FEDERAL RESEARCH PROGRAMME ON DRUGS

YOUTH-PUMED

Youth perceptions of nonmedical use of psychoactive medications

Frédérique Bawin (UGent), Kevin Emplit (USL-B), Julie Tieberghien (VIVES Hogeschool), Ellen Vandenbogaerde (VIVES Hogeschool), Mafalda Pardal (UGent), Christine Guillain (USL-B), Tom Decorte (UGent)

belspo .be

YOUTH-PUMED

Youth perceptions of nonmedical use of psychoactive medications

Contract - DR/00/86

FINAL REPORT

PROMOTORS: Mafalda Pardal (UGent)
Tom Decorte (UGent)
Julie Tieberghien (VIVES Hogeschool)
Christine Guillain (USL-B)
Yves Cartuyvels (USL-B)

AUTHORS: Frédérique Bawin (UGent)
Kevin Emplit (USL-B)
Julie Tieberghien (VIVES Hogeschool)
Ellen Vandenbogaerde (VIVES Hogeschool)
Mafalda Pardal (UGent)
Christine Guillain (USL-B)
Tom Decorte (UGent)

Published in 2021 by the Belgian Science Policy Office (BELSPO)
WTCIII
Simon Bolivarlaan 30
Boulevard Simon Bolivar 30
B-1000 Brussels
Belgium
Tel: +32 (0)2 238 34 11 - Fax: +32 (0)2 230 59 12
http://www.belspo.be
http://www.belspo.be/drugs

Contact person: Aziz Naji
Tel: +32 (0)2 238 36 46

Bawin, F., Emplit, K., Tieberghien, J., Vandenbogaerde E., Pardal, M., Guillain, C., Decorte, T. - ***Youth perceptions of nonmedical use of psychoactive medications.*** Final Report. Brussels : Belgian Science Policy Office 2021 – 214 p. (Federal Research Programme on Drugs)

ACKNOWLEDGMENTS AND LIST OF MEMBERS OF THE FOLLOW UP COMMITTEE

This research was supported by the Belgian Science Policy Office (BELSPO). We thank the members of the follow up committee who provided valuable insights and expertise throughout the research project.

Assistance provided by An De Buck was greatly appreciated. Advice given by Martin de Duve, Vibeke Asmussen Frank, Bryce Pardo, Beau Kilmer, Clayton Mosher, Katinka Van De Ven, Alexandra Hall, Marta Rychert, George Dertadian, Rosalie Pacula, Caitlin Hughes, Suzanne Nielsen, Rebecca Jesseman and Katy Holloway has been a great help in developing the policy recommendations of this research project.

We are particularly grateful to everyone who helped with disseminating the study and recruiting participants. We thank the colleagues at our research institutions for their assistance during the testing phase of the online survey. Finally, special thanks are extended to all participants who took part in the study and enabled this research to be possible.

On June 1st 2021, the research consortium organised a webinar about nonmedical use of prescription drugs among young adults. We thank the speakers for their contributions to this event, in particular: João Matias (EMCDDA), Ty Schepis (Texas State University), Tina van Havere (Cabinet of the Federal Minister of Public Health), Aziz Naji (BELSPO), and the research participants who shared their views on this topic.

Members of the follow up committee:

Huard, Katia (General Drugs Policy Cell)

Hogge, Michaël (Eurotox)

Jurdant, Alexis (Fedito Bruxelles)

Leclercq, Stephane (Fedito Bruxelles)

Matheï, Cathy (KU Leuven)

Méan, Matthieu (Modus Vivendi)

Nicaise, Pablo (UCLouvain)

Popelier, Kaatje (VAD)

Theisen, Caroline (General Drugs Policy Cell)

Van Huyck, Catherine (Modus Vivendi)

TABLE OF CONTENTS

LIST OF FIGURES AND TABLES

Boxes

Tables

Figures

INTRODUCTION

The growing use of prescription drugs is a global health concern. A "pill-popping culture", where many life issues are seen as problems that can be treated with medication, is becoming more common worldwide, not least in Europe and in Belgium. Simultaneously, there are increasing concerns about the nonmedical use of prescription drugs such as sedatives, opioid-based pain relief medication and prescription stimulants (Inciardi et al., 2007; Griffiths et al., 2014). Surveys note increasing prevalence rates in the US, with the highest rates among young adults aged 18-25 (Faraone et al., 2020). Nonmedical use may occur in the context of polydrug use, self-medication, recreational or enhancement purposes, with or without a medical prescription, but outside of the prescribed medical guidelines (Drazdowski, 2016; Milhet, 2015). Nevertheless, this trend has received little attention in scientific research in Belgium (De Bruyn et al., 2019; Ponnet et al., 2021), as well as in Europe as a whole (Casati et al., 2012).

Currently, most of the studies into NMUPD have been conducted in the US (Drazdowski, 2016) and fewer European studies are available (Casati et al., 2012; Helmer et al., 2016; Holloway & Bennett, 2012; Holloway, Bennett, Parry, & Gorden, 2013; Lehne et al., 2018; Papazisis et al., 2018). Furthermore, these efforts have tended to focus on monitoring prevalence of use among college or public-school students and gathering data on their supply channels and not so much on their perceptions of the use or supply of prescription drugs and associated harms. Against this backdrop, there is a clear need to better understand the young population of users, also taking into account that the drug-taking environment and patterns of drug use may differ greatly from those of other adults, and that young users are at a high(er) risk of adverse health outcomes. In particular, young users' own perceptions of the use of prescription drugs and associated harms are of particular relevance here, and could provide valuable insights for Belgian policymakers. This study aims to contribute to filling this knowledge gap by investigating young Belgian people's views on the nonmedical use and supply of prescription drugs in Belgium.

More specifically, we focus on a particular (age) group (18-29 years old) and consider the following groups of prescription drugs: 1) sedatives (e.g. benzodiazepines, z-hypnotics used to treat anxiety and sleep disorders); 2) analgesics (e.g. opioids); 3) stimulants (e.g., medications typically prescribed to treat attention deficit and hyperactivity disorder (ADHD)). These medicines legally require a medical prescription to be dispensed in Belgium. These three groups of medications seem to have been most predominantly associated with nonmedical use. We do not take into account over-the-counter drugs (OTC) which can be obtained without a prescription. Furthermore, in this study we use the following definition of 'nonmedical use of prescription drugs': (i) the use of prescription drugs without a prescription (ii) or the use of prescription drugs in ways not intended by the prescriber such as using prescribed medications in higher quantities or manners other than prescribed, or using medications for purposes other than prescribed.

Our study is driven by the following research questions:

RQ1- What do young people think about their nonmedical use practices, including types of medications used, settings of use and supply, perceptions of risk and social acceptability?

RQ2- What information do young people consult and rely on regarding prescription drugs?

RQ3- How has the nonmedical use and supply of prescription drugs been discussed among online communities of (potential) users?

RQ4- What measures may help to prevent or reduce nonmedical use of prescription drugs and related harms among young people?

In what follows we offer a review of the existing literature, of our research approach, study results and conclusions (including policy recommendations).

LITERATURE REVIEW

1. What is the nonmedical use of prescription drugs?

Studies exploring the 'misuse' or 'nonmedical use' of prescription drugs (NMUPD) utilise different definitions of 'nonmedical use' (Drazdowski, 2016). Nonmedical use is a broad term that covers different subtypes of use. Some studies focus only on the use of prescription drugs without a prescription, others focus exclusively on nonmedical motives for using prescription drugs (e.g. recreational use), and some combine the two. This inconsistency may complicate comparisons between study findings and makes drawing definite conclusions more problematic (Boyd & McCabe, 2008).

(i) Nonmedical use: without a prescription

A common criterion used to define NMUPD is 'the use of a prescription drug without a prescription'. Multiple studies suggest that when prescription drugs are used without a prescription, the main motive is consistent with the drugs' pharmaceutical indication – in other words, the user takes the medicine to experience its therapeutic effects (Holloway et al., 2013).

(ii) Nonmedical use: ways other than those intended by the prescriber

NMUPD is also defined as the use of a prescription drug in a way that is not as instructed by the prescriber. This includes using higher dosages, more frequent use and taking the drug using ingestion methods or for purposes other than those outlined in the instructions on the prescription (Milhet, 2015). For instance, in the study by Chan et al. (2019, p. 152) 'nonmedical purposes' are defined as follows: '*(i) by itself to induce a drug experience or feeling; (ii) with other drugs in order to enhance a drug experience; (iii) for performance enhancement (e.g. athletic); or (iv) for cosmetic purposes (e.g. body shaping)*'.

2. Types of medicines

Medicines can be classified in different ways according to their mode of action, their indications or their chemical structure. Of the various systems proposed over the years, the Anatomical Therapeutic Chemical (ATC) classification system is the internationally accepted system maintained by the World Health Organization (WHO, 2003). The ATC system separates drugs into groups according to the organ or system on which they act and/or their therapeutic and chemical characteristics. Three main groups of medicines are particularly meaningful for our study:

- **analgesics:** pain relievers, including opioids such as fentanyl, codeine and methadone;
- **tranquillisers, sedatives and hypnotics:** including benzodiazepines and benzodiazepine-like drugs, such as the z-hypnotics;
- **central nervous system (CNS) stimulants:** such as methylphenidate**.**

In this study we focus on medicines within these three categories that legally require a medical prescription in order to be dispensed in Belgium.

2.1. Analgesics

Analgesics are a class of drugs that act upon the nervous system to produce feelings of pain relief. Opioid analgesic drugs constitute the strongest pain-relieving medications. Prescription opioids include natural opiates (e.g. morphine, codeine), semi-synthetic opioids (e.g. oxycodone, hydrocodone, hydromorphone, oxymorphone) and synthetic opioids (e.g. methadone, fentanyl, tramadol). Prescription opioids are used mostly to treat moderate to severe pain, though some opioids can also be used to treat coughing and diarrhoea. The use of opioids may pose serious health risks, because prolonged use can lead to dependence. Opioids are also used for nonmedical purposes, as they induce effects such as relaxation and can produce a feeling of being 'high' (NIDA, 2020).

2.2. Tranquillisers, sedatives and hypnotics

Tranquillisers, sedatives and hypnotics encompass a large group of substances that are generally used to treat symptoms of anxiety, stress and sleeping disorders. These central nervous system depressants cause calming effects and sleepiness. Sedative medicines and hypnotics are mostly prescribed to treat sleep disorders such as insomnia, whereas tranquillisers are prescribed to treat anxiety or to relieve muscle spasms (NIDA, 2018b). Benzodiazepines and Z-drugs[1] are two of the most prescribed prescription drugs of this type (Casati et al., 2012). Long-term use of these medicines, even as prescribed by a doctor, can cause some people to develop tolerance (NIDA, 2020; NIDA, 2018a).

2.3. Central nervous system stimulants

Psychostimulants or central nervous system (CNS) stimulants are medicines that accelerate mental and physical processes. They increase energy, attention and alertness, and raise blood pressure, heart rate and respiratory rate. CNS stimulants can keep one temporarily awake, elevate mood, reduce irritability and feelings of fatigue, and enhance physical and mental capacities for work (Vardanyan, & Hruby, 2006). CNS stimulants are usually prescribed to treat attention deficit hyperactivity disorder (ADHD) and narcolepsy (uncontrollable episodes of deep sleep) (NIDA, 2018c).

[1] Z-drugs are non-benzodiazepine drugs with sedative effects that are similar to benzodiazepines.

3. Context of use

3.1. Motives for use

Improving our understanding of the different motivations for NMUPD will improve our knowledge on the nature of the phenomenon, and it is of critical importance to identify any associated risks. The key motives for NMUPD can be classified into three broad categories, including (i) self-medication, (ii) recreation and (iii) performance enhancement (McCabe & Cranford, 2012). It is important to note that the boundaries between these three categories are not clear-cut. For instance, there is a fine line between using a substance for enhancement or for self-treatment purposes. In some studies, self-medication and use for performance purposes are grouped as 'instrumental use' versus 'recreational use' (Watkins, 2016).

Individuals can report mixed motives for using prescription drugs (Daniulaityte et al., 2006; McCabe et al., 2009; Quintero, 2009). McCabe & Cranford (2012) found that most adolescents report more than one motive for past year NMUPD. Other research has found that many people who use prescription drugs nonmedically also report legitimate medical use (Bardhi et al., 2007; Brands et al., 2010; Kokkevi et al., 2008).

Motives for NMUPD seem also to differ across types of medicine. For instance, stimulants are much more frequently used for performance enhancement than are analgesics and sedatives (Lord et al., 2011; Brandt et al., 2014). The latter two are more often used as self-treatment (McCabe et al., 2007; Papazisis et al., 2018; Brandt et al., 2014). Nonetheless, social and recreational motives, such as 'getting high', having fun and experimentation, are also commonly reported for nonmedical stimulant, sedative and opioid use (Faraone et al., 2020; Drazdowski, 2016; Boyd et al., 2006a; McCabe et al., 2007; Lord et al., 2011; Teter et al., 2006; Peck et al., 2019; Papazisis et al., 2018; Brandt et al., 2014; Kenne et al., 2017; McCabe & Cranford, 2012). In the following subsections we elaborate on these three use motives of self-medication, performance enhancement and recreation.

3.1.1. Self-medication

When prescription drugs are taken without a legitimate prescription, it is possible that the medicines are still being taken for their 'normal' therapeutic benefits, i.e. to treat possibly undiagnosed or untreated mental or physical conditions (Drazdowski, 2016; Boyd et al., 2006a; Holloway & Bennett, 2012; McCabe et al., 2007). This behaviour can be labelled 'self-treatment' or 'self-medication'. These terms are generally used when medicines are taken without a physician diagnosing, prescribing or monitoring the treatment (Montastruc et al., 1997). McCabe and colleagues (2009, p. 63) state that self-treatment in the context of NMUPD 'is motivated by the desire to alleviate symptoms consistent with the prescription drug's pharmaceutical main indication'. Bardhi et al. (2007) speak of 'quasi-medical' reasons for the use of prescription drugs for health purposes by people who are not diagnosed with a physical or mental disorder (e.g. to manage insomnia).

Multiple studies exploring NMUPD suggest that when prescription drugs are used without a prescription, the main motive is to experience the therapeutic effects of the medicine (Holloway et al., 2013; McCabe et al., 2007; Papazisis et al., 2018). In other words, the motivation for using the medicine is consistent with the prescription drug's pharmaceutical main indication, but it is used without a

prescription. The reasons vary as to why young people use prescription drugs without being prescribed the medicines; they include costs, the need for instant pain relief and internal stigma associated with mental health problems (Kenne et al., 2017). However, more research is needed to explore young people's motives for deciding to treat their conditions without a legitimate prescription and thus without medical supervision.

Young people who use analgesics nonmedically are most often motivated by self-treatment (McCabe et al., 2007, 2009; Boyd et al., 2006a; Peck et al., 2019; Papazisis et al., 2018). Opioid-based analgesics also appear to be used as self-treatment to reduce sleep problems and to cope with psychiatric symptoms such as depression, tension, stress and anxiety, but to a lesser extent (Lord et al., 2011; Peck et al., 2019; Cutler & Kremer, 2017; Daniulaityte et al., 2006; McCabe & Cranford, 2012). Previous studies have suggested that the motivation for using sleep and sedative/anxiety medicines without a prescription is more often for self-treatment purposes (e.g. for relaxation, to relieve anxiety and as a sleep aid) (Boyd et al., 2006a; Holloway et al., 2013; Papazisis et al., 2018; Brandt et al., 2014; McCabe & Cranford, 2012; Ghandour et al., 2012). Finally, a proportion of students who use prescription stimulants nonmedically do so to treat self-diagnosed ADHD (Faraone et al., 2020).

3.1.2. Performance enhancement

The pressure to achieve and perform well in every area of life (e.g. at school, at work, in social contexts) can have adverse mental consequences (e.g. distress, sleep deprivation), and appears to be an important motivating factor for NMUPD (Kroll, 2019; LeClair et al., 2015; Dertadian, 2019).

The class of medicine that is used most frequently for performance enhancement is stimulants. Studies among young adults illustrate that the main motivations for nonmedical stimulant use are academic (Faraone et al., 2020; Drazdowski, 2016; Teter et al., 2006; Eickenhorst et al., 2012; Brandt et al., 2014). This practice is also referred to as pharmacological neuroenhancement, the improvement of cognitive performance or 'brain doping' (Franke & Lieb, 2010). Specific motives commonly reported for using stimulants are the improvement of concentration, alertness and focus, and using stimulants to stay awake for studying and as an aid for studying (Teter et al., 2006; Eickenhorst et al., 2012; Drazdowksi, 2016; McCabe & Cranford, 2012; DeSantis et al., 2008). The use rate of stimulants to enhance academic performance peaks during exam periods (Van Damme et al, 2018; Van Hal et al., 2013; Brandt et al., 2014). However, the cognitive capacity and grades of young people who use stimulants for academic achievement are not necessarily improved by the use of these 'smart drugs' (Arria et al., 2008b; Faraone et al., 2020). Evidence even shows an inverse relationship, with illicit prescription stimulant users more likely to have lower grades (Egan et al., 2013; McCabe et al., 2005). The use of analgesics for performance enhancement is less common (Lord et al., 2011).

Stimulants are used to a lesser extent for other performance enhancement purposes, such as weight management purposes (Teter et al., 2006; McCabe & Cranford, 2012; Drazdowski, 2016; Holloway & Bennett, 2012; Faraone et al., 2020); opioids are also sometimes used for this purpose, but even less than stimulants (Lord et al., 2011). Other – less commonly reported – reasons are athletic performance, work performance, sexual performance and cosmetic effects (e.g. to change body shape) (Drazdowski, 2016; Lord et al., 2011; Holloway & Bennett, 2012).

3.1.3. Recreation

Studies that explore people's motives for the use of prescription drugs recreationally mostly define and operationalise recreational use as the use for 'intoxication purposes', or 'getting high'. These studies show that young people use prescription drugs in order to experience pleasure or to achieve euphoric effects (Holloway & Bennett, 2012; McCabe et al., 2007; Quintero, 2009; Lord et al., 2011; Teter et al., 2006; Dertadian, 2019). However, Quintero (2012) found that 'getting high' is not the sole purpose of recreational pharmaceutical use among young people. Social dimensions appear to be equally or even more important. An example is the use of prescription drugs with the intent of socialising with friends at party settings (Quintero, 2009, 2012).

Prescription drugs are also used to increase or alter the intoxication effects of other psychoactive substances in recreational contexts (Bardhi et al., 2007; Quintero, 2009). Recreational and simultaneous polydrug use of prescription drugs happens most often in conjunction with alcohol (Quintero, 2009). Conversely, prescription drugs are also used to counteract drug effects and to 'come down' from other psychoactive substances (Bardhi et al., 2007; Holloway et al., 2013; Quintero, 2009; Lord et al., 2011; Teter et al., 2006; Ghandour et al., 2012).

3.2. Initiation and trajectory

In Europe, initiation into the nonmedical use of sedatives and tranquillisers usually occurs in early adolescence (Kokkevi et al., 2008). Similar findings have been reported in the United States (US) for opioids (Lankenau et al., 2012; Daniulaityte et al., 2006; Frank et al., 2015; Wu et al., 2008). College-based studies in the US illustrate that the majority of students initiate nonmedical use of prescription drugs before college (McCabe et al., 2007; Lord et al., 2011). However, Teter et al. (2006) found that most college students use stimulants nonmedically for the first time in college.

There seem to be two main trajectories associated with NMUPD initiation routes: 1) initiation through legitimate prescribed use, and 2) first use without a prescription. Some people start using prescription drugs nonmedically after enjoying the sensations induced by a drug they have used medically on prescription (Dertadian et al., 2017; Mui et al., 2014; Bardhi et al., 2007; Lankenau et al., 2012; Daniulaityte et al., 2006). Individuals who start using prescription drugs without a prescription are frequently motivated by curiosity or experimentation (Dertadian et al., 2017; Mui et al., 2014; Bardhi et al., 2007; Kokkevi et al., 2008). In this latter context, initiation to NMUPD is often a social process – the medicines are obtained from friends or acquaintances and first tried in social settings, such as at a friend's home or a party (Mui et al., 2014; Lankenau et al., 2012; Daniulaityte et al., 2006; Frank et al., 2015). Other initiation routes include first use for self-medication purposes for mental health issues (e.g. sedatives for anxiety or stress) (Bardhi et al., 2007; Kokkevi et al., 2008) or cognitive enhancement for academic performance (e.g. stimulants taken in an attempt to enhance studying ability) (Mui et al., 2014).

Wide availability, easy access, high exposure, social acceptance and close proximity are important factors for the first time use of NMUPD, which mainly occurs in a context of experimentation or curiosity (Yedinak et al., 2016; LeClair et al., 2015; Dertadian et al., 2017; Mui et al., 2014; Lankenau et al., 2012; Frank et al., 2015). In the study of Daniulaityte et al., 2006, the most frequently given reason for continued nonmedical use of pharmaceutical opioids was pleasure-seeking.

Illicit prescription drug users have different use trajectories that vary in complexity and in associated health risks (Daniulaityte et al., 2006). An important finding from previous research is that the motives for NMUPD change over time in young adulthood (Drazdowski, 2016; Garnier-Dykstra et al., 2012) and differ from other stages in life (LeClair et al., 2015). For instance, most young students first use stimulants out of curiosity, but as they get older their motivation changes to using them to enhance their ability to study (Garnier-Dykstra et al., 2012). The methods of administration can also change; while standard oral administration is the most common route when prescription drugs are used nonmedically for the first time, some opioid and stimulant users progress to snorting or injecting (Frank et al., 2015; Lankenau et al., 2012).

3.3. Profiles of nonmedical users

Studies conducted in the US show that the prevalence of NMUPD is highest among young adults aged 18 to 25 years. Nonmedical use of prescription drugs is significantly higher in this age group than among older adults and minors (Faraone et al., 2020; McCabe et al., 2018; Schepis et al., 2018). This age group is defined as 'emerging adulthood', which is the transitional period between adolescence and adulthood. Adolescents and young adults are considered to be a vulnerable group, as they are prone to taking risks and lack life experience and reliable information about risks linked to using prescription drugs nonmedically. This period often coincides with changes in their physical environment, for example changing schools, and they may take the drugs in an attempt to improve their academic results or sport performance, preserve social and familial relations in order to have friends and succeed in life, strive for a physical appearance they consider desirable, or 'get high'. Older adolescents may begin using prescription drugs nonmedically when competing for advance placement and honours courses in high school or for admission to college (UNODC, 2011). Some studies suggest that young people may be moving from the use of illicit drugs to prescription drugs (Johnston et al., 2009). The nature of NMUPD also differs between age groups (Schepis et al., 2018). Younger users report higher rates of concurrent drug use. For instance, Chan et al. (2019) show that young users are more likely to combine opioids with illicit substances than older users.

In addition to age differences, gender differences have been found in prior research for NMUPD. However, the results in this regard are mixed. Some studies show that females are more likely to use tranquillisers, hypnotics and sedatives nonmedically than males (Schepis et al., 2018; Kokkevi et al., 2008; Papazisis et al., 2018). The opposite is the case for prescription stimulants; a college-based study conducted among Flemish students found that nonmedical use of stimulants is more common among males (Van Damme et al., 2018). This finding is consistent with other international research (McCabe et al., 2005, 2006; Faraone et al., 2020). At the same time, Teter et al. (2006) did not find significant gender differences concerning the prevalence of illicit prescription stimulant use. Whereas multiple studies have found that the majority of people who use prescription opioids for nonmedical purposes are male (Peck et al., 2019; Lord et al., 2011; Martins et al., 2015), other showed that the majority of those who use pain medications nonmedically are female (Boyd et al., 2006b; Brands et al., 2010). Other studies, in turn, identified no gender differences (McCabe et al., 2007; Benotsch et al., 2011; Daniulaityte et al., 2009). Some research has demonstrated gender differences with regards to people's motives for use (Bjønness , 2019; McCabe et al., 2007, 2009; Lord et al., 2011; Teter et al., 2006). Male adolescents and young adults are more likely to use non-prescribed medicines for recreational purposes (e.g. to experiment, to counteract the effects of other drugs), and females of the same age are more likely to use these medicines for self-treatment and instrumental purposes (e.g.

pain relief, to lose weight, academic motivations) (Gunter et al., 2013; McCabe et al., 2007, 2009; Lord et al., 2011; Teter et al., 2006; Papazisis et al., 2018; McCabe & Cranford, 2012). However, other studies did not identify gender differences in people's motives for use (Eickenhorst et al., 2012).

Among young adults living in the US, the prevalence of nonmedical use of opioids is lower among college students compared to their same-age peers who do not attend college (Martins et al., 2015; McCabe et al., 2018; Schepis et al., 2018). A recent study from 2019 found no differences in primary motives regarding the nonmedical use of opioids between enrolled students and their non-college counterparts (Peck et al., 2019). Nonmedical use of prescription sedatives is also higher among young adults not in education (McCabe et al., 2018; Schepis et al., 2018). In contrast to opioids and tranquillisers, nonmedical use of stimulants is higher among college-enrolled students than among young adults who do not attend college (Martins et al., 2015; McCabe et al., 2018; Schepis et al., 2018; Ford & Pomykacz, 2016). A probable explanation for this is that academic pressure felt by students increases their likelihood of using prescription stimulants for study purposes. Students who have lower grades and experience academic difficulties are more likely to use prescription stimulants nonmedically than those without difficulties (Faraone et al., 2020; Garnier-Dykstra et al., 2012; McCabe et al., 2006). In addition to academic pressure, the college environment might be conducive to drug use, including NMUPD, because of peer influence/pressure, easy access, increased independence and new freedoms. Members of fraternities and sororities are more likely to report nonmedical use of prescription drugs (McCabe et al., 2005, 2006; Watkins, 2016; Faraone et al., 2020). The incidence of opioid and stimulant use disorders is higher among those who do not attend college and those at risk of dropping out of school (Martins et al., 2015; Schepis et al., 2018).

Most research into NMPUD among young adults is conducted with student samples (Babcock & Byrne, 2000; De Bruyn et al., 2019; Eickenhorst et al., 2012), which only covers one segment of the young adult population. Consequently, knowledge about other members of this population is limited. For instance, in 2018 less than half (39.2%) of the young adult population aged 20 to 24 were enrolled in tertiary education in Belgium (Eurostat, 2020). Other studies focus on NMPUD by young adults measured in specific samples and contexts, e.g. young adults socially active in nightlife scenes (Kelly et al., 2013a, 2013b, 2015a, 2015b; LeClair et al., 2015). Finally, although some studies have compared NMUPD between college-enrolled young adults and their peers not attending college (Martins et al., 2015; Peck et al., 2019; Schepis et al., 2018), use among non-college-attending young adults merits more attention in scientific research, especially given the higher risks for substance use disorders (Martins et al., 2015).

To date, most research looking into young people's nonmedical use of prescription drugs has been carried out predominantly among student populations using prescription stimulants (De Bruyn et al., 2019; Drazdowski, 2016; Teter et al., 2006) and, to a lesser extent, analgesics (Arriaet al., 2008b; Arria et al., 2008a, Brands et al., 2010; Davis et al., 2019). The nonmedical use of sedatives by young adults is therefore poorly understood because of the limited existing literature, yet research has shown that the user profiles of people who use medicines nonmedically differ depending on the type of medicine (Drazdowski, 2016; McCabe et al., 2018).

Previous studies have explored the differences in the profiles of nonmedical prescription drug users and non-users. Similar to other forms of substance use, mental health problems are associated with NMUPD. People with depressive symptoms are at increased risk of using prescription opioids

nonmedically (Daniulaityte et al., 2009). Novak et al. (2016) found that people who have a prescription are more likely to engage in NMUPD than people who have no prescription. Among college students, differences have been found between nonmedical prescription drug users and non-users in their social, academic and drug use behaviour. Nonmedical users have lower grades, spend less time studying, skip more classes and socialise more (Arria et al., 2008b). Students who do not use prescription drugs nonmedically report significant lower rates of drug use compared to using college students (Brandt et al., 2014).

3.4. Effects and outcomes

People take psychoactive substances because they expect to experience certain effects. To our knowledge, previous studies of NMUPD have paid little or no attention to users' experiences and self-reported effects (including desired effects).

3.4.1. Adverse effects, risks and outcomes

NMUPD poses health risks. Short-term side effects caused by NMUPD include headache, stomach-ache, irritability, feeling sad, reduced appetite, sleep problems/difficulties, dizziness and palpitation (Faraone et al., 2020). In addition, in the US the rate of NMUPD resulting in emergency department visits has increased significantly over the years (Centers for Disease Control and Prevention, 2010; Faraone et al., 2020). This appears to be an emerging problem in European countries as well (Novak et al., 2016; Liakoni et al., 2017). Other concerning outcomes are (unintentional) non-fatal overdoses and overdose deaths caused by the misuse of prescription opioids (Frank et al., 2015). Concurrent ingestion of prescription drugs with other (il)licit psychoactive substances can lead to an overdose or to harmful drug interactions (Edwards et al., 2017; Jiao et al., 2009). Further, ingesting prescription drugs through alternative administration routes can lead to negative health consequences (Faraone et al., 2020; Katz et al., 2011).

Long-term health hazards associated with extensive NMUPD are the development of mental health problems and disorders, including substance use disorders (Martins et al., 2015). This includes the transition from NMUPD to prescription drug dependence, and from the use of prescription drugs to illicit substance use disorders (Martins et al., 2015). For instance, reports from other studies show transitions from oral prescription opioid use to more hazardous forms of opioid use, such as the injection of opioids or heroin (Lankenau et al., 2012; Cerda et al., 2015; Daniulaityte et al., 2006; Frank et al., 2015; Mateu-Gelabert et al., 2015).

In many instances of NMUPD, there is no medical supervision. This means that users do not receive important medical information and have no medical follow-ups. This might result in a lack of knowledge about contraindications and the drugs' risks, side effects and interactions with other drugs. In addition, users are not informed about appropriate use patterns, including dosages and frequency of use. This can have serious health consequences, in particular for vulnerable populations.

3.5. Use patterns

Studies have reported diverging patterns of NMUPD, depending on the use motives and the type of medicine used (Bardhi et al., 2007). In this section we elaborate on administration methods, dosages and use frequencies.

3.5.1. Methods of administration

Most prescription drugs are intended for oral ingestion, and research has found that the main administration method of NMUPD is the conventional oral route (McCabe et al., 2007; Teter et al., 2006; Faraone et al., 2020). Non-oral administration routes include inhalation (e.g. smoking), intravenous administration (e.g. injection), intranasal administration and insufflation (e.g. snorting and sniffing).

The vast majority of young people who use stimulants and opioids nonmedically report oral administration methods. A non-negligible minority administer these substances intra-nasally (Garnier-Dykstra et al., 2012; McCabe et al., 2007; Teter et al., 2006; Babcock & Byrne, 2000; Brandt et al., 2014; Faraone et al., 2020). A very small proportion ingest prescription drugs through inhalation (including smoking) and injection (Teter et al., 2006; Faraone et al., 2020). When prescription drugs are administered through alternative routes, they are usually crushed into a fine powder, which can be snorted or injected (Bardhi et al., 2007; Lankenau et al., 2012; Daniulaityte et al., 2006).

The type of administration method used for NMUPD is associated with the motive for use. Non-oral administration methods are associated with prescription drugs used for recreational purposes (e.g. to 'get high') (McCabe et al., 2007; McCabe & Cranford, 2012), whereas standard oral ingestion is most common when stimulants are used to try to improve academic performance (Garnier-Dykstra et al., 2012) and when analgesics are used for pain relief (McCabe et al., 2007).

3.5.2. Dosage and frequency of use

Studies have found that some nonmedical users use larger amounts of their prescription drugs or use them more frequently than instructed by their physicians (Holloway & Bennett, 2012; Holloway et al., 2013; Sepúlveda et al., 2011).

While use frequencies vary widely, most adolescents and young adults appear to be infrequent users (Kelly et al., 2013b; Benotsch et al., 2011; Wu et al., 2008). Some young people's use can be defined as opportunistic (depending on availability), especially when the prescription drugs are used for recreational purposes and as an alternative for other recreational substances (Chan et al., 2019).

Nonmedical prescription drug users have described their use as controlled and limited, not impairing their social and professional functioning (Quintero, 2012; Bardhi et al., 2007).

3.6. Polysubstance use

There is growing evidence of a positive association between the nonmedical use of prescription drugs and the use of (il)licit substances (mainly alcohol and cannabis) (Chan et al., 2019; Schepis et al., 2018; Boyd et al., 2006b; Brands et al., 2010; Garnier-Dykstra et al., 2012; Kokkevi et al., 2008; Benotsch et al., 2011; Daniulaityte et al., 2009; McCabe et al., 2006). A positive link has also been found between NMUPD and the risk of substance use disorders (McCabe et al., 2009, 2018; Faraone et al., 2020). People who use prescription drugs for recreational purposes, such as to 'get high' or to experiment, are more likely to use other drugs and are more at risk of substance use problems than those who self-medicate with prescription drugs or who use them for instrumental purposes (e.g. to try to improve academic performance) (Boyd et al., 2006a; McCabe et al., 2007; Watkins, 2016).

In a nonmedical context, prescription drugs are sometimes co-ingested with other psychoactive substances, including licit psychoactive substances such as alcohol and illicit substances such as cannabis and cocaine (Bardhi et al., 2007; Quintero, 2009; Brandt et al., 2014; Egan et al., 2013; Frank et al., 2015). However, simultaneous substance use involves pharmacological risks (Häkkinen et al., 2012). Illicit polypharmacy is the concurrent illicit use of multiple pharmaceutical medications. Opioids and benzodiazepines are more frequently combined in this way, and this specific combination heightens the risks of overdoses (Frank et al., 2015).

3.7. Attitudes and social acceptability

Prescription drugs are mostly perceived by users to be inherently safer and less addictive than illicit drugs because they have undergone clinical research, are used medically, are widely available, are produced by legal pharmaceutical companies and are sanctioned and supported by the medical establishment (they are prescribed by health professionals and sold by pharmacies) (Mui et al., 2014; Quintero, 2012; DeSantis & Hane, 2010; Quintero, 2009; Lord et al., 2011; Cutler & Kremer, 2017; Frank et al., 2015; Compton & Volkow, 2006). In addition, information about their effects is widely available in package inserts and advertisements, and on the internet (UNODC, 2011). For instance, people who use prescription opioids for nonmedical purposes believe that these opioids are less likely to produce an overdose than heroin. Consequently, these users are unlikely to consult prevention services (Frank et al., 2015).

The perceived risks associated with prescription drugs differ between users and non-users. The perceived risks of prescription drugs are inversely related with nonmedical use and frequency of use (Lord et al., 2011; Arria et al., 2008a). Brandt et al. (2014) and Kenne et al. (2017) found that non-using young adults perceive the physical and mental health risks associated with prescription drug use to be higher than people who use them. Young adults who abstained from NMUPD indicated they were not interested, had concerns about physical and mental health damage, or were ‘not doing drugs’ (Brandt et al., 2014).

The moral and ethical judgements surrounding NMUPD are less studied than safety judgements. In the study by DeSantis & Hane (2010), conducted in the US, stimulants were presented as physically harmless and morally acceptable among college students, who collected and shared positive narratives about their use. In the qualitative study by Bardhi and colleagues (2007), young women believed that the social supply of medicines was acceptable and that quasi-medical reasons (e.g. to cope with anxiety) for using these prescription drugs were acceptable. The *Partnership Attitude Tracking Study* (Partnership for a Drug Free America, 2004), which included teens aged 14 to 18, observed that almost one-third of teens believe it is okay to take prescription drugs (without a prescription or higher dosages than prescribed) to deal with an injury or pain, as long as they are not ‘getting high’. On the other hand, Brandt et al. (2014) found that almost half of the students who use prescription drugs nonmedically think that stimulant use leads to unfair academic advantages. Many nonmedical users still think that, regardless of the context, it is not appropriate to use prescription drugs without a prescription (Helmer et al., 2016; Lord et al., 2011; Watkins, 2016).

Some studies have focused on the justification, rationalisation and neutralisation of NMUPD among students (Cutler & Kremer, 2017; DeSantis & Hane, 2010). These studies found clusters of justifications for the illicit use of medical stimulants and opioids. The clusters show overlaps and cover, largely, the

same rationalisations and neutralisation techniques used by students. Making comparisons between 'good' or safe prescription stimulants and 'bad' or harmful illicit drugs was a first important justification. Prescription drugs appear to be thought of as legal and safe alternatives to illicit drugs (Quintero, 2009). A misperception of safety arises due to the legal status of prescription drugs. It is common for people, including users themselves, to draw symbolic boundaries between illicit drugs and licit medicines, and between the users of these substances, in order to avoid negative social stigma (Frank et al., 2015).

Social drug research shows that the motives for drug use play an important role in the social acceptance by users themselves of different types of (il)licit drugs. Using drugs for the 'right reasons', such as health purposes (e.g. pain relief), appears to be morally more acceptable than using them for the 'wrong reasons', such as recreational or hedonistic purposes (e.g. to 'get high') (DeSantis & Hane, 2010; Cutler & Kremer, 2017; Bawin, 2020). Similarly, nonmedical prescription drug users consider self-treatment legitimate, whereas using prescription drugs to 'get high' is less legitimate, or illegitimate (Cutler & Kremer, 2017; Daniulaityte et al., 2006).

Another argument used to justify NMUPD is the 'victimless crime' argument. Young people using prescription drugs nonmedically think that their use is justified, since it does not cause harm to others nor to society (Bardhi et al., 2007; DeSantis & Hane, 2010; Cutler & Kremer, 2017). Claiming moderation or self-control is another argument used to neutralise stigma associated with drug use. This implies that people view their use as controlled and responsible (low frequency and dosage) and not as abuse, contrary to other substance users (DeSantis & Hane, 2010; Cutler & Kremer, 2017).

Cutler & Kremer (2017) found in their qualitative research that justifications for nonmedical use differ between the class of medicines. For instance, the 'everyone does it' argument was used as a technique used to neutralise the stigma of stimulant use but not opioid use. Students describe stimulants as 'life jackets' that are the only available measures saving them in crises. They may defend their use by saying it is a one-off, due to exceptional circumstances (Kroll, 2019).

To date, little social norms research has been done in the area of NMUPD. The majority of studies looking into peer norms among young people and substance use focus on the correlation between social norms and alcohol use (Borsari & Carey, 2001; Perkins, 2002), and to a lesser extent illicit drugs (e.g. cannabis) (Kilmer et al., 2006; Martens et al., 2006). There is a growing body of evidence that shows that misperceived peer use and norms influence personal behaviour. Over-estimating the substance use of peers is positively related with own substance use (Arbour-Nicitopoulos et al., 2010; Larimer et al., 2004). Studies conducted in Europe and the US indicate that these earlier findings on misperceptions of social norms might be expanded to NMUPD. The majority of the students who participated in a European college-based study perceived the use of non-prescribed prescription drugs to be higher among their peers than their personal use (Helmer et al., 2016; Lehne et al., 2018). The majority also believed that their peers were as supportive, or even more supportive, of the nonmedical use of prescription stimulants. These over-estimations were associated with higher levels of personal nonmedical prescription stimulant use (Helmer et al., 2016; Lehne et al., 2018). Three studies from the US found that university students over-estimated their peers' nonmedical and recreational use of prescription drugs. Nonmedical and medical users were more likely to over-estimate the prevalence of nonmedical use than were non-users (Sanders et al., 2014; McCabe, 2008; Kilmer et al., 2015).

Finally, other authors speak of the normalisation of the nonmedical use of prescription drugs among young adults (Ford & Pomykacz, 2016; Daniulaityte et al., 2006). This includes experimenting with prescription drugs (LeClair et al., 2015) and the use of prescription drugs combined with other normalised psychoactive substances such as alcohol (Daniulaityte et al., 2006). Nevertheless, users themselves find the misuse of prescription drugs less socially accepted than the misuse of alcohol, tobacco and cannabis, but more socially accepted than other forms of illicit drug use (Lord et al., 2011).

3.8. Sources of information

Existing knowledge on the information needs and information-seeking behaviour of NMUPD is scarce. Only a few studies have researched the type of information and information sources consulted by this population (e.g. Dertadian et al., 2017; Quintero & Bundy, 2011). The findings from these studies show that the internet, including search engines (e.g. Google) and specialised forum-based platforms (e.g. Erowid[2]), is consulted for various types of information about prescription drugs, including information on dosing, indications, concurrent substance use, costs, risks, recreational uses, clinical effects and adverse effects (Dertadian et al., 2017; Quintero & Bundy, 2011). The most searched-for topics include the medicines' risks and side effects (Quintero & Bundy, 2011). Quintero & Bundy (2011) show that this search for information is done with critical views and personalised risk assessments. The users evaluate the credibility and reliability of the information found online and cross-check and triangulate it with information coming from other sources (e.g. friends, medical professionals).

[2] "*This site and others* […] *are locations where individuals share information on a range of topics, including recommended dosages, costs, effects, routes of ingestion, strategies to gain prescriptions for specific drugs from health care providers, techniques to increase the potency of drugs, delivery methods for online prescription drug orders that are less likely to draw suspicion from authorities, guides for buying prescription drugs in Mexico, and diaries of drug use experiences"* (Quintero & Bundy, 2011, p. 899).

4. Supply

Prescription drugs used nonmedically are obtained through a variety of (legal and illegal) channels, including social supply (family and friends), dealers, the internet (e.g. the dark web), theft or burglary (e.g. from hospitals, residences and pharmacies), forgery, and via physicians but under false pretences. This latter option includes malingering (i.e. feigning, fabricating or exaggerating symptoms), doctor shopping,[3] obtaining prescriptions fraudulently from a physician and cases involving unscrupulous physicians selling drugs. Little information is available on the costs of purchasing prescription drugs through illegitimate routes.

4.1. Sources of supply

4.1.1. Social supply

The majority of young people who report NMUPD obtain these medicines from peers, friends and family (including parents and the medicine cabinet at home) (Boyd et al., 2006b; Faraone et al., 2020; Garnier-Dykstra et al., 2012; Gunter et al., 2013; Holloway & Bennett, 2012; Lord et al., 2011; McCabe et al., 2006, 2007, 2018). The vast majority of users report that they obtained them for free (Bardhi et al., 2007; Brandt et al., 2014). Prescription drugs are also commonly shared among adolescents (Brands et al., 2010). When people obtain prescription drugs from friends or family, most of the time these medicines have been prescribed to that person (Dertadian et al., 2017; Garnier-Dykstra et al., 2012; McCabe et al., 2006; Mui et al., 2014; Lankenau et al., 2012). When people self-medicate with prescription drugs obtained from family or friends, these latter might be acting as lay carers, i.e. trying to help others with their own treatments.

4.1.2. Prescriptions

A number of nonmedical users report using their own prescribed medicines. Some of them report feigning symptoms in order to receive these prescriptions (Faraone et al., 2020).

4.1.3. Theft

Theft or taking prescription drugs from another person without their knowledge is a less common way of obtaining prescription drugs for nonmedical use (Novak et al., 2016; Faraone et al., 2020).

4.1.4. The illicit market and the internet

The purchase of prescription drugs for nonmedical use from dealers or via the internet is not often reported by young people (Holloway & Bennett, 2012; McCabe et al., 2006, 2007; Lord et al., 2011; Novak et al., 2016; Faraone et al., 2020). However, in recent years the internet has become increasingly popular as a way to obtain illegal drugs (Frank & Mikhaylov, 2020). It is possible that this trend is also true for the illicit purchase of prescription drugs. A study from Columbia University's National Center on Addiction and Substance Abuse (Califano, 2004) of 157 online drug sites found that most

[3] Doctor shopping *"is defined as seeing multiple treatment providers, either during a single illness episode or to procure prescription medications illicitly."* (Sansone & Sansone, 2012, p. 42).

prescription drugs are readily available online without a prescription. A systematic review of the misuse of medicines in the European Union (EU) found that purchasing and selling medicines on the illicit market and doctor shopping were both common actions. However, this study did not focus on a particular age group (Casati et al., 2012).

4.2. Diversion

Previous studies into NMUPD found that it is common for individuals to divert their medicines to friends and family members (Faraone et al., 2020). Diversion is defined as selling, trading or sharing prescription drugs with someone for whom they have not been prescribed (Garnier et al., 2010; Holloway & Bennett, 2012; Holloway et al., 2013). In college settings in the US, from a third to over a half of the students with prescription stimulants have illegally distributed their medicines to their peers (DeSantis et al., 2013; Sepúlveda et al., 2011). In the study by McCabe et al. (2006) looking into the nonmedical use of prescription stimulants among undergraduate students in the US, 54% of prescription holders had been approached with a request to divert their stimulant medication.

4.3. Availability and accessibility

Countries differ with regards to the ease of access to pharmaceutical drugs. The legal availability and accessibility of medicines is connected with nonmedical use (Casati et al., 2012).

Nonmedical users of prescription drugs living in the US indicate that prescription drugs are readily accessible (Lankenau et al., 2012; Bardhi et al., 2007; Faraone et al., 2020), and they hold physicians responsible for overprescribing (Cutler & Kremer, 2017). In the study by Cutler & Kremer (2017) young adults describe the easiness of malingering and doctor shopping in order to receive a prescription. The high availability and prevalence of use of prescription drugs, together with their direct-to-consumer advertising, leads to high exposure in the US. To date, there are no studies we are aware of that assess perceived accessibility and availability of prescription drugs in a nonmedical context in Europe.

5. The European and national context

5.1. Epidemiology of NMUPD in Europe

Recently, Europe has witnessed an increase in the number of prescriptions for medicines such as opioids, sedatives and stimulants, and an increase in the number of emergency room visits and drug treatment admissions due to these drugs (Casati et al., 2012; Griffiths et al., 2014; OECD, 2019). However, the real scale of NMUPD is difficult to estimate, partly because of gaps in the monitoring of legal medical use as prescribed by healthcare professionals (which creates opportunities for the diversion of prescription drugs), and partly due to the very broad range of products available and the lack of clear definitions for the surveyed population to report their levels and types of nonmedical use (UNODC, 2011).

There is room for improvement in the systematic monitoring of the extent and pattern of NMUPD in Europe (Novak et al., 2016). There are very few direct estimates of self-reported use, apart from some country estimates (Glaeske, 2005; Van Damme et al., 2018). Most European countries only carry out systematic monitoring of the extent or pattern of consumption of illegal drugs, alcohol and tobacco (Decorte et al., 2009; EMCDDA, 2020). As a result, most of the epidemiological data on the nonmedical use of prescription drugs among (young) adults in Europe comes from secondary sources such as drug treatment admissions and drug-related deaths and mortality.

In the following sections we highlight some of the key sources, at the European level, of data on NMUPD.

5.1.1. Treatment demand indicator data

The treatment demand indicator (TDI) provides an indirect indicator of trends in problem drug use and is a rich basis for more in-depth assessments of the nature and trends in high-risk drug use. It is a data collection protocol used across Europe. European data from specialised treatment centres indicate that heroin and other opioid users constitute approximately one-third of clients entering treatment (EMCDDA, 2020). In a number of European countries, a substantial proportion of the opioid clients who enter drug treatment do so due to misuse of medical analgesics (Casati et al., 2012; EMCDDA, 2018). For instance, in 2018, twenty European countries reported that more than 10% of all opioid clients entering specialised services presented for problems primarily related to opioids other than heroin (including methadone, buprenorphine, fentanyl, codeine, morphine, tramadol and oxycodone) (EMCDDA, 2020). The TDI further shows that the combined use of opioids and sedatives including benzodiazepines was reported by a considerable number of those receiving drug treatment. However, these figures are probably under-estimates because problems with secondary drugs, including benzodiazepines, are often under-reported.

In Belgium, benzodiazepines have been registered the most in the category ‘treatment for other drugs’. Data from treatment centres indicate that 422 people were treated in relation to benzodiazepine use in 2018. The treatment entrants for benzodiazepines were more frequently female, and on average 45 years old, which was similar to treatment entrants for alcohol (Antoine et al., 2019).

5.1.2. The drug-related death and mortality indicator data

The drug-related death and mortality (DRD) epidemiological indicator (developed by the EMCDDA) provides statistics on overdoses as well as estimations of the overall and cause-specific mortality among high-risk drug users. In Europe, about 4% of the mortality in the age group 15–39 is estimated to be attributed to illegal drug overdoses, often in combination with other substances such as alcohol and medication (Sciensano, 2021). The 2019 EMCDDA report on drug-related deaths and mortality in Europe suggests that some European countries have experienced an increasing number of drug-induced deaths caused by opioids such as tramadol, oxycodone and fentanyl analogues. In particular, the synthetic opioid analgesic tramadol has been associated with a significant number of deaths in Europe in recent years. Additionally, benzodiazepines were implicated in many drug-related deaths in Europe too, particularly in cases of multiple drug toxicity. In addition to prescription benzodiazepines, new psychoactive substances belonging to the benzodiazepine class are sold as alternatives to frequently prescribed tranquillisers such as alprazolam and diazepam (EMCDDA, 2019a).

Drug-induced deaths, as monitored by the EMCDDA, include all deaths attributable to illicit drug use. In Belgium, drug-induced deaths are recorded in the General Mortality Register located at the National Institute of Statistics. The most recent data available at the national level are from 2014. There were 61 overdose deaths among adults aged 15–64 in 2014. Opioids, mainly heroin, were involved in two-thirds of all toxicologically confirmed drug-induced deaths that were reported in that year. Information regarding deaths attributable to prescription drug use is not available.

The Belgian Early Warning System on Drugs provides additional information regarding drug-induced deaths. This system reported 62 drug-induced deaths in 2017. These were mainly caused by polydrug use, with opioids (typically heroin, morphine and methadone) involved in more than half of those cases. The synthetic opioid fentanyl was involved in six cases (Sciensano, 2019; EMCDDA, 2019b).

5.1.3. Other international data collection efforts

According to the International Narcotics Control Board (INCB), opioids other than heroin[4] were seized in increased quantities in 2017 in Europe. In that year, Europe was the region with the second highest prevalence of opiate use in the world. Heroin remains the most commonly used opioid in Europe, but the abuse of synthetic opioids such as fentanyl, methadone and buprenorphine appears to be on the rise. In June 2019, the Organisation for Economic Co-operation and Development (OECD) published the report *Addressing Problematic Opioid Use in OECD Countries*. This report notes that the average number of opioid-related deaths among the OECD countries increased by 20% in the period 2011–2016. The data include deaths associated with the abuse of illicit opioids (e.g. heroin) and prescription opioids (INCB, 2020).

Finally, there are important cross-national self-report studies worth mentioning:

[4] Including prescription opioids such as methadone, buprenorphine, tramadol, fentanyl derivatives, codeine, dihydrocodeine and oxycodone, as well as opium and morphine (INCB, 2020, p. 102).

5.1.4. The European Health Interview Survey

The European Health Interview Survey (EHIS) is conducted every five years among inhabitants (15 years and older) in all European member states. So far, two waves have been completed, between 2006–2009, and between 2013–2015. The survey asks about the use of prescription and non-prescription medicines in the last two weeks, without distinguishing between medical and nonmedical use. Nevertheless, results are striking, with 60% of Belgian respondents saying they had used a prescription medicine in the last two weeks, the highest prevalence among all European member states, where the average prevalence was 48.6%. In general, women reported using prescription medicines more frequently than men, and older respondents reported using more than younger ones. Importantly, the reported use in Belgium among those aged 15–24 was also the highest of all EU member states, with 32.8% of Belgian youngsters saying they had used prescription medicines in the past two weeks, while the European average was 21.9% (Eurostat, 2014).

The Belgian Health Interview Survey (HIS) is a cross-sectional population survey that was first carried out in 1997 and it has been repeated five times since then (most recently in 2018). While no age limits are set for participating in the HIS, the questionnaire covering 'sensitive' domains such as health status, drug use, lifestyle and prevention is only to be completed by respondents above the age of 15 (Sciensano, 2018).

The 2018 HIS provided results about the use of medicines. This information was obtained through self-reporting by the respondent on the use of medicines in the past two weeks and by the interviewer recording the brand names and national codes[5] of all medicines used by the respondent in the past 24 hours (Van der Heyden et al., 2020b). An interesting observation resulting from this survey, confirming the results from the European Health Interview Survey discussed above, is that Belgians were major users of prescription drugs. Over half (51%) of the population reported taking a prescription drug over the previous two weeks. The percentage of people using prescribed medicines was lower in Brussels (46%) than in Flanders (52%) and Wallonia (52%). Although the use of prescribed medicines remains high, it seems to have been stabilising in recent years. In 1997, 41% of the population stated that they had taken a prescribed medicine during the previous two weeks; in 2001 and 2004 this figure was 47%, and in 2008 and 2013 it rose to 51% (Van der Heyden et al., 2020b).

Data from the 2018 survey also provide an overview of the relative magnitude of use of the main groups of medicines within the general population. For reimbursed prescription drugs, 36.3% of the medicines used were for the cardiovascular system, 15.5% for the gastric system and 14.5% for the nervous system. The use of medicines for the nervous system, including analgesics, anxiolytics and hypnotics, was the highest for non-reimbursed prescription drugs (36.9%) (Van der Heyden et al., 2020b).

Generally, according to the 2018 HIS, and in line with European EHIS data, women had used more prescription drugs than men during the previous two weeks. The use of prescription drugs increased substantially with age (20% under 15 years compared to 92% for over 75 years). The use of over the counter (OTC) medicines was higher among adults aged 25–54, but differences relative to other age groups were not very substantial. Furthermore, people with a low educational level used as many

[5] This information (brand name and national code) is linked to the ATC classification system in the statistical analysis of the results.

prescribed medicines as those with a high educational level. However, people with a low educational level used more analgesics, anxiolytics and hypnotics (Van der Heyden et al., 2020b).

The 2018 HIS report included a new question about the nonmedical use of prescription drugs. 'Nonmedical' was defined as 'use without a prescription'. Opioids (e.g. methadone, fentanyl, buprenorphine, oxycodone, codeine) and other psychoactive medicines (e.g. Valium, Ritalin, Rohypnol, Temesta) were included. Unfortunately, few data are available in the report. The results show that the last year prevalence of opioid use among those aged 15–24 was 0.4% and increased to 1.1% among those aged 35–44. Nonmedical use was slightly higher among women (0.7%) than among men (0.6%), and higher in Flanders (0.7%) than in Wallonia (0.6%) and Brussels (0.2%). However, we have to take account of the small survey subsample (Gisle & Drieskens, 2019). The figures for the nonmedical use of psychoactive medicines other than opioids are not mentioned in the report.

Access authorisation to the HIS survey database allows EUROTOX (Federation of European Toxicologists and European Societies of Toxicology) to carry out customised analyses for Wallonia and Brussels. Their reports, published in 2018, allow us to refine the Belgian HIS 2013 survey on the use of psychoactive prescription drugs among the Walloon and Brussels population.[6] Findings show that 14% of the Walloon and 10% of the Brussels population aged 15 or older had consumed sedative prescription drugs in the previous two weeks. Ten per cent of the Walloon population had taken prescribed antidepressants, as had 7% of the population in Brussels. Regarding the use of medicines in the past 24 hours, analgesics (with or without prescription) had been taken by 6% in both regions. Anxiolytics, sedatives and hypnotics had been taken by fewer than one in ten (7% in Wallonia and 5% in Brussels). Finally, antidepressants had been consumed by 7% of the Walloon population and by 4% of the Brussels population (Stévenot & Hogge, 2019a, 2019b). The consumption of antidepressants and analgesics (with or without a prescription) has been relatively stable over time in Wallonia and in the Brussels Region. However, between 2008–2013 there was a slight decrease in the use of anxiolytics, hypnotics and sedatives (Stévenot & Hogge, 2019a, 2019b).

In terms of regional differences, the data from the HIS 2013 survey indicate that the consumption of prescribed antidepressants in the previous two weeks was significantly higher in Wallonia than in Brussels. On the other hand, while the consumption of prescribed sedatives was higher in Wallonia than in the Brussels Region (Van der Heyden, 2015), the difference was not significant after standardisation for age and gender. The consumption of psychotropic medicines (with or without a prescription) in the past 24 hours was slightly higher in Wallonia than in the Brussels Region for antidepressants, anxiolytics, hypnotics and sedatives. There was no significant difference for analgesics, with 5.6% in Wallonia compared to 5.8% in the Brussels Region.

We can draw directly on data provided by the 2018 HIS reports regarding the use of psychotropic prescription drugs in the two weeks prior to the survey. Results show that 13.1% of the Walloon and 9.7% of the Brussels population had taken prescribed sleeping pills or tranquillisers. In Wallonia 9.2% had taken prescribed antidepressants, versus 8.1% in Brussels (Gisle, Drieskens, Demarest, & Van der Heyden, 2020).

In addition, the HIS 2018 survey added a question in the section on illicit drugs in order to address the use of opioid medicines (e.g. codeine) that were not prescribed by a doctor. About 0.2% of the Brussels

[6] EUROTOX does not yet have the authorization to access the database of the HIS 2018 survey.

population and 0.8% of the Walloon population reported having used an opioid that was not prescribed, at least once in the previous twelve months (Stévenot & Hogge, 2019a, 2019b).

5.1.5. The EU Medicine Study

In 2016, a study of the nonmedical use of prescription drugs in five European countries (Denmark, Germany, UK, Spain and Sweden) aimed to understand the prevalence and characteristics of those engaging in NMUPD across the EU (Novak et al., 2016). So far, this European Union Medicine Study (EU-Meds Study) is the only source of information about the prevalence and characteristics of those engaging in NMUPD aged 12–49 across the EU. Lifetime and past-year prevalence were estimated for opioids (13.5% and 5.0%, respectively), sedatives (10.9% and 5.8%) and stimulants (7.0% and 2.8%), with the highest levels for the nonmedical use of stimulants among those aged 18–29, for both lifetime and last year use. No difference in prevalence rates were found for sedatives and opioids. Interestingly, these findings suggest that the prevalence of NMUPD in the EU is likely to be lower than the prevalence estimates in the US (Novak et al., 2016).

5.1.6. The European School Survey Project on Alcohol and Other Drugs

The European School Survey Project on Alcohol and Other Drugs (ESPAD) – the largest cross-national research project on drug use among students aged 15–16 in more than forty European countries, conducted every four years since 1995 – includes some questions about the nonmedical use of analgesics and sedatives, hypnotics and anxiolytics. In 2019, the ESPAD survey measured lifetime prevalence of nonmedical use of painkillers. Nonmedical use was defined as use 'to get high'. On average, the use of painkillers to get high was reported by 4% of the adolescents in Europe. To measure lifetime experience of use of sedatives, hypnotics and anxiolytics, students were asked on how many occasions they had used tranquillisers or sedatives 'without a doctor's prescription'. Lifetime prevalence of the use of 'tranquillisers or sedatives without a doctor's prescription' ranged from 1.7% to 21% (average= 6.6%). Generally, these numbers are relatively low (ESPAD Group, 2020).

In the past, Belgium (Flanders) has taken part in the ESPAD survey but unfortunately it did not participate in the most recent edition from 2019. So far, it is one of the most important sources for gaining insight into the nonmedical use of particular pharmaceuticals among youth in Belgium. In particular, the ESPAD survey from 2015 found that the lifetime use of painkillers 'to get high' was reported by 7% of the respondents in Flanders, higher than the ESPAD average of 4%. Additionally, lifetime prevalence of the use of 'tranquillisers or sedatives without a doctor's prescription' was reported by 6% of the respondents in Flanders, which is equivalent to the ESPAD average (6%). For both painkillers and tranquillisers/sedatives, slightly more girls than boys reported lifetime use in ESPAD countries. Similar gender differences were found in Flanders (ESPAD Group, 2016).

5.1.7. Health Behaviour in School-aged Children 2014

A study conducted by the Service d'Information Promotion Education Santé (SIPES) of the School of Public Health of the Université Libre de Bruxelles provides data on the prevalence of use of psychotropic medicines in secondary education in the Wallonia-Brussels Federation. This study is part of the Health Behaviour in School-aged Children (HBSC) survey commissioned by the European Office of the World Health Organization. Based on a self-administered questionnaire to be completed in the

classroom, the survey is conducted every four years. As the results of the 2018 survey are not yet available, we will focus on the data collected in 2014 (Moreau et al., 2017).

To measure the use of psychotropic medicines, students aged 15 enrolled in secondary education were asked if they had ever used tranquillisers, benzodiazepines or barbiturates in their lives. The results show that lifetime prevalence of use of these substances was low in the Walloon (2%) and the Brussels student population (1%) (Stévenot & Hogge, 2019a, 2019b).

5.1.8. Enquête EUROTOX 2019

In 2019 EUROTOX conducted an online survey on the prevalence of the nonmedical use of psychotropic drugs among drug users in French-speaking Belgium. A total of 1,747 people took part in the survey. In the absence of a strict sampling method, the results cannot be considered representative of all drug users in French-speaking Belgium (Stévenot & Hogge, 2019a).

The results show that painkillers (34.5%) and hypno-sedatives (28.5%) were the most frequently used psychoactive prescription drugs in a nonmedical context, for lifetime use. Lifetime use of prescription amphetamines was only 12%, and for prescription methadone and buprenorphine 2.8%. For almost all of these classes of prescription drugs (with the exception of amphetamines), the prevalence of lifetime use was the same for men and women. More women than men had used prescribed painkillers nonmedically during their lifetime (38.2% versus 32.5%). While recent use (in the past 12 months) was generally of an occasional nature, a significant proportion of drug users had regularly used psychoactive prescription drugs, especially painkillers (5%) and hypno-sedatives (6.7%). Among young adults (18–24), about a third had used painkillers nonmedically in their lifetime and a quarter had used sedatives nonmedically in their lifetime. Prescription stimulants had been used nonmedically by about 13% (Stévenot & Hogge, 2019a).

5.1.9. Global Drug Survey

The Global Drug Survey (GDS), an anonymous online questionnaire about drug use (covering alcohol, illegal drugs, tobacco and medication) among users aged 16 and over, aims to identify new global and local trends in drug use. Data from 123,814 people from over 35 countries was used in the 2019 Global Drug Survey. In Belgium, 536 questionnaires were filled out. The average age of the respondents was 29.4 years old. The 2019 survey resulted in some interesting findings related to prescription drug use. However, the results provide no differentiation between medical and nonmedical use. In terms of lifetime prevalence, 28.2% of the respondents reported that they had ever used prescription opioids, while 25.7% had ever used benzodiazepines, 14.5% had taken tramadol and 5.7% methylphenidate. Last year prevalence rates were highest for prescription opioids (16.4%), benzodiazepines (16.1%) and tramadol (6.8%). Of particular relevance here is that 2.1% reported they had used z-products in the last year, 2.8% had used methylphenidate and 1.3% had used modafinil (Global Drug Survey, 2019).

5.2. Epidemiology of NMUPD in Belgium

Although awareness of NMUPD is increasing, epidemiological data on the extent and nature of the phenomenon in Europe is scarce, limiting our understanding of the phenomenon on the European level. In this section we focus on the epidemiological data on NMUPD among (young) adults and adolescents in Belgium.

Except for the Belgian Health Interview survey (HIS), most research into NMUPD among young adults in Belgium is conducted with student samples in high school and higher education. In those instances, prescription drugs are often just one of the types of substances monitored, alongside (il)legal drugs, and no clear distinction is made between medical or nonmedical use of prescription drugs. A small number of studies do focus on nonmedical use of prescription drugs by young adults in specific contexts, e.g. when socially active in nightlife contexts. These particular studies may help to provide an insight in the nonmedical use of prescription drugs among young adults who do not necessarily attend higher education.

5.2.1. The VAD school survey in Flanders

The VAD *Leerlingenbevraging*, a school survey in Flanders, has monitored the use of tobacco, alcohol, illegal drugs and psychoactive medication among adolescents aged 12–18 since 1998. The VAD (Flemish Association on Alcohol and Drug Problems) is the Belgian EMCDDA sub-focal point for Flanders. The most recent study was conducted in the school year 2018–2019 among 47,568 students from 71 different schools (Rosiers, 2020). The survey included questions about three types of psychoactive medication: 'tranquillisers and sedatives', 'ADHD-medication' and 'stimulants'.[7] The focus was on lifetime and last year prevalence of use, without any specification of motives (medical or nonmedical purposes).

The results show that tranquillisers and sedatives had been used the most by the respondents: 15.6% had ever used tranquillisers and sedatives while only 8% had ever used ADHD-medication and 2.8% stimulants. Lifetime and last year prevalence of tranquilliser and sedative use was highest among respondents aged 17–18 (lifetime: 17.8% and last year: 8.8%). In the most recent study, the lifetime use of tranquillisers and sedatives was reported more often by girls (18.4%) than boys (12.8%). In contrast to the figures for tranquillisers and sedatives, more boys than girls reported that they had used ADHD medication in the last year (7.7% vs. 3.4%). The lifetime prevalence and last year prevalence of the use of stimulants was quite low (2.8% and 1.4%), and no differences in terms of age and gender were reported.

With regards to tranquillisers and sedatives, lifetime prevalence increased from 12.7% in 2010–2011 to 15.6% in 2018–2019. The lifetime prevalence of the use of ADHD medications had also increased in recent years: 8% in 2018–2019 compared to 6% in 2010–2011 (Rosiers, 2020).

5.2.2. University and university college surveys in Flanders

A large-scale quantitative survey on drug use among university and university college students in Flanders, *In Hogere Sferen*, has been repeatedly conducted. The survey started in 2005 and is an initiative of the Association of Alcohol and other Drug Problems (VAD), Antwerp University, Centre for Mental Health Care VAGGA-Altox, and the City Council for Drugs Antwerp. So far, this survey among university and university college students has been conducted in 2005, 2009, 2013 and 2017 (Van Damme et al., 2018). The most recent survey in 2017 used a student sample of 35,221 respondents. The survey includes questions about the prevalence and frequency of licit and illicit drug use, negative consequences of use, mental health and context of use. Particular survey questions regarding

[7] The three types of medicines were not further explained in the report.

prescription drugs focus on lifetime and last year prevalence of stimulants, tranquillisers and sedatives. In both sections (lifetime and last year), examples were added to the questions to clarify the type of pharmaceuticals included.[8] Additional survey questions requested more details about the nonmedical use of stimulants, such as 'Have you been diagnosed with ADHD?', 'Have you used stimulants to treat your ADHD?', and 'Have you used stimulants to enhance academic performance?'. Respondents were also asked to report on the experienced effect of the use of stimulants, and about the channel of supply (e.g. prescription, internet, friends, family) (Van Damme et al., 2018).

In the 2017 survey, 14% of participants reported ever having used sedatives and tranquillisers, and 8% had done so in the last year. In particular, sedatives and tranquillisers were used occasionally during the year and more frequently (more than once a week) during exams. The same study also monitored the use of stimulants. The lifetime prevalence of the use of stimulants was 10.5% and the last year prevalence was 6.5%. The prevalence rates of nonmedical use of stimulants, defined in the study as 'use to improve study performance, without this use being part of a treatment of ADHD or ADD', also showed interesting results. The use rates of stimulants to enhance academic performance were higher during exam periods compared to other periods of the year (Van Damme et al., 2018; Van Hal et al., 2013). Almost 9% had ever used stimulants to improve their study performance and 4% had done so in the last twelve months. Slightly more boys than girls reported this nonmedical use of stimulants. Furthermore, only 38.2% of students who had ever used stimulants nonmedically indicated that they had experience the desired effects regularly or often. Finally, the majority of the respondents who reported nonmedical use of stimulants obtained these from peers and friends in the school context (30.4%), from health professional such as GPs (21.2%), from other peers and friends (19.7%) and from parents (17.2%) (Van Damme et al., 2018).

5.2.3 Federal Agency for Medicines and Health Products

Data on the prevalence of the use of psychoactive medicines among French speaking university students are also provided by the Federal Agency for Medicines and Health Products (FAMHP). In 2018 over 12,144 students were questioned about their use of stimulant prescription drugs. The average age of respondents was 22 years old and 65% were female. Medical or health science students accounted for approximately one-quarter of the respondents. The survey indicated that 8% of the students had taken stimulant medications, either as part of medical treatment or outside medical treatment. The majority had used these medicines in the year prior to the survey (FAMHP, 2019).

The data showed that 5% of the students had used stimulant drugs outside medical treatment, particularly in the hope of improving their ability to study. The use of prescription stimulants was twice as high among males (10%) as females (5%). Methylphenidate was the most commonly used medicine. Two out of three users of stimulant medicines reported taking them as nonmedical treatment, and this nonmedical use generally began after the age of 18. The motivations reported by the students included: to improve concentration (78%); to improve ability to stay awake and study longer (52%); to improve academic performance (49%); and to increase ability to memorise the course contents (46%). A minority of students mentioned using it for festive reasons (9%) and to experiment or to test the

[8] '*Have you ever used tranquillisers or sedatives such as alprazolam (e.g. Alpraz, Xanax), diazepam (e.g. Valium), zolpidem (e.g. Stilnoct), zoplicone (e.g. Imovane), lormetazepam (e.g. Loramet, Stilnaze) or lorazepam (e.g. Temesta, Serenaze)?*' And '*Have you ever used stimulants such as methylfenidaat (e.g. Concerta, Rilatine, Medikinet, EquasymXR), modafinil (e.g. Provigil), (dextro-)amphetamine (e.g. Adderall)?*' (Van Damme et al., 2018, p. 19).

products (22%). As a result, nonmedical use of these stimulant prescription drugs was inconsistent and more frequent during the revision weeks or exam period (FAMHP, 2019). The prescription stimulants are mostly obtained through non-official channels: via friends belonging to the student community (40%) or non-student community (16%), via parents (11%), via other family members (12%) and via the dark net (9%). Only 24% of the students who had used prescription drugs for nonmedical purposes reported that they had obtained them from a general practitioner, and 8% from a specialist physician (psychiatrist or neurologist) (FAMHP, 2019).

5.2.4. Nightlife setting data collection efforts

The *VAD uitgaansonderzoek*, another study designed and carried out by the VAD, focuses on the Flemish nightlife scene (e.g. dance events, festivals), using a self-report questionnaire. The most recent study was conducted in 2018 with a sample of 790 respondents. In addition to questions about illegal drugs, only one category of pharmaceuticals was included: sedatives and tranquillisers. The questionnaire measures lifetime and last year prevalence of use of sedatives and tranquillisers without making a distinction between medical and nonmedical use. The study found that 15.3% of respondents had used sedatives and tranquillisers in their lifetime but not in the last 12 months, 3.9% had used these pharmaceuticals once or less per month, and 2.7% had used them at least more than once per month. Between 2003–2018 there was a relatively stable trend for last twelve months use: 6.6.% in 2003, 8.3% in 2009 and 6.5.% in 2018 (Rosiers, 2019).

In the context of the harm reduction project *Drogues Risquer Moins*, data on drug use patterns in party settings was collected in Wallonia and Brussels between 2013 and 2016, primarily among those aged 18–25. About 5% of the respondents indicated they had used psychoactive medications during a party/festive event (EUROTOX, 2017).

5.2.5. Data collection efforts supported by health insurance funds

A number of small-scale research projects conducted by health insurance funds provide some additional findings for Belgium. Common to these studies is the use of statistics and reimbursement data in order to monitor the use of pharmaceuticals (defined by the number of packages of medication) and the quantity used (defined by the number of defined daily doses (DDD)). In a study by the Independent Health Insurance Funds, reimbursement data from 192,764 adolescents aged 12–18 was analysed in 2016. Results showed that more than half (55.4%) had used at least one reimbursed pharmaceutical in 2016, and that, on average, three to four different reimbursed pharmaceuticals had been delivered to these young people. Also, the number of DDDs was quite high, with a sharp increase (+12.4%) between 2013–2016. Remarkably, 4% of the adolescents had used tramadol, an opioid painkilling medication, in 2016. Less than 4% had used reimbursed psychostimulants such as Ritalin (2%) (Onafhankelijke Ziekenfondsen, 2018).

A similar study by the Socialist Mutual Health Insurance Funds (Socialistisch Ziekenfonds, 2018) used their members' reimbursement data to gain more insight in the use of ADHD medication Ritalin and Equasym among those aged 6–17. In particular, the focus was on the number of people who had received at least one DDD in the past year. The use of ADHD medication had remained relatively stable over the years, ranging from 1.8% in 2008 to 2.1% in 2011 and back to 1.8% in 2017. Again, it is striking that the dose taken by children and adolescents increased significantly. In 2008, average consumption

was reported at 150 DDDs while in 2017 this number increased to 175 DDDs (+ 17%). In terms of gender, the study also shows a clear peak of use among boys in the age category 10–14. In 2017, 2.7% of the boys in that age range had used ADHD medication, while only 0.8% of the girls in the same category had used Ritalin and Equasym. Another interesting observation resulting from this reimbursement data is that the use of ADHD medication is mostly observed in Flanders, particularly West Flanders where 1 in 20 children/adolescents had been reimbursed for ADHD medication (Socialistisch Ziekenfonds, 2018).

5.2.6. Other data on trends and public attitudes towards medication

The *DrugLijn* (VAD), a Flemish helpline providing anonymous information, advice and guidance on legal and illegal drugs, recorded all questions that were received regarding psychoactive medication since 2006. The number of contacts are indicative of the concerns and questions about the various types of drugs. A small peak in the number of contacts for all substance was observed in 2010–2011, but from 2014 the number of contacts stabilised (Evenepoel, 2019). In 2019, 10% of the DrugLijn contacts were related to psychoactive medication. Only cannabis (29%), alcohol (29%) and cocaine (16%) were more commonly asked about in 2019. In terms of gender, although most users of the DrugLijn are male (75%), a larger part of the questions regarding psychoactive medication were asked by women, in particular sleeping pills and sedatives (61%), painkillers (48%) and antidepressants (65%) (Evenepoel, 2020).

The VAD also provided some online tests to measure people's knowledge about drug use, own drug use, own use of internet and own gaming behaviour. The online self-tests have been available for particular drugs (such as alcohol, cannabis, cocaine, amphetamine, MDMA) since 2007, for the use of internet and gaming since 2009, and for the use of sedatives and tranquillisers since 2010. Similar to the number of contacts on behalf of the DrugLijn, there was a clear peak in the use of these online tests in 2010–2011, including those for tranquillisers and sedatives (Agentschap Zorg en Gezondheid, 2016; Evenepoel, 2019). In 2019, a total of 95,504 tests were completed. The self-tests on alcohol (3,387 tests) and own use of alcohol (27,405 tests) were the most popular. In comparison, 1,757 people completed the self-test for sleeping pills and sedatives, and 386 people completed the knowledge test (Evenepoel, 2020).

Finally, a 2017 study supported by a Belgian online pharmacy, NewPharma, used Google Keyword Planner to map which psychoactive medications are searched for online. This study does not provide evidence on the use of these medications, but gives an indication of public interest. With 127,290 searches, nervous system drugs such as antidepressants, anxiolytics, anti-epileptics, sedatives were most frequently searched for in Belgium. Opioids, particularly pain relief medications, were in second place with 75,170 searches. Among the nervous system drugs, almost 46% of the searches were related to antidepressants, and Sipralexa was the drug most often searched for. Anxiolytics and sedatives such as Xanax, zolpidem®, Temesta, Rivotril and Valium were included in 25% of the searches (NewPharma, 2018).

5.2.7. Research into the social costs of legal and illegal drugs in Belgium

An evaluation of public expenditures associated with drugs has included psychoactive medication (antidepressants, analgesics, anxiolytics, sedatives, hypnotics), arguing that these types of drugs are

particularly relevant since Belgium is a country with high prevalence rates of anti-anxiety and sedative drug use, especially in Belgian nursing homes (Anthierens et al., 2007). In 2012 the direct and indirect cost of legal drugs (alcohol, tobacco and psychoactive medication) and illegal drugs was estimated at 4.6 billion euros in Belgium, or 419 euros per capita, which is 1.19% of the gross domestic product.[9] Legal drugs imposed the highest cost on society, since 45% (2.1 billion euros) of the social cost of substance misuse was attributed to alcohol. About 32% (1.5 billion euros) was assigned to tobacco and 5% (215 million euros) to psychoactive medication, while illegal drugs comprised about 16% (726 million euros) (Vander Laenen et al., 2016).

5.3. Belgian policy and legislation regarding psychoactive medication

5.3.1. A global and integrated policy approach

The current Belgian drug policy is supported by the Federal Drug Policy Note of 2001 and the Common Declaration of 2010. The Federal Drug Policy Note was adopted as a long-term policy strategy and focuses on both illicit and licit drugs, including alcohol, tobacco and psychoactive medication. In pursuing a global and integrated approach, the establishment of a Health Policy Cell and a General Drugs Policy Cell was one of the most important action points (Federal Government, 2001, p. 31). The General Drugs Policy Cell became operational in 2010. This body prepares the decisions of the Inter-Ministerial Conference and maintains the integrated character of the policy measures. The General Drugs Policy Cell consists of three supporting working cells: the Drug Health Policy Cell, the Control Cell and the International Cooperation Cell (Inter-Ministeriële Conferentie Drugs, 2010). Whereas the General Drugs Policy Cell focuses on all aspects of the drug phenomenon, the Drug Health Policy Cell is specially focused on the health aspects of the problem.

In recent years, the Drug Health Policy Cell has also focused on psychoactive medications. In particular, there has been a focus on the increasing use of psychoactive medications. It is against this backdrop that the Belgian Psychotropics Expert Platform (BelPEP) was created in 2012. So far, the platform has been involved in several projects mainly focusing on the improvement of general practitioners' and/or occupational physicians' involvement in substance abuse management (e.g. Vanmeerbeek et al., 2015; Godderis et al., 2017). The goal of the platform is to support the responsible use of psychoactive medication (defined as psychostimulants, analgesics, psycoleptics, psychoanaleptics) among different groups: children/youngsters, non-institutionalised adults and institutionalised older adults. Accordingly, three working groups are operational within BelPEP (BelPEP, 2014). Within the scope of this research, the focus and activities of the working group '*Proper use of psychostimulants among children and youngsters*' are of utmost importance. This working group focuses on the use of psychostimulants – especially those known to be effective for ADHD (such as Ritalin, Concerta, Equasym or Medikinet) – among children and young adults up to 25 years. The working group not only aims to promote scientific research in this domain but also to support any actions to raise awareness about this topic and its related harms (BelPEP, 2014).

In the context of psychoactive medications, it is also worth referring to the protocol agreement of 21 March 2016 between the Federal Government and the regional governments regarding prevention.

[9] Direct costs are goods or services that are used or provided to address drug (mis)use and direct consequences. Indirect costs are productivity losses caused by illness, premature death (due to illnesses, accidents or crimes) or by imprisonment (Vander Laenen et al., 2016).

Section 4 of this protocol agreement stipulates how both levels may reinforce such a coherent health policy regarding psychoactive medications. The focus at the federal level is on the training of healthcare professionals with regard to prescribing and dispensing psychoactive medication (Protocol Agreement, 2016).

Aware of the public health issues associated with the overconsumption of psychotropic prescription drugs, the FPS Public Health launched the campaign 'Hypnotics and tranquilizers – think about other solutions first' on 1 February 2018, in collaboration with BelPEP (Federal Public Service Health Food Chain Safety and Environment, 2018). This campaign offered various tools (e.g. posters and brochures for the public, practical sheets and manuals for physicians and pharmacists, online training) with the aim of reducing the consumption of psychotropic medicines by choosing alternatives. A 'consensus conference' on the rational use of opioids for the treatment of chronic diseases was also organised by the RIZIV (Rijksinstituut voor Ziekte- en Invaliditeitsverzekering) in December 2018 (RIZIV, 2018a). This conference echoed the 2017 RIZIV report, which warned about the considerable increase in the consumption of five prescribed opioids: tramadol (e.g. Contramal), oxycodone (e.g. Oxynorm), tilidine (e.g. Valtran), fentanyl patches (e.g. Durogesic) and piritramide (e.g. Dipidolor). The federal organisation is concerned about the misuse of those psychotropic medicines and recommends a global approach by the various actors working in the field to counter them (RIZIV, 2018b).

5.3.2. Key legislation Belgium: the law of 25 March 1964 on medicines

The basic law governing medicines in Belgium includes the Law of 25 March 1964 on Medicines. This law defines the authorisation/registration and controlling procedures, including the essential steps before a new product can be used as medicine. The authorisation, registration and sale of medicines is strictly regulated and controlled by the federal authorities. In Belgium, the Federal Agency for Medicines and Health Products (FAMHP) is the competent authority that watches over the quality, safety and efficacy of medicines and health products. The FAMHP manages all activities before the first marketing authorisation of a medicine or a health product and ensures all inspection and control activities afterwards (FAMHP, 2020b). Once the authorisation and registration is granted, a medicinal product receives a marketing authorisation (MA) or registration number. These medicinal products can only be sold by licensed pharmacies. Drugs that are prepared in a pharmacy under the responsibility of the pharmacist are not registered by the FAMHP (FAMPH, 2020a).

Once products have been registered and put on the market, the FAMHP is appointed as the federal agency ensuring the quality, safety and efficacy of medicines and health products on the market. The FAMHP also controls the manufacturing, distribution, delivery, import and export of medicines and health products, and combats illegal practices. The FAMHP ensures that patients have relevant information so that medicines and health products are used correctly, and in this context the FAMHP controls the advertising of medicines and health products and has set up a database with all registered medicines (FAMHP, 2020b).[10]

[10] For more please see: https://geneesmiddelendatabank.fagg-afmps.be/#/query/human/ [15 July 2021].

5.3.3. Procedure for prescribing and dispensing medicinal products

First-line treatment

In most cases, general practitioners (GPs) provide first-line treatment. A number of elements must appear on medical prescriptions for medicines to be dispensed in Belgium: the professional qualification of the prescriber and details for contacting him/her directly; the patient's date of birth; and the generic name of the medicinal product. The brand name should be given when the prescriber deems it medically necessary. The number of visits, the number of patients and the prescribing practices are monitored by RIZIV through individual activity reports on each GP. GPs are provided with an individual report about their patients and prescribing practices each year. The report provides them with feedback on their first-line treatment; in particular, it gives them information relevant for appropriate prescribing practices.

GPs play a significant role in detecting and managing the misuse of prescription drugs. This includes informing patients about the risk of misuse or over-consumption of prescription drugs (RIZIV, 2020). How they manage this has been explored in the Up To Date study (Vanmeerbeek et al., 2015). More than half of the GPs in this study reported feeling helpless about patients who misused psychoactive medications. They stressed a lack of education, support or guidelines in how to deal with these patients (Vanmeerbeek et al., 2015).

Pharmacies

In Belgium, pharmacists are the only professionals authorised to sell any kind of non-refundable medication, to dispense prescription drugs for the named patient in a regulated pharmacy (Law of 25 March 1964 on Medicines). The location and sale of medication are strictly regulated. FAMHP is tasked with the recognition of pharmacists. Importantly, medicines prescribed in Belgium cannot always be obtained in another EU country and vice versa (Federal Public Service Health Food Chain Safety and Environment, 2020a, 2020b). However, as EU citizens have the right to access healthcare in any EU country, a Directive 2011/24/EU on patients' rights in cross-border healthcare set out EU rules on a minimum list of elements to be included in a medical prescription taken from one EU country to another (a so-called 'cross-border prescription'). This will enable a pharmacist in another EU country to prescribe the equivalent product in that country (European Commission, 2011).

There is no exhaustive data on the quantity of psychoactive medicines sold by pharmacies in Belgium, as only treatments reimbursed by the compulsory health insurance are encoded in the Pharmanet system.

5.3.4. Other legislation in Belgium: the law of 24 February 1921 on traffic in poisonous, soporific, narcotic, psychotropic, disinfectant or antiseptic substances

The main legal source of interest is the Law of 25 March 1964 on medicines, but we cannot overlook the law of 24 February 1921 on drug trafficking[11] and the Royal Decree of 6 September 2017.[12] The 1921 law criminalised a number of acts, including the possession or acquisition of substances without

[11] Law of 24 February 1921 on the traffic in poisons, soporific and narcotic drugs disinfectants and antiseptics, amended several times.
[12] Royal Decree of September 6, 2017 regulating narcotic, psychotropic and soporific substances.

medical authorisation, making them punishable by imprisonment and a fine. The Royal Decree of 6 September 2017 states that '*obtaining or attempting to obtain products by means of a false medical prescription, a false request, a false signature or any other fraudulent way is prohibited*'. The decree defines the prohibited substances, which are classified in five categories and include all the narcotic and psychotropic substances listed in the 1961[13] and 1971[14] international conventions of the United Nations, and also – following the law of 7 February 2014[15] – the 'substances listed at the national level using a generic structure', i.e. new psychoactive substances (NPS). A psychotropic substance (such as methadone) can have different legal statuses – it can be legal when delivered by a pharmaceutical dispensary on the basis of a physician's prescription, or illegal when acquired outside the legal circuit (e.g. on the black market).

In addition, while physicians may provide substitution treatment based on methadone or buprenorphine under certain conditions set out in the Royal Decree of 19 March 2004,[16] the Act of 24 February 1921 stipulates that practitioners of healing, veterinary medicine or the paramedical profession who improperly prescribe, administer or dispense medication containing soporific, narcotic or psychotropic substances likely to create, maintain or aggravate an addiction will be punished (art. 3).

5.4. Prescribing practices in Belgium

5.4.1. Brands in Belgium – types of prescription drugs

As stated above, the FAMHP's medicinal product database gathers information about all medicinal products authorised in Belgium. In order to help professionals make the right choice, the Belgian Centre for Pharmacotherapeutic Information (BCPI), subsidised by the FAMHP, publishes leaflets that are circulated free of charge to doctors, pharmacists and dentists. In addition to the their therapeutic and pharmacological properties, the price and reimbursement conditions are also mentioned. This information is meant to encourage the correct prescription, delivery and use of medicinal products (FAMHP, 2020b; FAMHP, 2020c).

The BCPI gives us a clear overview of the active ingredients and brands of each prescription drug in Belgium. The following division – relevant to this study – is made: analgesics, central nervous system stimulants and sedatives, hypnotics and anxiolytics. These types of prescription drugs account for the ATC code N (nervous system) (WHO, 2003). The active ingredients and brands are summed up based on the relevant categories in Appendix I (update: April 2020).

[13] Single Convention on Narcotic Drugs of 1961, signed in New York on 30 March 1961.
[14] Convention on Psychotropic Substances, signed in Vienna on 21 February 1971.
[15] Act of February 7, 2014, amending the Act of February 24, 1921, concerning trafficking in poisonous, soporific, narcotic, psychotropic, disinfectant or antiseptic substances and substances that may be used in the illicit manufacture of narcotic and psychotropic substances.
[16] Royal Decree of March 19, 2004 regulating substitution treatment, amended by the Decree of October 6, 2006 amending the Royal Decree of March 19, 2004 regulating substitution treatment.

5.4.2. Contacts with general practitioners and prescription data

Prescription drugs legally require a medical prescription. Therefore, practice-level prescribing data may provide information about the medications that are prescribed by all practices (e.g. general practitioners, specialists) and dispensed in the community by pharmacies.

Health information regarding contacts with health care providers in general and contacts with GPs in particular is an essential part of a health information system and may help to improve the efficiency of the health system. The Belgian Health Interview Survey gathers information on contacts with GPs. The 2018 HIS report (*Gebruik van gezondheidsdiensten*) shows that GPs are the health professionals consulted most often by the vast majority of the population, and 82.9% of Belgians had at least one contact with a GP during the previous year (Van der Heyden et al., 2020a).

A study of the electronic prescriptions provided by GPs in the Flemish-Belgian population during 2015 revealed that 11.4% of those who consulted a GP received at least one prescription for a psychotropic medicine (including antidepressants, anti-psychotics, anxiolytics, sedatives and hypnotics) (Agentschap Zorg en Gezondheid, 2016). In particular, most prescriptions concerned anxiolytics (5.5%) followed by sedatives and hypnotics (4.4%), antidepressants (3.4%) and anti-psychotics (1.1%). The number of patients who received at least one prescription increased by age: 0.7% of adolescents (<20 years), 7.3% of those aged 20–39, and 15.0% of those aged 40–64. Remarkably, in more than half of the patients, the prescription could not be linked to a psychological diagnosis in the previous three years. This was most often the case for sedatives and hypnotics (Intego, 2016). Non-electronic prescriptions were excluded in this study.

The data for prescribed pharmaceuticals can be retrieved from Pharmanet, a national drug database with data on prescribed and reimbursed drugs dispensed by Belgian pharmacies. The database can be used to monitor and evaluate the nature and extent of prescription practices. These statistics show that, among the reimbursable psychoactive medications, psychoanaleptics such as antidepressants, psychostimulants and anti-dementia drugs were prescribed the most (337 million DDD), followed by analgesics such as pain relievers/opioids (117 million DDD) and psycholeptics such as tranquillisers and sedatives (51 million DDD). About 91% of the psychoanaleptics were for antidepressants. Among the non-reimbursable medication, psycholeptics was the largest group, followed by psychoanaleptics and analgesics. In total, the number of DDDs for each type of medication increased approximately 5% each year (VAD, 2020).

Furthermore, research by the RIZIV that focused on the prescription practices regarding opioids (analgesics) found that the prescription of opioids doubled between 2006–2017. Around 80% of these opioids (mainly tramadol, oxycodone and fentanyl) are prescribed by general practitioners. An additional analysis of high and/or chronic consumption of opioids shows that these prescriptions are mostly given to the older population. Nevertheless, although it is clear that younger adults (<49 years) use fewer prescription opioids, a higher dosage is often taken among this group. Frequent use of fentanyl seems to be most common (Willems & De Mooter, 2018).[17]

[17] Limited to data at the level of the total population or data per prescriber.

Despite the added value of these statistics, these figures do not give indications of nonmedical use, nor do they provide information about forged prescriptions, illegal online pharmacies or unscrupulous health professionals selling drugs.

6. The international legal context

Two EU agencies that formulate EU-wide laws and standards for health products and services also support national governments on health issues. The European Centre for Disease Prevention and Control assesses and monitors emerging disease threats to coordinate responses, and the European Medicines Agency (EMA) manages the scientific assessment of all EU medicines' quality, safety and efficiency.

While the member states are responsible for devising health policies, and organising and delivering health services and medical care, the EU has a complementary competence on the basis of articles 168 and 114 of the Treaty on the Functioning of the European Union (TFEU).[18] This allows it to support and coordinate actions and adopt binding legislation on certain clearly defined subjects, such as medicines and medical devices. The legal framework is in particular based on the 2001/83/CE Directive (EUR-Lex, 2019a) and the 726/2004 Regulation (EUR-Lex, 2019b). The Directive is one of the main elements of the EU's pharmaceutical legislation since it creates a Community code relating to medicinal products for human use, while the Regulation lays down Community procedures for the authorisation and supervision of medicinal products for human and veterinary use and establishing the EMA. The EMA has a role of advice and coordination in the EU medicines regulatory system: advising the member states and the institutions of the European Commission on all matters relating to medicinal products, and coordinates the scientific evaluation of the quality, safety and efficacy of medicinal products developed by pharmaceutical companies in the EU prior to their introduction on the market (Scholz, 2015). The EMA does not monitor the misuse of prescription drugs in the Europe, and the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) is mainly focused on illicit drug use rather than NMUPD. For this reason, as has been noted by previous authors, 'to date, literature on the extent of the phenomenon in the European Union is very scarce, limiting our understanding of the problem on a European level' (Casati et al., 2012, pp. 228-229). Indeed, information is limited on current treatment practices in Europe to manage the misuse of medicines. However, there have been several EU-funded projects, such as CODEMISUSED looking at Codeine Use, Misuse and Dependence, and Access To Opioid Medication in Europe (ATOME). In this field there is ongoing collaboration between the EMCDDA and EMA (EMCDDA, 2020).

The EU has drawn up a Drugs Strategy for the period 2013–2020. In terms of demand reduction, the 2017–2020 plan emphasises the importance of informing and preventing the abuse of psychoactive medicines (Stévenot & Hogge, 2019a).

Two United Nations Conventions deal with psychoactive substances internationally: the Convention on Narcotic Drugs of 30 March 1961 (United Nations, 1961) and the Convention on Psychotropic Substances of 21 February 1971 (United Nations, 1971). These instruments placed a number of natural or synthetic substances under control in order to prevent their misuse while guaranteeing their availability for scientific and medical use. Some of these substances are essential medicines for the treatment of, for instance, pain. It is therefore essential to guarantee their accessibility to patients who need them, while at the same time making their use, manufacture and dissemination as safe as possible.

[18] Retrieved from: https://eur-lex.europa.eu/legal-content/FR/TXT/?uri=CELEX:12012E/TXT [22 April 2020].

This implies a dual obligation for member states – to implement regulations and policies that help to prevent potential harm resulting from controlled substances while ensuring that they are adequately available, accessible and affordable for those in need of them (the 'principle of balance') (IDPC, 2014). According to the final report presenting the outcomes of the Access To Opioid Medication in Europe (ATOME), a consensus process with European experts from law and governance, public health, human rights, palliative care and pain treatment, and harm reduction, revealed the difficulty of defining concepts such as 'rational (medical) use' versus 'misuse' of controlled substances. The report equally reflected the challenge of outweighing the risks and benefits of certain substances. The consensus process underlined the complexity of political guidance in balancing control and availability, and protection and harm (ATOME, 2014).

The Commission on Narcotic Drugs (CND), established within the United Nations, is mandated to decide on the scope of control substances. The CND is competent to place a substance under international control, to modify the regime applicable to a substance or to remove it from international control. The CND has the authority to take any action that may be necessary to bring a substance under international control. For example, as the opioid crisis in North America evolves, in March 2018 the CND scheduled six analogues of fentanyl. This builds on the decision by the Commission at its sixtieth session, in 2017, to place two precursor chemicals used in the manufacture of fentanyl and an analogue under international control. The use of tramadol is also concerning, particularly in Africa. Nonmedical use of this opioid painkiller, which is not under international control, is also expanding in Asia. The impact on vulnerable populations is a cause for serious concern, putting pressure on already strained health-care systems (United Nations, 2018).

METHODS

The aim of this project is to improve understanding of the nonmedical use of prescription drugs (NMUPD) by young adults in Belgium. To achieve this, we used a mixed methods approach, combining quantitative (online survey, N=574) and qualitative (in-depth interviews, N=63) methods, together with a rapid analysis of online forums (N=27).

1. Conceptual framework and operationalisation

This study examines young adults' NMUPD. Eligibility criteria to participate in the study included: being between 18 and 29 years of age, residing in Belgium, and currently using or having ever used psychoactive prescription drugs nonmedically. The operational definitions of these concepts are listed below (Box 1).

Box 1: Operationalisation of key concepts for the purposes of our study

Nonmedical use:

In the context of this study, nonmedical use is understood as:

- *the use of a medicine for purposes other than as prescribed (e.g. to study, to stay awake, to get 'high', to lose weight, to relax);*
- *and/or the use of a medicine in larger amounts, more often or for longer than as prescribed;*
- *and/or the administration of a medicine by methods other than those prescribed;*
- *and/or the use of a medicine without a prescription.*

We focused on three types of psychoactive prescription drugs:

1. **Stimulants:**
   - Defined in the survey as: *Prescription stimulants (e.g. Ritalin, methylphenidate, modafinil, Provigil, Concerta) are usually prescribed for the treatment of attention deficit hyperactivity disorder (ADHD).*
2. **Analgesics:**
   - Defined in the survey as: *Painkillers (e.g. tramadol, Contramal, codeine, fentanyl, oxycodone, MS Contin, Valtran) are usually prescribed for pain relief.*
3. **Sedatives:**
   - Defined in the survey as: *Tranquillisers or sleeping pills (e.g. benzodiazepines, Xanax, zolpidem, Stilnoct, diazepam, Temesta) are usually prescribed to help people sleep, relax or calm down, to relieve anxiety and panic attacks, or to relax muscle spasms.*

2. Data collection and analysis

2.1. Online survey

The online survey aimed to provide quantifiable insights into the nonmedical use of, and attitudes towards, psychoactive medicines by young adults living in Belgium. The questionnaire was constructed based on previous international and national instruments[19] and relevant theoretical information gathered in the literature review phase. The questionnaire (see Appendix II) included demographic questions and asked about the medical use of the three types of prescription medicines of interest to this research project. It also included questions on the frequency, type, initiation, motives and context of nonmedical use, and on administration methods, effects and supply of these psychoactive prescription drugs. An important part of the questionnaire focused on attitudes towards nonmedical use, diversion behaviours, information sources, perceived problematic behaviour and current and/or concurrent use of other psychoactive substances. The questionnaire also asked about the effects of the COVID-19 pandemic and associated measures on NMUPD. At the end of the questionnaire, respondents were asked to leave their contact details if they were interested in taking part in the qualitative research phase, and/or in entering a prize draw (see below).

The questionnaire was translated into Dutch and French and input on Limesurvey, an online survey tool. We ran a pilot test of the survey's logic and ease of understanding with three to five individuals at each partner institution. The final survey took on average about 15 minutes to complete. The above conceptualisation of 'nonmedical use of prescription drugs' was presented to the respondents at the beginning of the survey and was repeated throughout the survey. Participants who did not meet the key eligibility criteria (i.e. aged 18–29 *and* having used prescription drugs nonmedically) could not complete the survey. The nonmedical use of psychoactive medicines, by definition, is use that is not registered by doctors, pharmacists or health organisations. There is no available list of users, nor a clear indication as to how to reach any representative sample of this population. In order to reach this 'hidden population', we used a targeted sampling strategy. Due to the COVID-19 pandemic and associated measures, we relied mainly on online recruitment strategies (see Section 4: Limitations below).

We created a dedicated website and Facebook page (available in Dutch and French) for the research project. The website included information about the study, instructions on how to participate in the survey and interviews, and information about the researchers and their contact details. We devised virtual promotional information leaflets adapted to the target population, and provided additional, detailed information about the study on our website. In addition, we compiled a list of more than 1,000 organisations across Belgium, some with strong, others with more indirect, potential links to nonmedical users of prescription drugs. This included, for example, associations for drug prevention and treatment, student associations and councils. We emailed these organisations and asked them to use the promotion material to invite their own members/networks or target groups to participate in the survey. A number of these organisations shared this material through email, on their website or on Facebook pages. We also promoted the survey on Facebook groups and communities and

[19] Novak et al., 2016; McCabe et al., 2005 (Student life survey 2005); Schepis et al., 2018; Garnier-Dykstra et al., 2012; Lehne et al., 2018; Helmer et al., 2016 (Social Norms Intervention for the prevention of Polydrug use (SNIPE)); ESPAD, 2015; ICPSR, 2016 (Monitoring the future, a Continuing Study of American Youth); Modus Vivendi asbl, 2020 (Trans-European COVID-19 & drugs survey Phase 1: lockdown); Addiction Research Foundation, 1982 (DAST-10).

additionally used Facebook's paid advertising strategy to target a more or less indiscriminate sample of young people aged 18–29 across Belgium.

As an additional incentive to motivate people to take part in the study, we offered a mobile phone and cinema tickets through a prize draw, which participants could enter by leaving their contact details at the end of the survey. We randomly selected and notified winning individuals after closing the survey.

The survey was launched on 30 June 2020, and closed on 5 October 2020 with a total of 574 completed questionnaires. It was opened 1,411 times. After closing the survey, the dataset was uploaded to SPSS Statistics 27 and prepared for analysis. The database was cleaned up and some variables were recoded. The codebook was adapted to the changes we had made to the database. The data analysis started with a visual inspection of the dataset. We then performed descriptive analyses to reveal possible trends and distributions in the data. We conducted general frequency analyses for all variables. Bivariate associations between demographic characteristics were examined using Pearson Chi^2 analyses. We used Bonferroni-corrected p values to reduce the chance of type I error resulting from multiple pairwise comparisons. We also conducted logistic regressions and linear regressions in order to detect any statistical significant differences between subgroups for a number of variables of interest, including nonmedical use, initiation age, initiation motive, recreational use motives, use frequency, use setting, problematic use and attitudes. For logistic regressions, adjusted odds ratios (Exp(B)) and 95% confidence intervals (CI) were calculated. For linear regressions, we calculated adjusted, unstandardized coefficients and also 95% confidence intervals. Significant results were reported for $p<0.05$. To examine which variables have an impact on the outcome, only main effects were considered in the model. No model selection was performed. In addition, possible multicollinearity issues were examined by the variable inflation factors, VIF.

Our sample is not, and was not intended to be, representative of young people in general, nor of nonmedical users of psychoactive medications. Given this convenience rather than representative sample, we used measures of association (predominantly odds ratios) and their significance levels as measures of the existence and strength of differences within this particular sample. We cannot generalise any results to the general population of nonmedical users. Nevertheless, this data offers important insights into this difficult-to-reach population.

2.2. In-depth interviews

Entering the world of those using prescription drugs nonmedically and engaging them in an interview is an effective way of understanding how these young people think about their use practices, settings of use and supply, the risks of use and social acceptability, and what information they consult and rely on regarding prescription drugs.

In order to gather complementary in-depth insights into these issues, we conducted interviews with a sub-set of the online survey participants. At the end of the survey, respondents were asked to leave their contact details if they were interested in participating in an in-depth interview. The researchers contacted all candidates via email or phone to schedule the interviews. The majority of the interview respondents were recruited through this method. Other respondents were reached via snowball sampling. Accordingly, the recruitment of interviewees was fully dependent on the sampling and promotion strategies of the survey questionnaire. The interview phase of the research ran partly parallel to the online survey: interviews started on 10 July 2020 and ended on 22 October 2020.

Initially, 169 online survey respondents agreed to and signed up for the interview (FR=65, NL=104). We contacted all respondents to invite them for a follow-up interview through email or telephone, using the contact details they left in the survey. However, the majority did not respond to this email or telephone contact. Some responded initially, but were later not available to be interviewed or did not show up to agreed meetings. We ended up successfully interviewing 59 of 169 survey respondents who had agreed to be contacted. We reached five additional respondents through referral from three interviewees. In total, 63 interviews were conducted by four researchers, 44 in Dutch and 19 in French. The total number of interviewees (N=64) is higher than the total number of interviews (N=63) because there was one double interview.

We designed an interview protocol in Dutch and French (see Appendix III), which included an informed consent form, the general interview topics and subsequent interview questions. As with the survey questionnaire, the interview topics and questions were informed by existing research. The interview guideline also took into account preliminary findings from the survey. Pilot interviews were conducted with young adults to test the interview questions and approach. The interviews focused on the following topics: demographic characteristics, current medical use of the three types of prescription drugs; initiation, progress and current nonmedical use of psychoactive medicines; supply channels; information sources; perceptions of risk; attitudes and social acceptability; and the impact of the COVID-19 pandemic on NMUPD.

The initial research proposal had anticipated that interviews would be conducted in person. However, due to the COVID-19 pandemic and the confinement measures interviewees were given the choice of participating in a face-to-face interview online, or in person. The majority chose to participate in an interview via online video call platforms (e.g. Microsoft Teams) (N=42); the other interviews were conducted in person at a location suggested by the respondent (N=21). The 63 interviews were audio or video recorded and took on average an hour to complete. All participants provided written or oral informed consent to be interviewed for this project. The participants were compensated with one cinema ticket for completing the interview.

Audio and video recordings of the interviews were transcribed verbatim and, after transcription, coded using NVivo. This qualitative analysis program allowed the research team to code interview transcripts and to sort, arrange and access data in a variety of ways. First, once the data collection had been completed two researchers coded a set of interviews in preparation for the coding phase. In particular, a preliminary coding scheme was developed from initial transcripts based on the broader topics addressed during the interviews. Subsequently, this code tree was tested by other researchers within the team and thereafter refined. Once the coding scheme had been discussed and agreed upon by the whole research team (cfr. intercoder reliability), interview data was subsequently coded, and was also categorised so that links with the survey data could be identified. Analysis of the interview data followed a cyclical process. Interpretations resulting from the interviews were regularly discussed within the research team. In addition, the results retrieved from the interviews were gradually contrasted with and re-interpreted using the associated literature and the results of the online survey.

2.3. Online forums

An online search was conducted to identify online forums that discussed the nonmedical use of prescription medication. In order to be included in the explorative analysis, online forums were

required to be publicly searchable, to be forums where the exchanges took place in French or Dutch (as the scope of this project was limited to Belgium), and to be generally open to NMUPD by demonstrating some sort of conversation or advice about, and/or acknowledgement of, the nonmedical use of prescription drugs. In our explorative analysis of online forums, we did not limited our search to drug-related forums only, but also included forums with a general scope.

Based on these inclusion criteria, popular English language online forums observed in the survey and interviews, such as Reddit, Erowid or Bluelight, were not included in the analysis. Also, private groups on Facebook, which do not allow open access, were excluded. Facebook seems to host a number of private groups where people who use prescription medication nonmedically can seek advice or have online discussions with others. For instance, four private Facebook groups indicated in their administrator's description that these groups had been founded in order to share personal experiences among peers who struggle with the use of prescription sedatives and painkillers. These private groups invite users to talk about sedatives and give advice, such as exchanging tips for quitting benzodiazepines or talking about their effects and side effects (e.g. temazepam and oxazepam). One private group is aimed at people who are or have been addicted to painkillers; it is described as being a safe and trusted support group where people can share their stories, receive encouragement and learn about ways to manage their addiction to painkillers. A level of distrust by users toward some healthcare professionals is observed by the inclusion of the statement *"doctors and care providers who do not really know how to help us 'addicts'"*. However, only members can see who is in the group, what they post and whether or not this conversation is actually related to NMUPD.

Given the open and informal nature of online forums (typically, access is not limited to particular nationalities), we cannot be certain that the forums identified could be classed as 'Belgian' or that only Belgian residents were actively engaged in them. In addition, while our study focuses on NMUPD among young adults, it is not possible to identify the age of people who are active on online forums.

The key search terms used to retrieve these forums are included in Box 2.

Box 2: Keywords used to identify online forums

- [(type of) medicine], psychoactive medications, medicines, prescription drugs, medications, etc.
    - Stimulant medicines, e.g. methylphenidate (Ritalin, Concerta), modafinil;
    - Sedatives, e.g. benzos, Xanax (alprazolam), Valium (diazepam), Temesta (lorazepam), Zolpidem (stilnoct);
    - Analgesics, e.g. painkillers, codeine, tramadol (Zaldiar);

in combination with:

- [use motives], e.g. to party, to study, to lose weight, to get high, recreational use, self-medication; or
- [type of use], e.g. without a prescription, without a diagnosis; or
- [problematic use] e.g. addicted, overdose; or
- [administration method] e.g. snorting; or
- [combining substances] to get high, coming down from other substances, 'lean'.

A total of 27 forums were identified and inventoried between March 2020 and March 2021. Of those, 19 used the Dutch language and 8 used French. Some of the online forums that were mentioned by the respondents in the survey and during the interviews, such as Drugsforum Psychonaut and Psychoactif, were also included in the explorative analysis.

Applying a rapid analysis, titles were read first, followed by (sub)threads. If the title of the topic or thread directly or indirectly suggested prescription medication, the forum was inspected more thoroughly. The rapid analysis identified and recorded the forum's structure (discussion room, question and answer forum), its focus (drug-related or general), the number of messages, the number of members and the number of hits for particular types of medication. The forums were quantitatively analysed for overall content using spreadsheet software Excel, leading to a second phase that identified the general themes that are discussed. This phase involved analysing the title of the thread and reading the first message/post within the thread to determine dominant themes.

3. Ethical considerations

This research project is funded by the Belgian Science Policy Office (BELPSO) and it was approved by the ethical commissions of the Faculty of Law and Criminology of Ghent University and Université Saint-Louis Bruxelles (Appendix IV). The research team has no potential conflicts of interest to declare.

The survey data were fully pseudonymised. IP addresses were not collected and it is not possible to link any demographic data back to participating individuals. At the end of the survey, respondents could leave their email address or phone number if they wanted to take part in the qualitative interview phase and/or prize draw. These highly personal data were only used, as consented by respondents, for further contact regarding a qualitative interview and/or winning a prize, and were deleted from the anonymised data file. Respondents were asked to read and consent to information on research goals and the processing of their data before being allowed to complete the survey. They were assured of the confidentiality of their participation before taking part.

Participants in the in-depth interviews were provided with written and verbal information about the study's objective, possible risks of participation, the interview topics, goal and format, and the way the study findings would be published (see Appendix V). Interviewees were informed that participation was voluntary, they could ask for more information about the study, their data were processed confidentially, and they could end the interview at any time. They received and were asked to sign an informed consent form which could include their signature or name (see Appendix VI). Before the start, the interviewees were also asked for permission to record the interview. Measures were put in place to ensure that participants' identities and personal information remained confidential. Interview notes, signed consent forms, questionnaires and recordings were stored securely. To protect identities, interviewees' names and other personal data disclosed during the interviews that could identify participants, places or other individuals, were transformed into pseudonyms or were left out in the data analyses.

4. Limitations

As our target population of nonmedical users is essentially a hidden population, and we relied on targeted sampling through predominantly online channels for the quantitative survey, we have little indication as to how representative our sample is of nonmedical users of prescription medicines in

general. For instance, in order to reach young adults we disseminated our study via Facebook groups of study programmes and via student associations. This may help to explain the over-representation of students and highly educated participants in our sample (see Results, Chapter 1). There were also marked regional differences in the sample that may be a reflection of regional differences in dissemination and take-up of the survey rather than actual differences in the population of nonmedical users. We thus need to be very careful not to make any generalisations on the basis of this sample, and see all analyses – as was always intended – as purely exploratory investigations into a population of which very little is known in Belgium to date.

As the sample for qualitative interviews was reliant on our survey sample, we are well aware that this self-selection procedure may have generated some bias. For instance, some groups of users were over-represented in the this qualitative interview sample. The majority of the interviewees used stimulant medication nonmedically, followed by sedatives, and only a small minority had experience of the nonmedical use of analgesics. In addition, most interviewees were male (N=37) and most had an employment status classified as 'student' (N=43).

The COVID-19 pandemic was an unexpected and major obstacle with which we were confronted from the start of this research project. This health crisis and the associated safety measures had implications for several aspects of the research, and in general we were forced to adapt our research plan in this increasingly complex context. First, the meetings between the research teams from the different institutes could no longer take place physically, and the network partners were forced to exclusively collaborate online. The impossibility of meeting physically was challenging when collaborating on complex research tasks such as coordinating coding strategies, and when making important decisions. The three meetings of the steering committee also had to be organized remotely. In addition, our research plan anticipated in-person, face-to-face in-depth interviews. Due to the health risks and the measures taken by the institutions where the researchers are appointed, the majority of the interviews were conducted online instead. Conducting surveys online is common practice; however, most qualitative methods are in-person because of the added value of the direct interaction. Online communication can disrupt the natural flow of conversation, and it makes it more difficult to perceive and read facial expressions and body language. In addition, online communication during this project was sometimes disrupted by technical problems (e.g. a bad internet connection).

Another change to our research plan involved the inclusion of an additional section in the online survey and interview protocol on the impact of the COVID-19 pandemic on the nonmedical use of psychoactive medication. Furthermore, the COVID-19 pandemic partially undermined the research's recruitment and promotion strategies. We had planned to distribute printed promotional material (e.g. flyers, posters) across relevant locations aimed at a young target audience (students and non-students). We intended to promote the research in the summer of 2020 during the festival period, as a lot of young people tend to attend music festivals during the summer. Since physical meetings were cancelled en masse, we decided not to print promotional material. We had also planned to make use of the beginning of the academic year in autumn 2020 to disseminate the research project among students on campus. However, universities and college universities switched to distance learning and student associations cancelled their activities, which meant that we could not optimally communicate with this target group. In response to the cancellation of physical meetings, we switched to online promotion strategies, as mentioned earlier. The changes to our recruitment strategies may have meant

that we did not reach certain populations, such as the most vulnerable or those who do not have access to the internet.

Other researchers also had to adapt their research approach as a result of the COVID-19 pandemic and switched to online data collection methods (mainly online surveys). In addition, new research was set up specifically to study the impact of COVID-19 on various life domains. This may have led to additional 'competition' for our study, in particular the online survey. These developments may have caused research fatigue among potential participants

RESULTS

1. An overview of our sample

This chapter provides basic information about the study participants' background, including socio-demographic characteristics, medical and nonmedical prescription drug use, and physical and mental health. The final subsection of this chapter focuses on the participants' psychoactive substance use other than prescription drug use.

1.1 Sociodemographic characteristics

The first set of questions in the survey addressed participants' socio-demographic characteristics, including their age, gender, place of residence, subjective perception of income, country of birth, employment status and education. The survey was completed by 574 Belgian young adults (aged 18–29) who reported NMUPD, including 380 responses in Dutch (66.2%) and 194 in French (33.8%).[20] The average age of the survey sample was 22.48 years (s.d.= 3.1, median= 22). The majority were female (61%, N=350) and born in Belgium (93%, N=534). Most respondents lived in Flanders (62%, N=356), slightly more than a quarter lived in Wallonia (27.4%, N=157) and about one in ten lived in Brussels (10.6%, N=61). About half of the sample lived in the provinces East Flanders (20.4%, N=117), Antwerp (14.6%, N=84) and West Flanders (11.7%, N=67). Most respondents said that their household had enough income to live on – they were able to makes end meet easily (70.1%). Nevertheless, a sizeable one in three (29.9%) reported that they found it difficult to make ends meet (see Table 1 below).

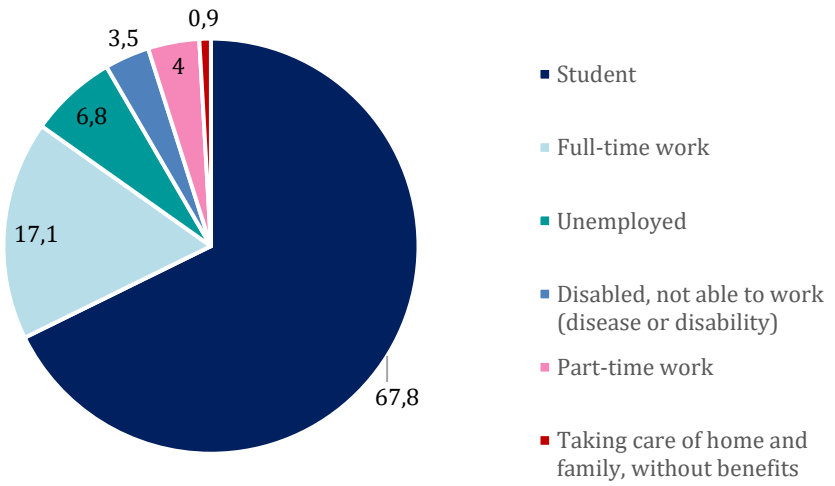
[20] We used the language respondents used when they filled out the survey as an indicator of 'region'. Although these two variables do not completely match, very few respondents living in Wallonia filled out the survey in Dutch and vice versa. 38 of 61 respondents living in Brussels filled out the survey in French, and 23 in Dutch. By using survey language as an indicator of region, Brussels respondents were grouped among their respective 'language communities'.

Table 1: Sociodemographic characteristics of the survey sample (N=574)

	N	Valid %	
Language			
Dutch (NL)	380	66.2	
French (FR)	194	33.8	
Gender			
Male	214	37.3	
Female	350	61.0	
Other	10	1.7	
Age			
Mean			22.48
Median			22
Standard deviation			3.1
Age category			
18–21	252	43.9	
22–25	214	37.3	
26–29	108	18.8	
Place of residence			
Flanders	**356**	**62.0**	
East Flanders	117	20.4	
Antwerp	84	14.6	
West Flanders	67	11.7	
Flemish Brabant	60	10.5	
Limburg	28	4.9	
Brussels	**61**	**10.6**	
Wallonia	**157**	**27.4**	
Hainaut	48	8.4	
Liège	43	7.5	
Namur	28	4.9	
Walloon Brabant	26	4.5	
Luxembourg	12	2.1	
Households' ability to make ends meet			
With great difficulty	14	2.5	
With difficulty	41	7.3	
With some difficulty	112	20.0	
Fairly easily	155	27.7	
Easily	158	28.3	
Very easily	79	14.1	

One in five of our respondents was currently employed full time (16.2%, N=93) or part time (3.7%, N=21) (see Figure 1 below). Most respondents were studying (67.8%, N=389), and most of them were enrolled in higher education (N=353).

Figure 1: Employment status (N=574, %)



The data show that our survey sample was highly educated. The majority had obtained a university degree or were studying at university (54.53%, N=313) (see Table 2 below).

Table 2: Education status

	Non-students (N=190)		Students (N=383)			
	Highest degree of education		Highest degree obtained		Current studies	
	N	%	N	%	N	%
University: academic bachelor/master	61	32.1	78	20.4	252	65.8
University college: professional bachelor	25	13.2	40	10.4	85	22.2
University college: graduate	5	2.6	5	1.3	16	4.2
Secondary education: TSO	30	15.8	60	15.7	6	1.6
Secondary education: ASO/ KSO	26	13.7	175	45.7	5	1.3
Secondary education: BSO	23	12.1	12	3.1	7	1.8
Primary education / BUSO	16	8.4	11	2.9	0	0
Other	4	2.1	0	0	12	3.1

Bivariate associations between demographic characteristics were examined using Pearson Chi² tests and comparisons of column proportions with Bonferroni correction. There were some intertwined socio-demographic differences within this sample (see Appendix VII for bivariate analyses of these differences). Respondents who filled in the survey in French were more likely currently not to be students (38.7% of French-speaking compared to 28.9% of Dutch-speaking respondents, with χ^2= 5.547 and p= .019), and to report difficulties in making ends meet (42.2% of French-speaking compared to 23.7% of Dutch-speaking respondents, with χ^2=20.528 and p<0.001). Older age groups were more likely to report difficulties in making ends meet (40.7% of those aged 26–29 vs. 24.8% of those aged

18–21 reported difficulties, with χ^2= 9.077 and p=.011). Older respondents (aged 26-29) were less likely to be students compared to younger respondents (18-21) (χ^2= 184.43, p<0.001). Students were less likely to report difficulties in making ends meet compared to non-students (χ^2=6.89, p=0.009). As indicated in the methods chapter, these differences cannot be generalized to the entire Belgian young adult population of non-medical users, cf. sampling issues. Bivariate analyses also do not account for other variables that may affect the estimated proportions. The estimated effects can be adjusted by considering these so-called confounders in a regression analysis.

Table 3 below presents the demographic characteristics of the interviewees. As the interview participants (N=64) were predominantly recruited from among the survey respondents, their respective sociodemographic characteristics were consistent overall. However, in contrast to the survey, where a majority of respondents were female, the majority of the interviewees were male (37 men vs 27 women) (see Table 3 below).

Table 3: Sociodemographic characteristics of the interview sample

	N=64
Language	
Dutch (NL)	44
French (FR)	19
Gender	
Male	37
Female	27
Age	
Average	23
18–21	23
22–25	25
26–29	16
Employment status	
Student	43
Employed	13
Unemployed, looking for a job, unable to work	8

* The total number of interviewees is higher than the total number of interviews because there was one interview with two interviewees (See Methods chapter).

1.2. Medical and nonmedical prescription drug use

To measure young adults' medical and nonmedical use of psychoactive medicines, survey respondents were asked to indicate whether they had ever used the following prescription drugs: 1) stimulants, 2) analgesics, 3) and/or sedatives. They were asked to specify whether this use had occurred in a medical and/or nonmedical context.[21]

Analgesics had been used medically most often, reported by 77.0% (N=442) of the sample. Medical use of sedative medicines was reported by 38.9% (N=223) and about a quarter of the sample had used prescription stimulants medically (24.0%, N=138) (see Table 4 below). For each category of prescription

[21] Participants who had never used any of the three types of prescription drugs, or who had only used the prescription drugs medically, were not able to fill in the remaining questions of the survey.

drugs, slightly over half of the sample indicated (also or only) having used it nonmedically, 52.1% for stimulants, 53.1 % for analgesics and 54.9% for sedatives.

Table 4: Lifetime medical and nonmedical use of prescription drugs

	Stimulant medicines		Analgesic medicines		Tranquillising/ sedating medicines	
	N	%	N	%	N	%
Medical use	138	24.0	442	77.0	223	38.9
Nonmedical use	299	52.1	305	53.1	315	54.9
Never used	236	41.1	76	13.2	189	32.9

We used logistic regression analyses to evaluate differences in the nonmedical use of each type of medicine (see Appendix VII). The odds for having ever used stimulants nonmedically are 1.12 (95% CI of [1.03-1.22]) times higher when the age increases with one year while the other independent variables remain the same. The odds also increase 2.97 (CI: 1.79- 4.93) and 4.10 (CI: 2.42- 6.92) times for respectively having ever used stimulants medically and illicit drug compared to no use. They were lower for females (OR=.43, CI: .28- .67), French-speaking respondents (OR=.35, CI: .23- .54) and respondents indicating they had ever used analgesics (OR=.29, CI: .19- .44) or sedatives (OR=.34, CI: .22-.52) nonmedically. The odds of having ever used analgesics nonmedically were higher for French-speaking respondents (OR=1.56, CI: 1.04-2.35) and those respondents who report medical use of analgesics (OR=1.64, CI: 1.07-2.53), and lower for older respondents (OR=.92, CI: .85- .99) and those who had ever used stimulants nonmedically (OR=.32, CI: .21-.48). Within our sample, the odds of nonmedical use of sedatives were higher for respondents who had ever used sedatives medically (OR=2.08, CI: 1.42- 3.05) and lower for respondents who had ever used stimulants nonmedically (OR=.38, CI: .25- .57). Further, nonmedical use of stimulants seems to be inversely related to nonmedical use of sedatives and analgesics.

A slight majority of the survey sample (53.7%) had ever used only one type of psychoactive medicine nonmedically. For just over one-fifth of the sample (22.3%), the only medicines ever used nonmedically were prescription stimulants, whereas for around one in six these were analgesics and sedatives (16.4% and 15.0% respectively). One in three (32.6%) had ever used two type of prescription drugs (16.6% had used analgesics and sedatives, 9.6% stimulants and sedatives and 6.4% stimulants and analgesics). Finally, around one in seven (14%) indicated having ever used all three prescription drugs nonmedically (see Table 5 below).

Table 5: Number of prescription drugs ever used nonmedically (N=574)

	N	%
One type	308	53.7
Stimulants	*128*	*22.3*
Analgesics	*94*	*16.4*
Sedatives	*86*	*15.0*
Two types	187	32.6
Stimulants and analgesics	*37*	*6.4*
Stimulants and sedatives	*55*	*9.6*
Analgesics and sedatives	*95*	*16.6*
All three types	79	13.8

1.3. Medical conditions and healthcare

In the interviews we inquired into participants' medical conditions and medical (pharmaceutical) treatments in order to contextualise and identify connections with their NMUPD.

Only a few interviewees told us they suffered from physical health problems that were related to their NMUPD, mainly chronic pain. Mental health problems were more common among our interviewees. They reported having medical diagnoses for the following psychological disorders: ADHD, ADD, depression, bipolar disorder (with psychoses) and autism. A few respondents had been struggling with severe mental health problems and noted having had suicidal thoughts or having attempted suicide in the past. Multiple respondents in our sample had sought help for their mental health problems and reported having been in therapy (e.g. with a psychologist or psychiatrist, and a few had also been admitted to psychiatric hospitals).

1.4. Psychoactive substance use

1.4.1 Ever and past 12 months use

A set of questions in our survey concerned psychoactive substance use, including licit and illicit substance use. Participants were asked about lifetime use and past 12 months use.

For lifetime use, over nine in ten (94%) had used alcohol, and three in four had used cannabis and tobacco (76% and 75%, respectively). Around three in four had ever used illicit drugs in their lifetime (76.5%, N=439). In the last 12 months, 90% of the respondents had used alcohol; this was about 60% for both cannabis and tobacco (see Table 6 below).

Table 6: Substance use (lifetime and past 12 months)

	Lifetime		Past 12 months	
	N	% of cases	N	% of cases
Alcohol	538	93.7	522	90.9
Cannabis	434	75.6	339	59.1
Tobacco	431	75.1	340	59.2
MDMA	210	36.6	141	24.6
Cocaine	174	30.3	117	20.4
LSD and other hallucinogens (e.g. psilocybin, mescaline, peyote)	165	28.7	99	17.3
Amphetamines	150	26.1	70	12.2
Ketamine	127	22.1	87	15.2
NPS and synthetic cannabinoids	103	17.9	64	11.2
GHB	37	6.4	16	2.8
Methamphetamines	22	3.8	10	1.7
Heroin	13	2.3	7	1.2

With respect to the qualitative interviews, many of the participants had experience of illicit drug use. However, the level of experience and frequency of use varied widely. The most commonly used illicit drug was cannabis, which was most often used recreationally at home or with friends (e.g. to relax). For instance, several interviewees reported having used cannabis daily or almost daily at some point in their lives. Other commonly reported illicit drugs included MDMA, cocaine, ketamine, amphetamine, (unspecified) designer drugs and psychedelics.

Several interviewees reported using new psychoactive substances (NPS).[22] A few interviewees reported the use of benzodiazepine analogues, also called new benzodiazepines (e.g. clonazolam, etizolam). For instance, one interviewee who was an experienced user of illicit drugs started using these designer medicines because of his previous experience with the prescription sedative alprazolam, which he used as an antagonist for the psychoactive effects of illicit drugs:

> *"I could just drive over there with a few friends and go and get weed in bulk – sometimes also codeine or Xanax. But, because of the Xanax, I started using stronger things. I had read that alprazolam was the weakest. Then I thought, ok, what's stronger? I want to try that. So then I tried bromazolam. It was similar, but not necessarily much better. And then I did go stronger and stronger...."* (R32)

Often, when interviewees used prescription drugs recreationally, this use was part of their overall illicit drug use. Many of them experimented with different types of psychoactive substances.

1.4.2 Substance abuse

A recurring theme in the interviews was self-reported substance use problems, including licit (alcohol) and illicit drug misuse (e.g. amphetamine, cocaine, MDMA, cannabis). Interviewees more commonly reported problems associated with the use of illicit drugs and alcohol than with prescription drug use (see Chapter 4, Section 4.7: Problematic use). Even so, multiple respondents reported licit and illicit drug use patterns that they themselves identified as being problematic, mainly referring to events in the past.

In our survey, participants were asked whether they had ever sought help for problems related to substance use, including prescription drugs, alcohol and illicit drugs. The majority (79.8%, N=458) indicated they had never looked for help (see Table 7 below).

Table 7: Ever sought help for problems related to substance use

	N	%
Yes	98	17.1
No	458	79.8
Rather not say	18	3.1

[22] Including: 2-fma, clonazolam, etizolam, bromazolam, flualprazolam, flunitrazolam, diclazepam, pyrazolam, 2CB, 1P-LSD, methoxetamine, 3-Meo-PCP, 5-MeO-MiPT (Moxy), 3-FPM, 4-FMP (4FA), 4F-MPH, 5-MAPB, 2-CE.

2. Initiation

The way young people are introduced to and initiate NMUPD is valuable information that can inform future prevention efforts and initiatives. In this chapter we look at the age, and more broadly the life period, at which respondents had used prescription drugs nonmedically for the first time, and from which supply sources they had obtained them. In the following sections we focus on initial motives for using prescription drugs nonmedically and on initiation use patterns. This information is particularly relevant when comparing it to information on current NMUPD in later sections, as it allows us to identify possible transitions.

2.1. Initiation age

We asked survey respondents what age they were when they used prescription drugs nonmedically for the first time. The median age of initiation for the nonmedical use of prescription stimulants and sedatives was 18. The initiation age for prescription analgesics was lower, with a median age of 16. Two in three (66.6%, N=203) of the respondents using analgesic medicines nonmedically had done so before they were 18 years old, as had 39.5% (N=118) of those using stimulant medicines and 38.8% (N=122) of prescription sedatives users (see Table 8 below).

Table 8: Initiation age

	Stimulant medicines (N=299)		Analgesic medicines (N=305)		Tranquillising/ sedating medicines (N=315)	
Mean	17.83		15.90		18.26	
Median	18		16		18	
	N	%	N	%	N	%
<14	28	9.4	90	29.5	26	8.3
15–17	90	30.1	113	37.0	96	30.5
18–20	133	44.5	59	19.3	116	36.8
>20	46	15.4	30	9.8	73	23.2
Don't know	2	0.7	12	3.9	3	1.0
Missing	0	0	1	0.3	1	0.3

We used a standard linear regression to estimate the relative effects of different variables on the initiation age of each prescription medicine (see Appendix VII). In our sample, the respondent's age had a positive effect on their reported initiation age of nonmedical drug use for all prescription drugs, including stimulants (β=.41, CI: .23-.58) analgesics (β=.40, CI: .23-.58) and sedatives (β=.55, CI: .42-.69). Within our sample, having ever used stimulants and sedatives medically had a negative effect on the nonmedical initiation age of these substances, suggesting that respondents who had ever used these substances medically started using them nonmedically at a younger age (stimulants β=-1.15, CI: -2.060- -.237; sedatives β=-1.26, CI: -2.04- -.48). Other significant effects included a positive effect of recreational initiation use motives on initiation age for analgesics (β=1.301, CI: .12- 2.48). Not experiencing difficulties in making ends meet (β=.955, CI:.205- 1.706) and having initially obtained sedatives through a prescription (β=1.19, CI: .048- 2.322) all had a small positive effect on initiation age for sedatives.

The qualitative interview data offer some insights to help us interpret these differences in initiation age.

With regard to **prescription stimulants**, interviewees often mentioned having experimented with or started using these medicines nonmedically in their later teens. In particular, they often started using prescription stimulants at college or university when the amount of studying they had to do increased, as explained by the following interviewee:

> **I:** *"Can you remember the first time you used Ritalin?"* **R:** *"That would have been at university, I think, because in secondary school I didn't really need it. Also, I didn't really know people who had it prescribed. So then I tried it a few times."* (R07)

Many respondents had started using **prescription sedatives** at a similar age, and indicated this was to counter the stresses of life, whether studying, finding their way in the employment market, or in other aspects of their personal life (in love or social relationships). As this respondent said:

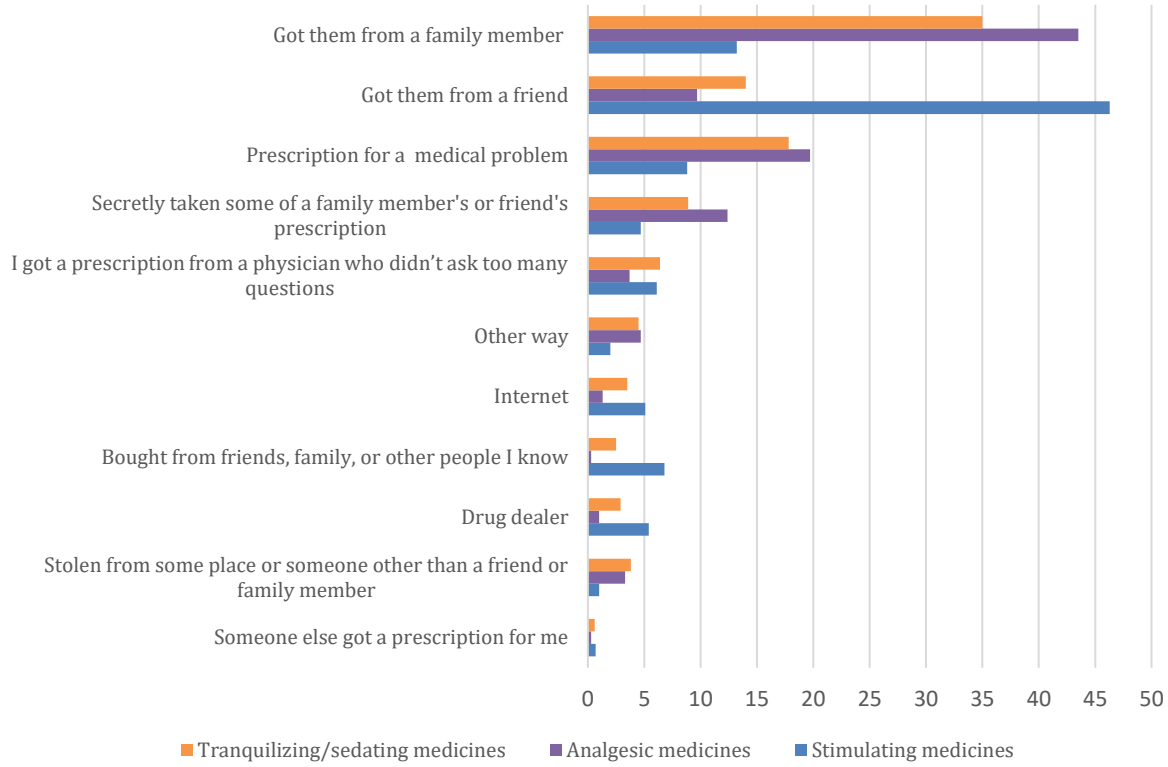
> *"When I was in my second year at university, I must have been 18 or 19, I took Xanax. I took it more regularly to calm down, not so much to experiment, but more to really unwind."* (R30)

The relatively younger average initiation age of **prescription analgesics** in the survey, in comparison to prescription stimulants and sedatives, may be related to differences in these medicines' intended effects: pain relief versus performance enhancement and sedation, respectively. In other words, pain, and looking for relief from it, may be less age-specific and start occurring at younger ages. It should be noted that the age difference emerging from the survey may also in part be due to respondents misinterpreting the description of 'prescription analgesics' as also including non-prescription medicines such as paracetamol, as quite a few respondents recorded quite young ages (20 respondents gave an age below 10) for initiating these medicines nonmedically, whereas we did not encounter these young initiation ages during the qualitative interviews.

2.2. Supply channels

In the survey, respondents were also asked from which source they obtained the prescription drugs the first time they used them nonmedically. Respondents who used prescription analgesics and sedatives were more likely to report receiving these medicines from a family member (43.5% and 35.0% respectively) than those using prescription stimulants (13.2%). Friends were more likely to be the source of prescription stimulants (46.3%) than prescription analgesics (9.7%) or prescription sedatives (14.0%). The third most commonly reported source of supply for first nonmedical use was one's own prescription for a medical problem. Respondents using prescription analgesics (19.7%) and prescription sedatives (17.8%) reported this supply route twice as often as those using prescription stimulants (8.8%) (see Figure 2 below).

Figure 2: Source of supply of initial use (%)



This divergent pattern is supported by our qualitative data; many interviewees reported initially obtaining prescription stimulants for nonmedical use through friends, whereas prescription sedatives and analgesics were often initially obtained through adult family members or previous medical experience with these medicines. For example, with regard to the initial use of **prescription analgesics and sedatives**, one respondent explained:

> *"I was in pain and normal* [over-the-counter] *painkillers didn't work, because the muscle was so cramped, and she* [aunt] *had Contramal – it was the strongest painkiller she had at home. I can't actually remember whether it helped that time, but since then I remember having taken it two to three times."* (R05)

Very few respondents mentioned first getting this type of medication knowingly from a family member without suffering from any prior symptoms. Interviewees sometimes indicated that adults looked out for any negative experiences or side effects:

> *"I asked my parents themselves* [for lorazepam/Temesta]*. They were cautious, because they never gave me an entire pill or anything. They used to say, 'Here, take a quarter or take half and see how you feel afterwards.'"* (R35)

A few respondents mention taking these medicines from their medicine cabinets at home, sometimes without the knowledge of their parents or grandparents. For instance, one respondent noted:

> *"My grandmother, she used anxiolytics, lorazepam. I used to steal lorazepam from her medicine cabinet."* (R54)

In line with the survey data, with regard to initiation in the use of prescription sedatives, and analgesics in particular, interviewees mentioned previous medical use. For instance, some respondents had been introduced to these medicines when they suffered medical emergencies or had chronic medical conditions. After that, they continued using them in higher doses, more frequently, or in ways not intended by the initial prescription. Some of these participants discovered other interesting properties of prescription analgesics when using them for medical purposes, as explained by the following interviewee:

> *"When I was 15, I had a serious operation to my chest and I got tramadol for it and morphine-like pills and I took them for a while. I kept the leftovers, and later on I used them as well. Just for fun* […] *Even when I was in pain, I did enjoy it a little bit as well, I have to admit that. It's like when you're not in pain and you take it you obviously feel better than when you are in pain and you take it, but even then I enjoyed that painkiller too. Perhaps that's a bit strange. It was like a euphoric effect."* (R07)

For **prescription stimulants**, most interviewees mentioned the role of friends or acquaintances as the main sources of initial use. One respondent told us:

> **I:** "*How did you get it, then?"* **R:** "*From mates who had it prescribed to them, and I said, 'I can't concentrate, can I try it once?' And he said, 'Ok.'"* (R07)

Only a few respondents mentioned having initially obtained prescription drugs online, mainly those using prescription stimulants (e.g. Modafinil). Those buying prescription drugs online appeared to be a specific subsample of respondents in that they were particularly interested in the effects of various legal and illegal substances and seemed to experiment with a wide variety of substances.

In general, the initial supply channel was often a well-known and trusted person, whether a friend, family member or GP. It should be noted that respondents often mention that their initial use, whether supplied by family or friends, was accompanied by more or less elaborate (safety) instructions for use from those trusted individuals (see Chapter 10: Information).

Other respondents mentioned an intrinsic interest in licit and illicit psychoactive substances, including prescription drugs, that could be triggered by other substance use, online research or even formal education. For instance, one of the respondents explained his initiation to these products as follows:

> *"I got interested in it because I was studying pharmacology, and in the second year of my Bachelor there was a mention of MDMA. I started reading up on it just out of boredom. I realised that many things I had learned before actually didn't add up and then I started using MDMA and LSD and actually it grew from there – out of interest."* (R20)

2.3. Reasons for initial use

In addition to the source of supply for the first time of nonmedical use, we asked about participants' main reason for use. First-time nonmedical use of prescription stimulants was mainly motivated by the need to study (32.1%) or to help with concentration or alertness (19.1%). Half of the respondents using prescription analgesics used these the first time nonmedically to relieve pain (49.8%). The second most reported reason was to reduce tension or stress (10.6%). The first time prescription sedatives were used nonmedically was mainly to help with sleep (32.7%), followed by the reduction of anxiety (16.5%) and of tension or stress (16.2%) (see Table 9 below). Overall, the majority of respondents initially used these substances nonmedically for functional reasons, whether pain/stress relief, inducing sleep or

performance enhancement. Recreational initial use, i.e. using these medicines to experiment, party or get high, was mentioned by a minority, though still a substantial proportion, of respondents. Respondents mentioned having recreational reasons for initially using prescription stimulants more often than for analgesics or sedatives (31% vs. 23.8% vs. 18.3%, respectively).

Table 9: Motives for initial use

	Stimulant medicines (N=299)		Analgesic medicines (N=305)		Tranquillising/ sedating medicines (N=315)	
	N	%	N	%	N	%
Self-medication	**27**	**8.9**	**226**	**74.6**	**252**	**80.1**
To relieve physical pain	6	2.0	151	49.8	3	1.0
To help with my sleep	3	1.0	10	3.3	103	32.7
To relax or relieve tension or stress	10	3.3	32	10.6	51	16.2
To decrease anxiety	1	0.3	8	2.6	52	16.5
To cope with depression/ to reduce sadness	6	2.0	23	7.6	38	12.1
Because of anger or frustration	1	0.3	2	0.7	5	1.6
Performance enhancement	**179**	**59.9**	**5**	**1.7**	**4**	**1.2**
It helps me to study	96	32.1	1	0.3	1	0.3
To help me concentrate or to increase my alertness	57	19.1	0	0	2	0.6
To get more energy or to be more productive	20	6.7	2	0.7	0	0
To help me lose weight	6	2.0	2	0.7	1	0.3
Recreational	**93**	**31**	**72**	**23.8**	**58**	**18.3**
To experiment, out of curiosity or to see what it's like	44	14.7	26	8.6	24	7.6
To get high	10	3.3	23	7.6	20	6.3
To party	25	8.4	6	2.0	2	0.6
To socialise or to have a good time with my friends	6	2.0	2	0.7	2	0.6
I don't know	1	0.3	4	1.3	1	0.3
Other reason	7	2.3	11	3.6	9	2.9

We combined self-medication and performance enhancement initiation motives to compare any differences with recreational initiation motives in logistical regressions for each type of prescription medicine (see Appendix VII). The odds of recreational initiation motives were consistently lower for females (stimulants OR=.26, CI: .14- .51; analgesics OR=.31, CI: .15- .64; sedatives OR=.21, CI: .10- .49), indicating that male respondents had more frequently initiated each type of substance for recreational reasons. Ever having used illicit drugs increased the odds of recreational motives for initial use of stimulants (OR=15.42, CI: 1.80- 132.40) and analgesics (OR=9.82, CI: 1.27- 76.28). We found similar effects for having initially obtained these medicines from friends, with this initial supply source increasing the odds of recreational motives for initial use of stimulants (OR=2.12, CI: 1.08- 4.16) and analgesics (OR=3.00, CI: 1.09- 8.30). The odds of recreational motives for initial use of stimulants were also higher for French-speaking respondents (OR=3.36, CI: 1.56- 7.24) and for those having ever used stimulants medically (OR=2.43, CI: 1.24- 4.75). The odds of having initiated analgesics for recreational motives were also higher for respondents that had started using analgesics at an older age (OR=1.15, CI: 1.02-1.30). With respect to initiation motives for the use of sedatives, having initially obtained them through an own prescription lowered the odds of recreational motives (OR=.07, CI: .01- .58).

Our qualitative data shed further light on the reasons for initial use, which we discuss next.

2.3.1 Performance enhancement

Initiation with **prescription stimulants** appeared to be most often associated with performance enhancement, particularly in the context of studying. Most respondents started using in college or university, because they wanted to be able to concentrate better. Often these respondents 'tested' a friend's or family member's prescription stimulants to see if they produced the desired effect, i.e. improving concentration, especially when experiencing academic difficulties. For instance, one respondent told us:

> *"I took it once in an exam period, just to see, what does it do? Because you always hear those stories of people passing exams purely on Ritalin. Then you're sitting there and you don't take it and you have low marks and you think, 'I'm going to try that too.'"* (R14)

Interestingly, a few interviewees had previous experience of using illicit stimulants to help them study and started using prescription stimulants to attain the same effects. One respondent actually started using prescription stimulants purely because he had 'run out of amphetamine' to help him study:

> *"I had been doing several substances for a while and I was looking for something that helped me study. I didn't really cope well with the comedowns of amphetamines and derivatives so I was looking for something that had little or no negative effects. Then I encountered modafinil."* (R20)

2.3.2 Self-medication

In the case of **prescription analgesics**, initial nonmedical use was often for pain relief. Respondents recounted having been in severe pain, whether due to a chronic or acute condition (e.g. after an operation or accident), and being offered analgesics by a family member or friend, taking more than prescribed or using leftover analgesics from a previous prescription.

A few respondents mentioned having started using analgesics nonmedically for inducing sleep rather than pain relief. This sleep-inducing effect of analgesics was often discovered through medical use, and a reason for continued, nonmedical use, as illustrated in the following:

> *"*[Contramal] *is a relatively strong painkiller and I got that one prescribed because I had migraine for a week at the time. I noticed that when I took it I slept well, too."* **R: "***You experimented with that a bit, then?***" I: "***Yes."* **R:** *"Not because you had a migraine, but to sleep better?***" I: "***Yes, yes."* (R04)

Respondents most commonly reported initiating the nonmedical use of **prescription sedatives** for self-medication purposes, such as stress and anxiety, to manage emotions, to get to sleep more easily or generally to 'relax', as acknowledged by this interviewee:

> *"When I was 18 a friend gave me my first Xanax. I did take it every now and then to sleep or to relax at night – to avoid having too much stress, actually."* (R34)

A few respondents mentioned initially using sedatives nonmedically in order to 'forget', or to deal with feelings of sadness and depression. This often occurred in solitary contexts, although a few respondents mentioned having taken prescription sedatives nonmedically in the presence of friends or to regulate their emotions in social situations.

2.3.3 Recreational use

Prescription stimulants were more frequently initiated in a recreational context than other types of medicines. In comparison to recreational initial use of analgesics and sedatives, which occurred in a solitary context, recreational initial use of stimulants happened more often in a party context, surrounded by friends who might also be using, as illustrated in the following:

> *"A mate of mine has ADHD and he took it and he said, 'You should really go out on it once, if you're not used to it – it could be fun.' So that was more experimental."* (R18)

Some respondents also mentioned that they initially had recreational motives, such as looking to experiment, for using **prescription sedatives** nonmedically, as described by the following interviewee:

> *"*[Talking about Valium] *I was in an experimental phase then and I thought, why not? Then I took it once at home and I didn't think it was that special, personally."* **I:** *"It was purely to see what effect it had?"* **R: "***Yes, yes… a bit experimenting, like I say."* (R10)

In rare cases, respondents mentioned having initially used **prescription analgesics** in a nonmedical way for recreational motives, such as the following respondent:

> *"I have tested Valtran, and I liked the effects. I was totally 'high' and I felt really good."* (R54)

In general, the minority of respondents who had recreational motives for starting to use prescription drugs often used a variety of medicines purely to try them out and experiment, making it more difficult for respondents to distinguish differential initiation patterns between different types of substances. Typically, they took whichever medicine was available at the time, without much consideration of the associated psychoactive effects. One interviewee commented:

> **I:** *"How did you start using Xanax?"* **R:** *"Gosh, I think it was through friends of mine, who were in my group of drug friends. But I have to say, I actually can't really remember how that first time happened."* (R30)

Some of the respondents (who had experience with the use of illicit drugs) were curious about the use of certain prescription drugs (e.g. Ritalin or alprazolam), because they knew they could be used as '(recreational) drugs' or 'party drugs'. Multiple respondents said that they had heard or read stories about stimulant prescription drugs having similar effects as stimulant illicit drugs. As one respondent said:

> *"There are stories such as Ritalin being a mild version of speed – 'Kidi Coke''. They generally say that Ritalin is a bit like speed, or a light version. I haven't done speed or anything, but just from the moment you hear 'Oh, Ritalin is drugs', that's where it starts* [claps hands]*."* (R15)

Some interviewees explained that the threshold to use prescription drugs nonmedically for the first time was low because they felt confident about the safety of medicines. A few respondents told us that they were interested in using illicit drugs such as cocaine or amphetamine, but because they thought that snorting Ritalin was a smaller step than snorting illicit stimulants, they chose to snort Ritalin. For instance, one respondent commented that:

> *"I think when I was 17, it was with Ritalin. That was to try it out because a friend of mine had it and… it all sounds so stupid to say, but her logic was that when you sniffed that, it felt like speed and we as teenagers wanted to try that, of course."* (R30)

Respondents who had experience with the use of illicit stimulants (e.g. MDMA, cocaine) felt comfortable about and were not afraid of taking stimulant prescription drugs (e.g. Ritalin) nonmedically for the first time, because they thought they recognised the feeling when taking prescription stimulants:

> *"I have used ecstasy, and MDMA as well, which is why I was not so scared of taking Ritalin, because it has the same amphetamine components. I recognised the feeling immediately. It is actually a very light, light form of Ecstasy."* (R12)

In conclusion, initial use of prescription medication was often a process of trial and error. Respondents reported that they tried a drug to see what the effects would be and what it might do, to find out whether what others said about it was correct, and to discover whether it could help them to relieve any symptoms, concentrate better or to party. Whatever the effect, the initial trial of a certain medication seemed to be an important indicator of whether the individual would use it again or not. Respondents who did not experience the expected effects, or who experienced unwanted side effects, seemed more inclined not to use these substances again, as noted by this respondent:

> *"It really was just to try it out once, to see what it did. It didn't do anything the first time, so I then tried it a second time, and it also didn't do anything. So then I was like, yeah, there's little point in stuffing my body with this substance if it doesn't work anyway."* (R04)

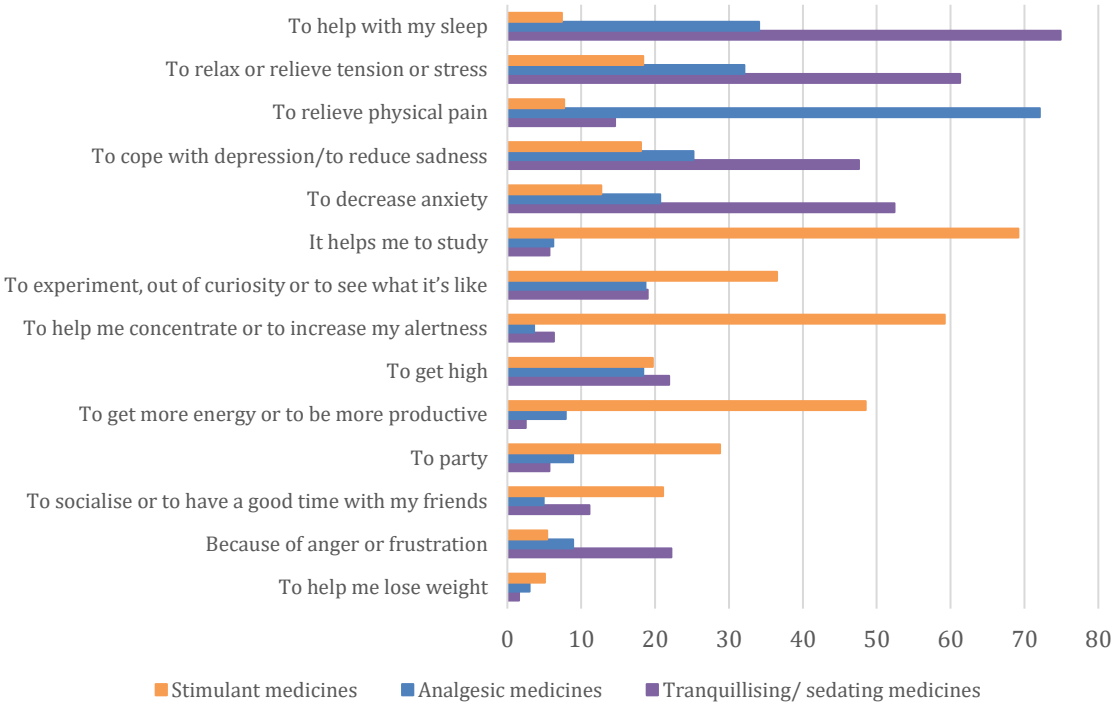
3. Motives for use

Survey participants were asked about their motives for use, and multiple answers were possible. For the purpose of this analysis, the reported motives have been grouped into three categories: self-medication, performance enhancement and recreational.[23]

The findings show that NMUPD was usually motivated by self-medication (80.7%, N=463) and performance enhancement (53.5%, N=307). However, the exact motives differed between the types of prescription drugs. The most reported reasons for stimulant use in a nonmedical context were to study, and for purposes that are likely to be related to studying, such as to improve concentration and alertness and to increase energy or productivity. For prescription analgesics, the most reported reason for use was pain relief, followed by sleep and relaxation. Finally, sedative medicines were mostly used to help with sleep. Other commonly reported motivations for using sedatives were to reduce stress, sadness and anxiety.

Prescription drugs were less commonly used recreationally by our study participants. About four in ten (42.3%, N=243) had done so. Within this group of motives, experimentation was reported most often, followed by using to get high and to party. Stimulants were the type of medicines most used for recreational purposes (see Figure 3 below).

Figure 3: Motives for NMUPD (% of cases)



As with initiation, we grouped the motives for current use into the categories of recreational and non-recreational, for logistical regression. Firstly, illicit drug use, increased the odds of recreational motives

[23] *Self-medication:* To relieve physical pain; To help with my sleep; To relax or relieve tension or stress; To decrease anxiety; To cope with depression/ to reduce sadness; Because of anger or frustration. *Performance enhancement:* It helps me to study; To help me concentrate or to increase my alertness; To get more energy or to be more productive; To help me lose weight. *Recreational:* To experiment, out of curiosity or to see what it's like; To get high; To party; To socialize or to have a good time with my friends.

for the use of stimulants (OR=8.98, CI: 2.86- 28.18), analgesics (OR=5.17, CI: 1.89- 14.14) and sedatives (OR=5.01, CI: 1.93- 12.99). Female gender lowered the odds of recreational motives for stimulants (OR= .45, CI: .26-.77), analgesics (OR= .51, CI: .27- .93) and sedatives (OR= .52, CI: .30- .91). The third was having initially obtained prescription medicines from family members, which lowered the odds of recreational use motives for all substances (stimulants OR=.26, CI: .09-.75,; analgesics OR=0.31, CI: .15-.65; and sedatives OR= 0.36, CI: .18- .73). Only having obtained prescription analgesics from friends increased the odds of recreational use motives for analgesics (OR=3.39, CI: 1.17- 9.80). Finally, having used stimulants medically increased the odds of having used stimulants recreationally (OR= 2.1, CI: 1.13-3.91).

In line with our survey data, the motives for use discussed in the interviews were closely linked to the type of prescription medication consumed. In the following sections we focus on the three types of use motives (performance enhancement, self-medication and recreational use) based on our interview data.

3.1. Performance enhancement

Within our sample, the main motivation for using prescription drugs, particularly stimulant medicines, was for studying. They were used less often for other enhancement reasons, such as work performance or sports performance. The high number of students in our study sample may have contributed to this finding.

3.1.1 Study performance

Prescription stimulants were the main type of medicine used for academic purposes by interviewees. The brand Ritalin and the generic methylphenidate were the medicines that were most often used. Less common was the use of Concerta, and even fewer participants used modafinil, armodafinil, Equasym or Medikinet.

In an academic context, stimulant medicines were mainly used when studying for exams. They were used to improve concentration, to have more energy and to study for longer periods of time (e.g. 12–16 hours per day), including staying up all night:

> *"I had to pull all-nighters to study. I don't know of any other way to stay awake for more than one full night and then another day."* (R20)

Often, these participants discussed experiencing time constraints, and motivation and concentration difficulties, during exam periods. They were concerned about not being able to study the material in time at their own pace. Some respondents noted that they spent (too) little time studying during the year and needed to catch up during the exam periods. More often, participants also took stimulant medicines on the day of their exam in order to be awake, focused and concentrated. When they had been studying late in the evening or at night the day before the exam and got up early to review study materials, they had little sleep and took the medicine to wake up.

These stimulant substances were also used to a lesser extent when completing school assignments, such as theses, papers and school projects. Respondents noted that they resorted to stimulant medicines because they needed to meet deadlines.

When explaining their motives for using prescription stimulants for academic purposes, respondents sometimes noted that they experienced stress and external and internal pressure to obtain a degree. Some respondents indicated that they were dealing with cognitive performance anxiety or were having difficulties in education. They spoke of desperate situations and feeling hopeless about passing their exams (e.g. referring to it during interviews as their 'last chance' or 'saving' their exams). One respondent noted:

> "*If I think it can save my exams, I'm willing to do it.*" (R33)

Prescription drugs other than prescription stimulants were sometimes used in a study context, although this was uncommon. For instance, **prescription sedatives** were sometimes taken before an exam to cope with stress, to have a good night's rest and to be calm during a written, oral or practical exam.

3.1.2. Other enhancement reasons

Only a few respondents in our sample used **prescription stimulants** to enhance their work performance. Reasons for using stimulant medicines while at work were similar to those reported in relation to studying, as described above. Respondents who had a student job (e.g. bartender) and those working full time took these medicines in order to be more focused, work more efficiently and stay awake and alert while working. For instance, one respondent said he used Ritalin to do the administrative tasks of his job more efficiently. He noted that when he used Ritalin that type of task took half a day of work, while it took two days without it and, in addition, he thought he worked less rigorously.

Only a few interviewees used prescription drugs for enhancement purposes other than study or work performance. For instance, one respondent noted having taken prescription stimulants once when she needed to clean her room. A few respondents used prescription medicines for sport or athletic enhancement. For example, one talked about using stimulant medicines to improve concentration and be more clear-headed during league games of the sport he practised. Another respondent used the medicines to improve weight training ('muscle drugs'). Finally, one respondent had taken prescription analgesics (codeine) combined with kratom to increase endurance and stamina for fitness tests (i.e. running and swimming) at college university.

3.2. Self-medication

The second group of use motives can be categorised under *self-medication*. This covers the use of prescription drugs in order to cope with (self-diagnosed) mental or physical health problems. In our sample, interviewees self-medicated with prescription drugs mainly for mental health problems and less often for physical conditions. Prescription sedatives were most often used for self-medication purposes, followed by analgesics and finally stimulants.

3.2.1 Mental health problems

Some of our participants who used **sedating medicines** that had been legitimately prescribed to them for mental health problems self-medicated with higher doses than prescribed in order to achieve their

desired effects and to help them cope with their psychological problems. In particular, they mentioned using higher doses to help them sleep or to calm down.

The majority of interview respondents who used diverted prescription sedatives (i.e. sedatives not prescribed to them) reported that this was for self-medication. This use was often sporadic or temporary in nature. Interviewees' narratives illustrate that these medicines were used in exceptional circumstances, such as when in a bad mood, feeling stressed, having sleep difficulties or experiencing anxiety (e.g. flying phobia). For instance, some of the respondents who were enrolled in higher education experienced stress and sleep problems during exam periods. Those students self-medicated with sedating medicines to cope with these psychological symptoms. For instance, one told us that:

> *"The night before my exam I feel like, 'Ok, I'm in my bed. I've been exercising, so I'm normally tired.' But my brain keeps racing and I really can't sleep. A few hours pass and then I make the decision: 'Ok, if I take a benzo now, I can probably get to sleep by midnight and then I still have plenty of sleep time. Then I will be rested enough to take the exam and probably pass.'"* (R43)

Sedatives were also used as a way to 'escape'. One respondent explained as follows:

> *"I received sedatives because I lost a girlfriend to suicide and another friend of mine was raped. So I got depressed and then they prescribed sleep medications so that I could have a night's rest. But after a while – it's bad to say this because I was 21 – that was the only way that I could get to sleep or have a moment of rest. Then you take a little bit more and at that moment you think, 'I wouldn't mind if I didn't wake up tomorrow.' That was misuse, because it is a way to escape, to numb or to not have to think for a moment. I got up and all I thought about was the moment that I could lie in my bed again. Sometimes, I took a pill very early in the day, earlier in the evening, so that I would be able to go to sleep earlier."* (R17)

Finally, it is worth noting that some participants took prescription sedatives (e.g. benzodiazepines) in order to sleep after having taken stimulants to study, work or party (see Chapter 4, Section 4.5: Concurrent substance use).

A few respondents took **prescription analgesics** (e.g. bronchosedal codeine, tramadol) to cope with mental health issues such as stress and sleeping difficulties, as described in the following:

> *"It happened that I was lying awake with anxiety. I was constantly having racing thoughts and zolpidem did not help with those thoughts. Taking zolpidem sent me to sleep very quickly. But in order to really calm me down and to sleep, I found that bronchosedal was more effective."* (R38)

Some of these respondents explained that they preferred to take prescription analgesics instead of sedatives because they perceived the calming effects as being slightly different.

Among our interviewees, **prescription stimulants** were used less often for mental health problems than were prescription sedatives and analgesics. For instance, a few respondents who did not have a formal diagnosis of AD(H)D indicated that they might be suffering from the symptoms, and thus self-diagnosed with AD(H)D. Unlike the group of respondents who used prescription stimulants to enhance their academic or work performance, these respondents thought they actually had a medical condition (albeit one that was undiagnosed by a professional). This type of use can be defined as self-medication. In addition, a few respondents used Ritalin to improve their mood (e.g. when they were alone at home).

3.2.2 Physical health problems

Prescription analgesics (e.g. tramadol) were most often used to self-medicate for physical health problems. The main motive for taking prescription analgesics nonmedically was pain relief. A few interviewees in our sample were legally prescribed analgesics for pain issues (e.g. for chronic pain). However, they took higher or more frequent doses than those prescribed by their physicians, because the recommended doses did not provide effective or enough pain relief. Other participants took prescription analgesics that had not been prescribed to them. In particular, they used analgesics from the medicine cabinet at home, or given by a parent when in severe pain or discomfort (e.g. menstrual cramps, hangovers). In similar circumstances, other respondents also used leftover analgesics that had been prescribed to them for a previous medical problem (e.g. surgery).

3.3. Recreational use

In addition to performance enhancement and self-medication, prescription drugs were used for recreational purposes. The recreational use of prescription drugs was described in hedonistic terms, i.e. to experience the psychoactive effects and for pleasure. In particular, respondents' recreational motives included using prescription drugs 'out of curiosity', 'to get high', 'just for fun', 'as a joke together with friends' and 'to cope with boredom'.

In *Chapter 2 Initiation*, we noted that prescription drugs were used recreationally for the first time in a context of curiosity and experimentation. These remained important factors in subsequent recreational use. These respondents were curious about the psychoactive effects of prescription drugs. For instance, one noted that he exchanged Ritalin for Concerta, to see whether it caused different psychoactive effects. This group of respondents talked about testing different kinds of (prescription) drugs that were available to them (e.g. in the medicine cabinet at home).

Our interviewees used stimulant medicines more often than prescription sedatives and analgesics in recreational contexts.

Prescription stimulants were used in party settings for their stimulant effects, i.e. to have more energy, to be able to party longer, to dance or to stay awake longer. Some interviewees noted that when they felt really tired at a party they took the substances to wake up. Nonetheless, the regular use of prescription stimulants in party settings was uncommon. Recreational motives reported by a few interviewees that fall outside of party settings included using stimulants when reading a book, in order to be more absorbed by the story, and to be able to continue playing videogames for several hours.

Recreational motives for using **prescription analgesics and sedatives** were very similar. They were used recreationally most often for relaxation and pleasure, in particular '*to chill*' (e.g. on an aeroplane) or '*to have fun'*, and less often '*to party*'. Sometimes, the medicines were taken to enhance relaxation and appreciation while engaged in particular leisure activities such as watching a movie, listening to music, eating and going for a walk in nature. Participants also used high amounts of sedatives or analgesics in order to get intoxicated ('to get high').

Interestingly, recreational prescription drug use was only reported by those interviewees who also had experience of using illicit drug. It often seemed that respondents used other psychoactive substances, such as alcohol or illicit drugs, before, alongside or after taking prescriptions drugs (see Chapter 4, Section 4.5: Concurrent substance use). Respondents reported that being intoxicated by alcohol,

prescription drugs, illicit drugs or a combination of these substances lowered their inhibitions. This meant that they were also more likely to take medicines recreationally and to increase the dose, as one respondent explained:

> *"The problem is that once you take alprazolam, you don't care any more and you start using all sorts of things – you'll start rolling a joint faster."* (R13)

A few respondents noted that they only snorted Ritalin when they were already very drunk.

We found diverging views concerning the use and perceived enjoyment of prescription drugs vis-à-vis other licit and illicit substances in recreational contexts. On the one hand, several respondents reported that their experience of taking certain prescription drugs was more enjoyable than taking other licit and illicit psychoactive substances in certain contexts. Firstly, this preference seemed to be related to the perceived intensity of the psychoactive effects of prescription drugs. Some respondents preferred prescription drugs because their psychoactive effects were considered mild and less intense than those of illicit drugs. The overall physical as well as mental impact of use was seen as limited. For instance, one respondent said he could use alprazolam three times a week, but not MDMA because the experience was too intense. The side effects of prescription drugs were also described as being less severe compared to illicit drugs. Secondly, the duration of the effects was important to some respondents. The effect of prescription drugs was considered to be of a relatively short duration. Thirdly, the type of psychoactive effects played a role in why respondents chose to use prescription drugs recreationally. One respondent who was diagnosed with ADD said that taking stimulant medicines recreationally felt familiar, because he took the medicines in daily life for his work. A few participants preferred using prescription drugs over drinking alcohol. They noted that when using prescription drugs they felt more in control, clear-headed, and not nauseated or dizzy, unlike when they consumed alcohol.

On the other hand, the recreational experience of prescription drug use was often described by other interviewees as less enjoyable compared to the psychoactive effects induced by illicit drugs. Although prescription stimulants were often described as a mild version of amphetamine, MDMA or cocaine, this was not positively appreciated by this particular group of respondents. For example, one participant noted:

> "*I don't know anyone who is addicted to sniffing Ritalin, because it's boring compared to the rest."* (R14)

One other clarified that:

> "*It works kind of like speed, not as much fun as speed, but let's say it does something* [laughs]." (R07)

When stimulant medicines were used recreationally in nightlife settings this was often related to a lack of availability of other illicit drugs, as noted by the following respondent:

> "*I never snorted Ritalin in a group. We didn't sit there, with five guys saying, 'Let's take Ritalin.' Actually, it was always the case that there was nothing else, to put it bluntly. It was a back-up plan so that you at least did something."* (R14)

When illicit drugs were available, stimulant medicines were unlikely to be used.

In addition to the psychoactive effects, there were other reasons why nonmedical users preferred taking prescription drugs recreationally instead of illicit drugs. One of these was safety considerations (see also Chapter 8, Section 8.2: Risk perceptions and Chapter 9: Risk management strategies). As mentioned above, some respondents reported a lower threshold to use prescription drugs than illicit drugs, because they considered them less physically and mentally harmful, as well as more accessible and socially acceptable. One respondent commented:

> "*Actually, it's a bit of a shortcut for... I also occasionally use regular* [illicit] *drugs recreationally, from the nonmedical world. I think if you are in a setting where this is really not done, for example a youth club, and if you know there are other people who do it as well* [use Ritalin]*, then it feels just about tolerable to do it, because it feels less illegal."* (R19)

Price considerations were also mentioned by some of our respondents:

> **I:** *"Why did you choose Ritalin and not, for example, speed, cocaine or…?"* **R:** "*Because it was easy to get...* [...] *I know people who use coke but, depending on how addicted you are, I guess, you could take one gram in a night and that's 50 euros. While I paid 20, 15 euros for a box with 20 or 24 pills or so. So I could party with it for a whole week, so to speak."* (R35)

3.4. Intertwined motives

In the previous sections we grouped the motives for prescription drug use discussed by our interviewees into three categories: performance enhancement, recreational use and self-medication. However, the boundaries of these categories are not always clear.

In certain contexts, study performance enhancement was closely linked to self-medication for psychological symptoms. Firstly, as mentioned before, prescription sedatives were taken before an exam to cope with stress and to be calm during the exam. Secondly, the use of stimulant medicines improved some students' mood and therefore helped them to study.

We also found a close link between recreational prescription drug use and performance enhancement. Some respondents took stimulant medicines to stay awake and concentrated during a lecture in the morning if they had been out the night before. In addition, a few participants who took stimulant prescription drugs to help them study noted that the stimulant effects were also pleasurable.

Finally, it appears that the line between self-medication and recreational prescription drug use is not always clear:

> *"Even when using recreationally, I feel that it is also sometimes a bit like symptom relief, especially for mental problems. It might be difficult to separate them."* (R39)

4. Use patterns

Currently, very little is known about the use patterns of young adults who use prescription drugs nonmedically in Belgium (see Literature review, Chapter 5: The European and national context). In this chapter we aim to draw a comprehensive picture of nonmedical use patterns of prescription drugs by examining frequency of use, dose patterns, administration methods, concurrent substance use and setting of use.

4.1. Type of nonmedical use

First, in order to categorise the 'nonmedical use' of survey participants, they were asked to select from a list of statements (see Table 10) all those that applied to their use of prescription drugs during the past 12 months. Multiple answers were possible. Using these medicines without a prescription was the most reported option for all three types of medicine: 52.5% for analgesics, 45.1% for sedatives and 45.2% for stimulants (see Table 10 below).

Table 10: Type of nonmedical use (past 12 months)

	Stimulant medicines (N=299)		Analgesic medicines (N=305)		Tranquillising/ sedating medicines (N=315)	
	N	% of cases	N	% of cases	N	% of cases
I used it without a prescription of my own	135	45.2	160	52.5	142	45.1
I used it in greater amounts, more often, or longer than it was prescribed	40	13.4	80	26.2	84	26.7
I used it for purposes other than as it was prescribed	72	24.1	80	26.2	69	21.9
I used an administration method other than as it was prescribed	29	9.7	19	6.2	29	9.2

4.2. Frequency of use

In our survey, frequency of NMUPD was measured for lifetime and past 12 months use.

4.2.1 Lifetime nonmedical use

Participants in the survey were asked how many times they had used prescription drugs nonmedically. For each type of medicine, less than a quarter reported 40 occasions or more. For all three types of prescription drugs, almost half of the subsamples indicated they had used the medicines nonmedically on fewer than 10 occasions: 46.5% for stimulants, 45.9% for analgesics and 53.3% for sedatives (see Table 11 below).

Table 11: Lifetime nonmedical use

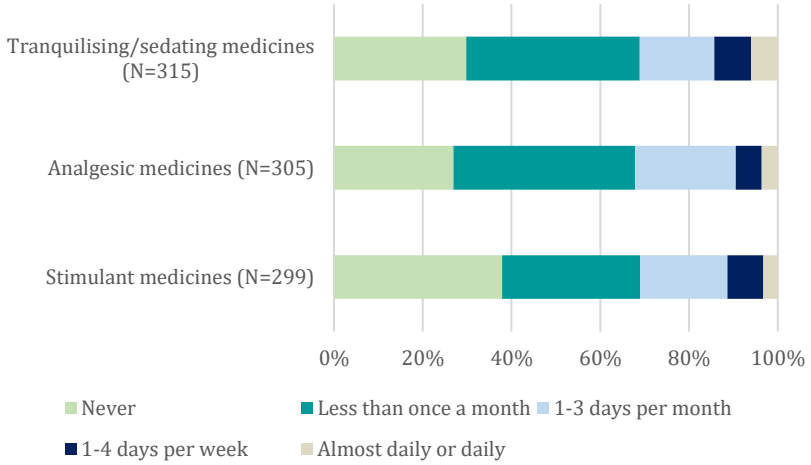
	Stimulant medicines		Analgesic medicines		Tranquillising/ sedating medicines	
	N	%	N	%	N	%
1–2 occasions	61	20.4	37	12.1	47	14.9
3–9 occasions	78	26.1	103	33.8	121	38.4
10–19 occasions	50	16.7	56	18.4	57	18.1
20–39 occasions	42	14.0	42	13.8	39	12.4
40 or more occasions	68	22.7	67	22.0	51	16.2

We compared those who had used 10 times or more to those who had used less in logistical regressions for each type of prescription medicine. Interestingly, the most consistent predictor of lifetime frequency for each prescription medicine was initiation age, with higher initiation ages consistently decreasing the odds of having used stimulants (OR=.89, CI: .82-.97), analgesics (OR=.84, CI: .77-.91) and sedatives (OR=.87, CI: .79-.95) 10 times or more. For stimulants, we observe lower odds of French-speaking respondents (OR=.30, CI: .15-.61) having used them 10 times or more, and higher odds for older respondents (OR=1.15, CI: 1.01-1.30), those having obtained simulants via the internet (OR= 2.62, CI: 1.02-6.70) and having used at school or at work (OR=2.45, CI: 1.36-4.43), alone at home (OR= 2.24, CI: 1.13-4.42), at social gatherings (OR=2.08, CI: 1.02-4.23). For analgesics, having used the medicines alone at home (OR=3.66, CI: 1.62-8.26) or at school or work (OR=2.24, CI: 1.23-4.09) increased the odds of having used them 10 or more times. Also, having ever used analgesics medically (OR: 2.12, CI: 1.03-4.36), and having obtained medicines through family (OR: 2.29, CI: 1.24-4.23) increased the odds of having used analgesics 10 times or more. For sedatives, having used them medically (OR: 1.90, CI: 1.07-3.38), at home alone (OR=4.63, CI: 2.00-10.69) and at a social gathering (OR= 3.15, CI: 1.51-6.60) all increased the odds of having used sedatives 10 times or more.

4.2.2 Nonmedical use in the past 12 months

Survey participants who indicated having ever used a particular prescription drug nonmedically were asked how often they had done so in the past 12 months. The results showed that most respondents were sporadic or occasional users. Using less than once a month was the answer category selected most in the case of prescription analgesics (41.0%) and sedatives (39.0%). This was the second most selected option for stimulants (31.1%). A significant proportion of the respondents who reported ever having used a particular medicine nonmedically had not used this medicine in the past 12 months, in particular prescription stimulants (37.8%) (29.8% sedatives and 26.9% analgesics). For all three types of medicines, a small minority of the respondents reported daily or almost daily use in the past 12 months (6.0% sedatives, 3.6% analgesics and 3.3% stimulants) (see Figure 4 below).

Figure 4: Nonmedical use in the past 12 months



Our interviewees reported low use frequencies and irregular use patterns, as most of them used sporadically or only in exceptional circumstances, rather than daily. Moreover, a significant number had used prescription drugs nonmedically only a few times in their lives. In those cases where interviewees reported daily nonmedical use, this tended to be temporary, for a short period of time only (e.g. during exam periods). The interview data suggest that the frequency of NMUPD is related to accessibility and availability, and therefore can be described as opportunistic use (e.g. the length or frequency of stimulant use for study purposes depended on how many pills participants' friends could give them). Several participants also told us that when they had used all their medicines they did not actively seek out other options. For instance, in some periods respondents used daily until they ran out of their medicines, and in other periods they were not using at all.

This opportunistic nonmedical use of prescription drugs was common in **recreational** contexts in particular. Recreational prescription drug use was characterised by infrequent or sporadic use and by experimentation. Nonmedical users who reported having used prescription drugs recreationally only a few times indicated that one of the main reasons was that the 'recreational effects' were 'unspectacular'. As one respondent noted about the concoction 'Lean'[24]: "*It was not worth it*" (R34), and another respond stated:

> "*It was just funny to try it once, but not to say 'Let's do it again!'* […] *It is also quite expensive, so it is almost not worth the money. Me and my friends said when you smoke two or three joints in a row you almost have the same feeling and it's one tenth of the price. It is also much safer."* (R35)

When prescription stimulants were used for **study enhancement**, they were used regularly during exam periods and rarely at other times of the academic year (e.g. they were used daily for three months a year). A few of these students who used stimulant medicines regularly during exam periods told us they used more frequent and higher doses towards the end of the exam period to stay awake and productive. They indicated that they were more tired at the end of the exams and needed higher doses because they had built up tolerance. At the same time, some of our interviewees only used stimulants for study purposes sporadically or a few times in their lifetime. They did not want the

[24] Lean is a mixture of cough syrup (promethazine) containing codeine and soda.

medicines to influence their study behaviour, or they did not want to become dependent on the medicines to study. In addition, a few respondents noted that the medicines were ineffective.

The frequency of use of sedatives and analgesics for **self-medication** purposes varied widely. While some used sedatives regularly (e.g. twice a week) in certain periods, others reported sporadic or low-frequency use of sedatives. The latter indicated that they used because of 'exceptional situations' and for 'emergencies' (e.g. using one sedative from someone else's prescription in order to induce sleep during the exam periods, on an aeroplane or after surgery).

The interviewees who continued using prescription drugs for enhancement and self-medication purposes did so because they considered them to be effective, as noted by the following respondent:

> *"The thing is, it always had such a useful effect that I thought, why wouldn't I do it? Instead of 10 out of 20 it gives me a 14. So it's worth it. But of course that is a wrong way of reasoning."* (R32)

4.3. Dose

Most interviewees were able to discuss the specific doses they consumed. When prescription drugs were used in recreational contexts, it was more difficult for participants to know how much they exactly used, because they were intoxicated or the pills were crushed, divided among friends and snorted.

Participants determined their dose for NMUPD based on the information they read on the package insert, online sources, their friends' and family members' advice and their own experiences (see more on this in Chapter 10: Information). Interviewees who used prescription drugs for enhancement purposes or for self-medication also experimented with dosage to find what they considered as an optimal dose. One of our respondents commented:

> "*I wasn't really aware of the doses and I was experimenting. So I used more back then. Now, I know very well that with that many milligrams I can handle this much, and I know how it affects me.*" (R43)

Some respondents who used prescription stimulants for study purposes told us they took an additional pill when they noticed that their concentration decreased.

The dose consumed by our interviewees depended on the purpose of use as well. The interview data revealed that participants often used a 'low' dose of prescription drugs for functional use, i.e. enhancement purposes (e.g. to study or for school assignments) or self-medication, and higher doses when using the medicines for recreational purposes (e.g. to party). For instance, one respondent noted that when he used sedatives to sleep it was a "*normal*" dose, but when using them recreationally he consumed higher doses (e.g. 0.5 milligram alprazolam to sleep and at least 1.5 milligram for recreational use).

Multiple respondents reported consuming the recommended dose or lower of stimulant medicines for **study purposes**. These doses were described as being sufficient and limited the disadvantages associated with use (i.e. physical side effects). Availability was also a factor (e.g. some respondents reported taking a low dose or having a low frequency of use because they had a limited amount of prescription stimulants that had to last them throughout the entire exam period). However, some respondents, mainly those who obtained prescription stimulants legitimately from their physicians (e.g. for ADHD), used higher doses than prescribed, in an attempt to improve their concentration or to

be able to study longer. For some, the dose of stimulant medicines used (up to 120 milligram per day) depended on the number of hours respondents needed to study, while other interviewees had a fixed dose (e.g. one pill per day).

When diverted prescription drugs were taken for **self-medication**, many interviewees indicated that they did not exceed recommended doses. Some of the respondents whose prescription sedatives had been legitimately prescribed by their physicians for mental health problems self-medicated with higher doses of the medicines in order to be able to cope with these psychological issues. Interviewees explained that because of using regularly and developing tolerance they were not able to achieve the desired effects with standard doses. They decided, on their own and without their physician's approval, to exceed the recommended dose, as discussed by this respondent:

> *"I have benzos in droplets. When I have a panic attack or trouble sleeping, it relaxes me completely. The rule is normally three times five drops a day. But sometimes I use more."* (R01)

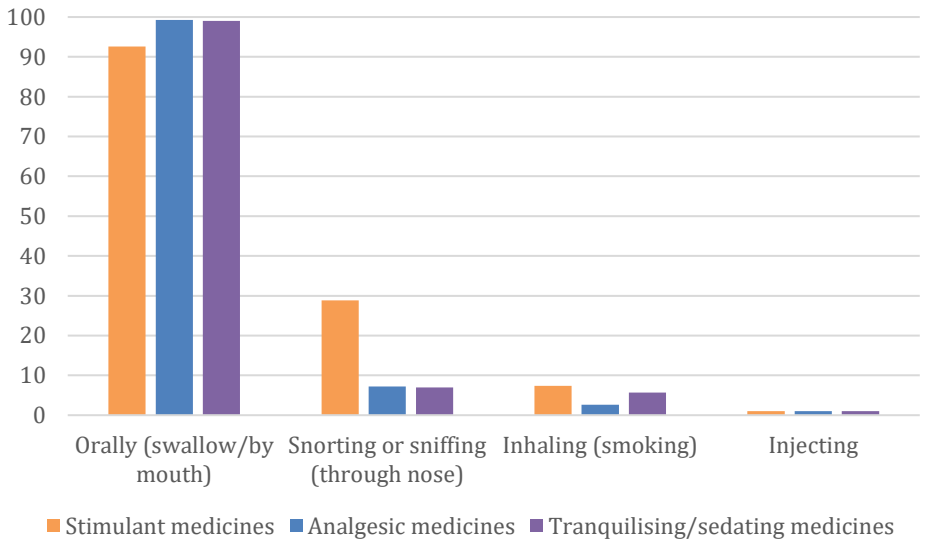
In general, the dose of prescription drugs taken for **recreational use** tended to be higher than the dose of the same medicines when used for self-medication or enhancement. This was a result of users seeking to intensify the psychoactive effects associated with those medicines. In recreational contexts, when being intoxicated – from alcohol, prescription drugs, illicit drugs or a combination of these – several respondents were less mindful about dosages and more likely to increase the dose. They typically started with a low dose (e.g. 1.5 milligrams of alprazolam), but ended with higher dosages (e.g. 6 milligrams of alprazolam). This was explained as follows:

> *"At the moment itself it always seems a good idea, then it's like, I don't feel anything. Or you forget that you have already taken some. Then the day after you notice how much has gone."* (R13)

4.4. Administration methods

Survey participants were asked which administration routes they had used when taking prescription drugs nonmedically. These included oral administration, intranasal administration, inhalation and injection. It was possible to select multiple answers.

Figure 5: Administration methods (%)



The vast majority of the sample had taken prescription drugs orally in the context of nonmedical use (99.7%, N=572). This is 99% of the participants who use prescription analgesics (N=303) and sedating medicines (N=312), and 93% of the participants who use stimulants (N=287). Our interviewees also discussed oral administration, for instance noting:

> *"I always swallowed it. I tried to take it as prescribed as much as possible."* (R35)

Interviewees had also tried alternative administration routes, mainly in order to alter the prescription drugs' psychoactive effects.

The second most-reported administration method in our survey sample was intranasal administration (snorting), but this was only reported by less than a quarter of the total sample (18.1%, N=104). However, here we identified a more marked variation between the types of prescription drugs. Almost 30% of the participants who used prescription stimulants nonmedically had snorted these medicines (N=86), while only 7% of both prescription analgesics (N=22) and sedatives (N=22) users had done so.

The interview data suggest that intranasal administration of prescription drugs, mainly stimulant medicines such as Ritalin, was most common in **recreational** contexts. The medicines were mainly snorted in order to intensify their psychoactive effects. Capsules that contained modified release stimulants were opened or crushed in order to take the substance at one time, by snorting the powder. One respondent with an ADHD diagnosis who snorted Ritalin for recreational purposes was convinced that he would not experience these "*recreational*" effects when taking Ritalin the conventional oral way.

Prescription sedatives and analgesics (e.g. alprazolam, morphine) were rarely snorted. In cases when those medicines were snorted, this was done most often out of curiosity and to **experiment**. Based on our interview data, one reason why participants did not continue to snort prescription sedatives was because then the intranasal administration did not have any added value compared to oral ingestion and because the experience was not enjoyable.

A few respondents reported having snorted stimulant medicines for **study purposes**. These participants reported that when they snorted the medicines their concentration was higher and the effects occurred faster and lasted for a shorter period of time compared to oral ingestion. One respondent explained that he administered stimulant medicines intranasally because he needed a smaller dose and experienced fewer side effects:

> *"I actually started using it orally and then you have to use a lot more. Now, I use it intranasally and I notice I have enough with much less. The impact on my stomach is also less bad. When using orally you really cannot eat anything for a whole day, which also greatly affects your well-being. If you use intranasally, you can still eat properly."* (R42)

Some participants had snorted Ritalin only a handful of times for study purposes because they thought it brought no added value compared to the oral route.

Finally, prescription drugs were rarely administered intranasally for **self-medication** purposes. Only one respondent indicated having snorted painkillers once, because they needed instant pain relief.

Interviewees also discussed negative aspects associated with snorting prescription drugs, and some characterised it as painful, tasting bad, repulsive and blocking nasal airways. For instance, one explained:

> "*We always do it at parties from our youth club. A friend of mine brought Ritalin, and we said, 'Come on, let's sniff it.' It was just as a joke. You take a little bit, but I must say it doesn't go in smoothly. We used capsules that had micro pellets. So it could not be real powder, but instead it was pellets. I remember it was in my nose and we were saying, 'Eww, no...'. So it wasn't a good experience actually."* (R14)

Interviewees who never snorted prescription drugs believed that this method of use was a bridge too far and described it as 'dirty'.

The other administration methods measured in the survey, including inhalation and injection, were reported by a very small minority of the total sample (7%, N=40 and 1.2%, N=7 respectively) (see Figure 5 above). Similarly, none of our interviewees indicated having administered prescription drugs through inhalation or intravenous injection.

The interview results provide some additional insights regarding alternative administration routes of prescription drugs that were not measured in the survey. These alternative methods were all used in recreational contexts, more often for experimentation. For instance, five interviewees had mixed prescription drugs in their drinks (e.g. alprazolam, codeine). One respondent told us:

> "*Those were extended release pills, so it works a bit slower. But if you want to get high, that's obviously not what you want* [laughs]*. So, I looked up all kind of tricks on the internet, like stamping on it or putting it first in water or cola, because it is covered with a layer that means it absorbs slower."* (R35)

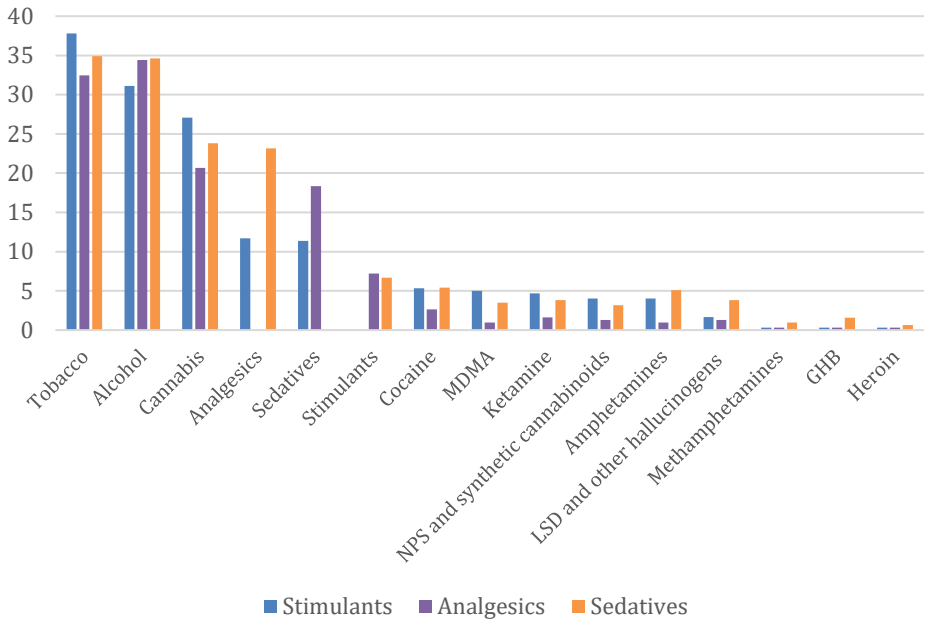
One popular example of a mixture of prescription drugs and liquid substances is the concoction 'Lean', which will be discussed in more detail in the next section on concurrent substance use. Finally, one respondent mentioned that he had administered a pill rectally once when he was intoxicated, out of curiosity.

4.5. Concurrent substance use

In our survey, we assessed concurrent substance use, i.e. combining prescription drugs with other psychoactive substances. We asked respondents: *'How many occasions when you used* [prescription drug] *during the last year did you use it along with the following substances – that is, so that their effects overlapped?'* [followed by a list of licit and illicit psychoactive drugs].[25] This question was repeated for the three types of prescription drugs. Response categories included 'never', 'sometimes', 'often' and 'always'. For the purpose of this analysis the answer categories were grouped. Participants who chose the answer option 'sometimes', 'often' or 'always', were counted as having reported concurrent substance use for the past year.

[25] The combination of the same type of prescription drugs was not assessed.

Figure 6: Concurrent substance use in past 12 months (% of subgroups)



The survey results show that tobacco, alcohol and cannabis were used most often together with prescription drugs. These are also the substances that were in general mostly used by the respondents. Our participants only rarely combined illicit drugs other than cannabis with prescription drugs. In terms of the combination of different types of prescription drugs, it appears that prescription sedatives and analgesics were combined most often (see Figure 6 above).

Many interviewees also discussed using prescription drugs concurrently together with other psychoactive substances, such as tobacco, alcohol and cannabis. Nonetheless, it is worth noting that not all interviewees who used psychoactive substances concurrently did this deliberately for the interaction of the effects. Often it seemed to be a coincidence that multiple substances were taken in the same timeframe, or the substances were taken for the same purposes. For instance, students reported concurrent use of prescription stimulants and caffeine, including coffee and energy drinks. Both psychoactive substances were used to increase energy and to wake up or to stay awake. One student said that he drank coffee in the morning to wake up and that the Ritalin would 'kick in' half an hour later. Two respondents who smoked cigarettes (tobacco) noted that they smoked more frequently when using prescription stimulants for study purposes. Some respondents smoked cannabis in the evening after studying with Ritalin. Other examples of using substances concurrently include taking sedatives at night after consuming alcohol, or drinking alcohol in the evening having taken sedatives, analgesics or stimulants during the day.

In other situations, psychoactive substances were combined purposely to alter the substances' effects, i.e. in order to increase or decrease their psychoactive effects. In addition, some respondents indicated having experimented with combining prescription drugs with other psychoactive substances out of curiosity. Prescription drugs were most often purposely combined with alcohol and mainly for recreational purposes. When prescription drugs were mixed with other substances in the context of enhancement or self-medication, it was mainly to counteract psychoactive effects.

In these cases, firstly, prescription drugs were combined with other psychoactive substances because of the synergetic effects or in order to intensify the overall psychoactive experience. For instance, one respondent explained that he enjoyed using alprazolam while smoking cannabis, while another interviewee liked the combination of cannabis and codeine. A few respondents noted that they had experience with the consumption of the concoction called 'Lean'. This is a mixture of cough syrup (promethazine) containing codeine and soda (e.g. Sprite). Most of the time the drink was consumed concurrently with alcohol in recreational contexts at home or at a friend's home. When intoxicated (e.g. with alcohol), some participants were more likely to use other psychoactive substances, including prescription drugs. For instance, alcohol was combined with depressants, including analgesics and sedatives (e.g. Xanax), in order to intensify the effects of both. One respondent pointed out that: "*When you drink alcohol after having taken Xanax, you can go completely crazy"* (R11).

Most respondents who took prescription medicines for recreational purposes (e.g. to party) also used other psychoactive substances at the same time, mainly alcohol and cannabis. *"If you snort and you have been drinking… well, sometimes that's fun, right?"* (R15). Respondents who used solely prescription drugs in nightlife settings were extremely rare.

Combining prescription drugs with other psychoactive substances in order to intensify psychoactive effects outside of recreational contexts was less common. For instance, one respondent reported the concurrent use of prescription drugs with other substances in order to increase the psychoactive effects in the context of performance enhancement. He had snorted cocaine together with Ritalin to study for his exams in the past. Synergetic effects in the context of self-medication were reported by respondents who tried to calm themselves by combining prescription depressants with, for instance, alcohol.

Secondly, multiple respondents took psychoactive medicines after having used other psychoactive substances in order to counteract the psychoactive effects and to reduce side effects. Some participants combined alcohol and stimulant medicines for this reason on purpose, mainly in recreational contexts. For instance, three respondents noted that they had the feeling that they got 'less drunk' when taking stimulant medicines and could keep drinking alcohol 'without losing control'. One of them stated that when he became too drunk he snorted Ritalin to sober up, to become clear-headed or more awake. Another respondent consumed alcohol to temper the adverse effects of stimulant medicines (e.g. feeling jittery) when going out. In a similar vein, two respondents had used prescription sedatives (benzodiazepines) in order to stop (bad) trips caused by the use of the illicit drug LSD and to sober up. One of them found out that this was more effective than smoking cannabis after using LSD. He also used prescription sedatives to counteract the physical side effects of the use of illicit stimulant drugs (e.g. vasoconstriction).

A common type of concurrent use was the consumption of sedative hypnotics to induce sleep after having taken stimulant psychoactive substances, as noted by this interviewee:

> *"I used to go to the Festival Dour. Then you use substances that keep you awake. I know that it is quite dangerous, but then I dared to take half a sleeping pill to get to sleep afterwards, at 6 o'clock in the morning."* (R05)

These participants used different types of sedating substances (e.g. prescription or new benzodiazepines, cannabis) after having consumed illicit (e.g. cocaine, MDMA or speed), licit (e.g.

energy drinks) or prescription (e.g. Ritalin) stimulants, mainly for party or study purposes. Using sedatives after having used stimulants for academic reasons also illustrates that self-medication motives were closely linked to performance enhancement (a point we raise in Chapter 3, Section 3.4: Intertwined motives).

4.6. Setting of use

Survey participants were asked about the settings in which they had used prescription drugs nonmedically. Multiple responses were possible. Prescription drugs were mainly used alone at home (80.7%). Almost half had used at a friend's or family member's home (45.6%). One in three had used prescription drugs nonmedically at school or work (33.3%) and a quarter at a social gathering (26.0%) (see Table 12 below).

Table 12: Setting of use

	N	% of cases
Alone at home	463	80.7
At a friend's or family member's home	262	45.6
At school or work	191	33.3
At a social gathering (e.g. party, festival, café, club)	149	26.0

The interviews with young adults using prescription drugs nonmedically offered additional insights on settings of use. The setting comprises the place of use and people present during use.

Overall, it appears that when prescription medicines were used for **performance enhancement or self-medication**, this often happened in a solitary context at home, with the knowledge of a few friends/family members, rather than them being physically present at the moment of taking the medicines. Even when obtained through family or friends, medicines were more often taken when these friends had left and respondents started to study, or settle in to relax or go to sleep. One respondent told us:

> *"I prefer to be as safe as possible at home or with someone I know. And… it's not like I'm going to take it and walk around town."* (R41)

Prescription drugs used **recreationally** were taken both alone and together with roommates, friends or acquaintances. Nonetheless, more often the recreational use of prescription drugs had a social aspect. For instance, one interviewee who was diagnosed with ADHD noted that he never initiated using his prescription stimulants recreationally. He joined in when others were already using his medicines, as he recounted:

> *"I'm not going to say, 'Let's go and snort Ritalin', but if someone else suggests it, why not? It's funny. Someone has to have it to be able to do it, and I am not going to be the buzzkiller."* (R10)

The main settings of recreational prescription drug use were participants' and their friends' homes, in dorms and at youth clubs. According to our respondents, the use of prescription drugs in nightlife was uncommon. Prescription drugs were used at home parties but less often taken purposely to large parties or festivals. People were more likely to consume illicit drugs in these settings. Prescription

sedatives and analgesics were used more often for experimentation purposes at home with friends or alone.

4.7. Problematic use

Problematic prescription drug use in the past 12 months was measured using the Drug Abuse Screening Test (DAST-10). This self-reported test includes a scale with 10 questions with 'yes' and 'no' response categories.[26] The minimum score on this test is 0 and the maximum score is 10. Higher scores correspond with higher risks of problematic use. The scores and their meaning are listed in Table 13, together with the results from our sample.

The results from this self-reported test showed that the majority of our sample had no or low levels of problems regarding their current nonmedical prescription drug use (67.7%, N=389). Nevertheless, around one in three (32.2%, N=185) had moderate to severe problems related to their nonmedical drug use (see Table 13 below).

Table 13: Prescription drug abuse (DAST-10)

Score	Degree of problems related to prescription drug abuse	N	%
0	No problems reported	77	13.4
1–2	Low level	312	54.3
3–5	Moderate level	142	24.7
6–8	Substantial level	37	6.4
9–10	Severe level	6	1.1

We used logistic regression to estimate any differences between respondents reporting no to low-level problems and those reporting moderate to severe problems (see Appendix VII). In our sample, we found higher odds of reporting moderate to severe problems among respondents who had ever used sedatives nonmedically (OR=2.60, CI: 1.65- 4.12), who have used for recreational purposes (OR= 1.74, CI: 1.03- 2.93), and who had used more frequently, whether more than 10 times in their lifetime (OR=3.48, CI: 2.07- 5.83), or at least weekly (OR= 2.92, CI: 1.67- 5.09). We also found higher odds for respondents who have obtained prescription drugs from the internet (OR= 2.07, CI: 1.02- 4.19). We observed lower odds of problematic substance abuse among respondents not reporting any difficulties making ends meet (OR=.59, CI: .38- .95) and older respondents (OR=.92, CI: .84- .996).

Among our interviewees, self-reported problematic substance use was more common with illicit drugs and alcohol than with prescription drugs (see Chapter 4, Section 4.5: Concurrent substance use). In accordance with the survey findings, a minority reported problems related to prescription drug use or identified their use as problematic themselves. In the same vein, very few interviewees noted having

[26] Here are some questions about your *nonmedical* prescription drug use in the last 12 months. Please answer with yes or no. **1.** Have you used prescription drugs other than those required for medical reasons? **2.** Do you use more than one prescription drug at a time? **3.** Are you always able to stop using prescription drugs when you want to? **4.** Have you had "blackouts" or "flashbacks" as a result of prescription drug use? **5.** Do you ever feel bad or guilty about your prescription drug use? **6.** Does your spouse (or parents) ever complain about your involvement with prescription drugs? **7.** Have you neglected your family because of your use of prescription drugs? **8.** Have you engaged in illegal activities in order to obtain prescription drugs? **9.** Have you ever experienced withdrawal symptoms (felt sick) when you stopped taking prescription drugs? **10.** Have you had medical problems as a result of your prescription drug use (e.g., memory loss, hepatitis, convulsions, bleeding, etc.)?

had financial, social or professional problems due to their prescription drugs use. In addition, only a few indicated that they had consulted a psychologist or therapist as a result of problematic NMUPD.

When prescription drug use problems were reported, they were more often related to dependence and tolerance, in particular in the case of prescription sedatives. These interviewees explained how their use frequencies had (greatly) increased and how they experienced withdrawal symptoms when discontinuing. For instance, three interviewees told us that they had been dependent on Xanax, because it gave them calming and relaxing sensations. One of them said that she was also addicted to the analgesic codeine for the same reason. Her abuse was part of a larger problem of substance abuse including alcohol and illicit drugs. Another interviewee was dependent on different types of prescription benzodiazepines and new benzodiazepines. This respondent reported having had severe drug problems, including the use of NPS and LSD. He labelled himself a 'junkie' during this period. He believed new benzodiazepines were extremely addictive:

> *"In a few weeks I had become addicted to Xanax. It was terrible, the phasing out.* [Groans] [...]. *I was sweating, I felt really nauseous, I had aggression attacks. Gosh, it was awful. I'm really not proud of what happened then. But, on the other hand, it was also a bit because of the doctors who have really been very irresponsible there, I think."* (R39)

Self-reported substance use problems associated with prescription stimulants were less common. For instance, one interviewee stated that he had been dependent on stimulant medicines, because he "*abused*" these medicines to feel good and needed them to study. He said he experienced more stimulant effects from the medicines than just better concentration. He was unable to stop using them because he felt worse when not taking them. He said he misused them by using higher doses than prescribed and snorting them. This respondent also reported substance abuse problems with alcohol and illicit drugs. Finally, some students indicated that they were dependent on prescription stimulants in order to be able to study.

A few respondents reported having overdosed with prescription drugs, mainly with sedatives. This included intentional misuse (e.g. a suicide attempt) as well as accidental over-use.

Most respondents who identified their (former) prescription drug use as problematic also reported problematic use of other psychoactive substances (e.g. alcohol, cocaine, NPS). Most of the time, problematic prescription drug use was part of a larger problem of drug misuse. For instance, one respondent recounted having had severe illicit drug problems, which led to mental health problems. For these problems he was prescribed several medicines, which he had also misused.

Some participants were concerned about their prescription drug use. In particular, the risk of dependence was a genuine concern for several (see Chapter 8, Section 8.2: Risk perceptions), including some who were worried about not being able to study without prescription stimulants. Other interviewees were not concerned about their use, nor did they identify it as problematic. They explained they only used in specific settings and for temporary periods. More often, they also argued their use frequency was low and they were able to stop using at any time. Later in this report we will illustrate how participants also used risk management techniques to prevent problematic use patterns (see Chapter 9 Risk management strategies).

5. Effects

This chapter discusses self-reported desired effects and side effects caused by NMUPD. The interview data illustrate that the experienced intensity of the effects differed between the type of prescription drug used and varied widely between respondents. The effects also depended on administration methods, use frequencies and dosages. While some respondents spoke of a significant impact, others described NMUPD as a mild or gentle experience. A minority of the respondents were not sure how to interpret the effects they experienced (e.g. students who were not sure whether their concentration had improved through their use of prescription stimulants).

5.1. Desired effects

Some interviewees reported they achieved the desired effects that they were looking for, but others reported not having attained any effects at all, or being unsure whether the effect they felt could be attributed to taking the prescription medicine in question. This was the case for all types of prescription medicines studied here.

5.1.1 Stimulants

Self-reported desired effects of stimulant medicines included feeling active, energised, having increased concentration, greater focus and alertness, feeling less distracted and more awake. Several interviewees indicated that their mood improved and that they experienced (slight) euphoria because of the use of stimulant medicines, whereas others denied this. Finally, a few respondents reported feelings of self-confidence and assurance.

The use of prescription stimulants for study purposes was considered effective by most participants. In particular, respondents noted that studying with these medicines was easier than without. In this context, the most reported effect caused by stimulant medicines was improved concentration or focus, as exemplified in the following citation:

> *"I'm more focused. I'm able to study longer and am much less distracted. It really is a power shot of energy."* (R37)

Participants' opinions diverged as to whether the use of stimulant medicines improved their motivation to study. Some respondents were convinced that the medicines enhanced their motivation or kept them motivated, while others thought that they did not influence their motivation.

Some students were unsure about the impact of stimulant medicines on their study performance and their grades; they thought they would have passed their exams or papers without using the medicines. They used them to '*play it safe'*. A minority of respondents did not experience improved concentration by the use of stimulant medicines, such as the following interviewee:

> *"Studying wasn't going well and you're in your first year and then she said, 'Oh yes, if you want, hey…' um, but I didn't experience anything from it so, yeah, I don't get that hype…."* (R05)

Yet others reported an effect, but not always the expected effect. Some were not sure whether they could attribute these effects to the prescription stimulants, or whether it could have been a placebo effect. One of the respondents explained it as follows:

> *"I do remember my first time a little bit because… I took* [laughs] *I took that Ritalin and I thought I'm going to… that's magical, I'm going to take it and then suddenly I'm going to study everything, I'm going to be able to do anything. But then I went to sit behind the computer and yeah we game a lot, right, so I just started gaming a little, a bit wait-and-see. And then I just sat there gaming, very concentrated, for three hours straight, without noticing that it was already working. So afterwards I had something like, yeah, indeed, it doesn't really give you an appetite for studying, you have to have that yourself… I really thought it would give me a little more motivation, but that wasn't what it did, it just gives you a little more focus, let's say."* (R12)

In a recreational context the effects of prescription stimulants were described many times as mildly psychoactive. Participants noted that they felt energised, awake, focused and clear-headed and the medicines enabled them to party longer, to be awake, to dance all night and to sober up. But, at the same time, the effects were seen as unspectacular and as a mild version of those of illicit stimulant drugs such as cocaine and amphetamine, as mentioned earlier. Several interviewees noted that Ritalin was called '*Kidi SOS*' and '*Kidi Coke*' in recreational contexts, because of the perceived similar but less intense psychoactive effects in comparison to cocaine. Less commonly reported sensations were the feeling of being more social and enjoying music more.

5.1.2 Analgesics

Unsurprisingly, since prescription analgesics were mainly used for self-medication, the most reported effect induced by analgesics was pain relief. Nonetheless, in this regard, a few also reported unsuccessful experiences, as this respondent illustrates:

> **I:** *"So you didn't experience analgesic effects of Contramal?"* **R:** *"No."* **I:** *"And later you took Ibuprofen and that helped?"* **R:** *"Yes."* **I:** *"And did you experience any other effects or side effects of Contramal at that time?"* **R:** *"Not that I know of, actually, I think perhaps I was a little tired or something, but not, eum, not consciously. It could also be due to it being evening or…."* (R05)

This respondent also referred to a common 'side effect' of analgesics, i.e. drowsiness, which, for some respondents, is a reason to continue using this type of medication in a nonmedical way after initially having used it for pain relief. When analgesics were used as self-medication for mental health problems, respondents reported mainly experiencing numbing and sedating effects caused by analgesics, such as feeling calm, which brought mental relief.

The mind-altering effects of analgesics also led to their use for recreational purposes. Participants reported feelings of lethargy ('mellow'), relaxation and euphoria ('chill') when using painkillers recreationally. One respondent commented:

> *"It was really a bit of fun. You can no longer push a handle down. If you try to do normal daily activities it will no longer work, and that is quite fun."* (R19)

5.1.3 Sedatives

When prescription sedatives were taken for self-medication, participants reported typical sedating effects such as feeling calm, the reduction of stress and inducing sleep.

> *"I get very tired at first, just very relaxed. Then I lay down and watch a movie or something. Then I really feel like falling asleep. I can still think, but I really feel my body collapsing. I just fall asleep. Or, I don't know, it's not asleep, it's passing out. I also breathe very deeply."* (R41)

Interviewees who consumed prescription sedatives recreationally reported mainly sedating effects and effects similar to those of analgesics. They described it as, for instance, feeling 'groggy', 'mellow', 'turning your brain off', 'finding peace' and 'feeling satisfied'. The interviewees also gave descriptions of being immobile, such as being 'stuck to the couch', 'unable to move' and 'feeling paralysed'. Respondents narrated the experience of using high dosages of sedatives as 'tripping', 'feeling strange' and feeling that 'the walls were moving'. A few respondents noted that they did not enjoy this experience.

5.2. Side effects

5.2.1 Stimulants

Self-reported side effects caused by the use of stimulant medicines included arrhythmia, tachycardia, nervousness, stress, hyperactivity, hyperthermia, tremor, (nervous) sweating, muscle strain, nausea, stomach and bowel problems, dry mouth, dehydration, mydriasis, nose bleedings, anxiety, hyperactivity, insomnia and difficulties in falling asleep. A few respondents mentioned social interaction difficulties. Some interviewees explained that the frequent use of prescription stimulants builds tolerance for the side effects.

One of the most often reported side effects of the regular use of stimulant medicines was the loss of appetite. Frequent use of prescription stimulants was most common among students and, consequently, some students indicated having lost weight during exam periods. The loss of appetite was not always considered to be a negative side effect. In addition, some respondents noted that they did not take care of themselves in general during exam periods because of the use of medical stimulants. Also, several interviewees reported experiencing a 'crash' after their exam period, when stopping the use of stimulant medicines and as a consequence of not getting enough sleep. According to our interviewees, this 'crash' can involve extreme exhaustion, nausea, headaches, fatigue and emotional breakdown.

Whereas most interviewees described prescription stimulants as effective, a few thought that their use had a negative impact on their study performance, since they experienced difficulties memorising study material and some of them felt wired. Some felt that using prescription stimulants for study purposes was having a negative impact on their mood. They noted that the medicines caused stress, mood swings, feelings of depression and depersonalisation. According to several interviewees, they associated their use with personality changes, and thought they became emotionless and 'flattened' ("*a plant*"). Respondents who used stimulant medicines to study for their exams indicated being relieved when the exams were over so that they no longer had to take the medicines.

According to our interviewees, when taking stimulant medicines for academic enhancement it was important to start studying as soon as possible, otherwise they feared that their focus would shift away from studying. For instance, respondents stated that, after having taken prescription stimulants, they cleaned their entire room, were gaming, on social media, shopping online, binge-watching, etc. for several hours instead of studying. This was identified by one respondent as *"being extremely focused*

on the distraction" (R35). Some interviewees also explained that the use of stimulant medicines did not have a positive impact on one's motivation to study.

Multiple respondents acknowledged that using stimulant medicines for study purposes caused (severe) physical side effects. However, in their view these negative side effects did not outweigh the perceived benefits, as narrated by this interviewee:

> *"It really helps me when I'm studying, but it also makes me a bit sick. I can't eat, I can't sleep. I actually hate to take it. But when it comes to studying, I do it with pleasure* [laughs] […] *It helped and I always had good results. That's all I have to say positively about it."* (R32)

5.2.2 Sedatives

Whereas many respondents reported that they were able to fall asleep or relax after taking prescription sedatives, some did not experience any effect, or reported uncomfortable side effects. Nonetheless, our interviewees reported few side effects caused by the nonmedical use of prescription sedatives in general. Those that were reported included dry mouth, feeling blurry and woozy, an inability to concentrate, impaired motivation, impaired memory and nightmares. When taking high amounts of prescription sedatives and/or at high frequencies, participants noted experiencing side effects the next day such as feeling languid and sick, tired, black-outs, and anterograde amnesia (memory loss). Most of the time, the side effects were mentioned when participants were discussing the concurrent use of the medicines with alcohol, as noted in the following:

> "*You are just a drunken sailor when you abuse some sleeping pills. You don't remember a lot about it afterwards. Don't keep your cell phone with you in particular, because then you will send rather incriminating messages to people* [laughs]." (R28)

A few respondents reported hallucinating or tripping after their use of prescription sedatives:

> *"How can I describe it? I saw all colours and things – elephants and stuff, really super-weird. I had never had that, but, yeah, eventually I just fell asleep and I woke up and was ok again, but I found it a bit weird, but ok* [laughs]. […] *I was tripping a bit or, how do they say that? But it also didn't last very long and then I fell asleep, and the next day I woke up at… 9am and I was awake, so it stopped working…."* (R16)

5.2.3 Analgesics

In line with the findings on prescription sedatives' side effects, only a few participants indicated experiencing side effects related to the nonmedical use of analgesics. Only taking these medicines frequently or in high doses appeared to cause significant adverse effects. In these circumstances, the interviewees reported the following adverse effects: drowsiness, slurring speech, withdrawal symptoms and apathetic emotions.

6. Supply

In addition to their perceptions about the overall accessibility of prescription medications, participants also gave us insights into how they obtained prescription drugs for nonmedical use, which sources of supply are most common, the price of medication, and if and why they diverted medications.

6.1. Sources of supply

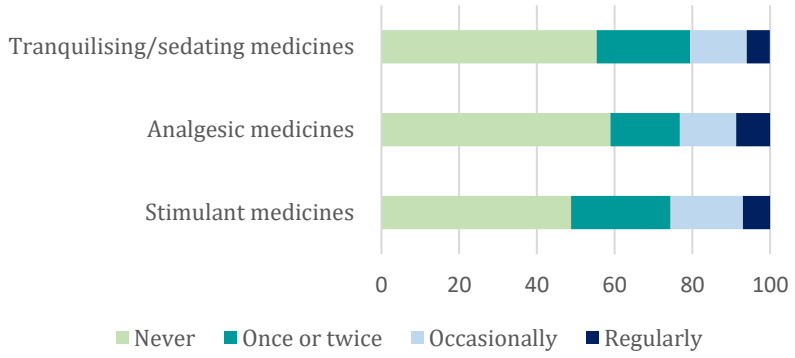
In the survey, respondents were asked about the sources of the prescription drugs they used nonmedically. These results show that prescription drugs were obtained through a variety of legal and illegal channels. In general, respondents mainly received prescription drugs that they used nonmedically from family members (43.4%, N=249) and friends (37.3%, N=214) for free. Almost one in three had a prescription for a medical problem (32.8%, N=188). Less than 10% of the sample had bought prescription drugs via the internet (9.6%, N=55) and from dealers (8.5%, N=49) (see Table 14 below). Slightly over half of the survey sample reported one source of supply from which they have ever obtained prescription drugs for nonmedical use (54.2%), about a quarter had used two sources of supply (26.3%) and one in five reported three sources or more (19.5%).

Table 14: Supply channels

	N	% of cases
I got them from a family member	249	43.4
I got them from a friend	214	37.3
I had a prescription for a medical problem	188	32.8
I secretly took some of a family member's or friend's prescription	99	17.2
I got a prescription from a physician who didn't ask too many questions	87	15.2
I bought them from friends, family or other people I know	56	9.8
I got them on the internet (e.g. internet pharmacy, dark net)	55	9.6
I bought them from a drug dealer	49	8.5
I stole them from some place or someone other than a friend or family member	18	3.1
Someone else went and got a prescription for me	21	3.7
I got them from a pharmacy using a forged or fake prescription	5	0.9

Although the question about supply channels did not differentiate between types of medication, the survey did also ask the respondents whether and which type of medication they had ever been offered in a nonmedical context. Two out of three participants had been offered prescription drugs (66.7%, N=383). Over half of the respondents reported never having been offered prescription analgesics (58.9%, N=338) or sedatives (55.4%, N=318). This was slightly different for prescription stimulants, where about half (51.2%, N=294) indicated having (ever) been offered them outside of a medical context (see Figure 7 below). These numbers may be related to the indicated main sources of supply, such as family members and friends (see Table 14 above).

Figure 7: Prescription drugs offered to respondents (in a nonmedical context) (%)



During the interviews, respondents discussed different supply channels, including legitimate sources (e.g. via a doctor's prescription), dealers or the internet, and social supply channels such as family and friends. While most respondents clearly obtained prescription drugs from one particular source of supply, a number of interviews revealed that some nonmedical users tried to acquire their prescription drugs through a combination of different supply channels. For instance, one of the respondents told us:

> *"I have been using several sources of supply. Some medications have been obtained via a dealer. Sometimes, I've ordered via the dark web. I have also obtained medications from a doctor's prescription. Once, I even obtained Temesta from the medicine cabinet of my ex-partner. These leftovers were there for almost eight months* [laughs]*…."* (R42)

6.1.1 Own prescriptions

Prescription drugs that were used for nonmedical purposes often originated from an initial doctor's prescription. A commonly reported supply channel was the medicine cabinet, using leftovers from their own prescriptions. Here, some respondents reported that they saved unused prescriptions, or used their prescriptions but kept their leftover medications. Some respondents even consciously conserved unused or leftover medications (e.g. painkillers after surgery) to ensure they lasted several months or years. The reasoning behind this is to keep something that might be useful later on, for instance in anticipation of future supply difficulties (e.g. if a friend from whom they obtain medication is unable to supply them) or future transitions in use (e.g. if they ever feel the need to experiment with a higher dose or to consume more frequently to study). While own prescriptions were often reported as a source of supply for nonmedical use of stimulant medication (e.g. for respondents who are diagnosed with AD(H)D), analgesics and sedatives were also obtained through previous or unused prescriptions from doctors. For instance, one of the respondents explained that:

> *"Based on the prescription you get a full package of Diazepam but you only have to take half of the box. There are many more pills in the package. It is easy to save them… and then you have the pills in your possession and use your stock."* (R35)

In addition, some respondents suggested that, based on their presentation of their medical problem, they can lead their own doctor to 'overprescribe' prescription drugs. Some of the examples given point to a trusting relationship between doctor and respondent, and in particular to having a good and longstanding patient–doctor relationship. In their view, in this context it was possible to obtain a prescription. In a similar vein, several respondents reported that a family member, often their mother or father, was able to renew their child's prescription when they visit the doctor. Other respondents discussed obtaining additional prescriptions fraudulently. A few respondents explained that they tried to acquire prescription medications by consulting more than one doctor (so-called 'doctor shopping') or by stealing from the medicine cabinet of a family member. One of them explained:

> *"I could go to the doctor and ask for a new box* […] *But I know my doctor would notice that my use has become problematic. You want to avoid this. As a result, you go to another doctor. They do not know you, your history, they have never seen you."* (R17)

At the same time, a few respondents described situations where they faked symptoms (e.g. stress and anxiety), or exaggerated concentration problems in order to successfully receive prescriptions for medication. As an example, some respondents pointed out that physicians were aware of the stress generated by exams and the academic setting overall, and that they could therefore obtain a prescription of Ritalin.

We also identified a few cases where respondents seemed to use multiple pharmacies simultaneously (so-called 'pharmacy shopping'). For instance, while studying abroad, one respondent succeeded in obtaining plenty of Ritalin with just one prescription. Another respondent indicated that he had been copying his prescriptions for Xanax in order to be able to visit multiple pharmacies:

> *"I say to the doctor, 'I left the medication at home. Can you give me an extra prescription?' Or, I copy the prescription and pick up two boxes at the pharmacy, often at different pharmacies… So far, obtaining this medication has never been a problem…."* (R40)

6.1.2 Social supply

The concept of 'social supply' can be described as transactions that exclusively involve friends, acquaintances and family members and that are not commercially motivated. The medicine cabinet at home, or leftover medications belonging to friends or family, were described as an important supply channel. Respondents indicated that they often obtained prescription drugs from family members (including their parents), friends or acquaintances. Our survey finding that about half of the respondents had ever been offered prescription drugs, especially stimulant medicines, outside of a medical context may also be explained by the importance of the social supply chain, in which sharing or giving away medication is central.

Thus, particular medications that, for whatever reasons, are not taken as indicated can make their way into the hands of others. In several interviews, respondents explained that close family members and friends seemed to be willing to share their leftover medication. Gifting or sharing medication was described as an act of trust or friendship.

6.1.2.1 Family members and the medicine cabinet at home

Several respondents referred to situations where they were offered medication by close family members (e.g. mother, aunt, cousin), particularly when they were facing issues their close family members also struggled with, such as pain, sleeplessness or concentration problems. For instance, some respondents reported having turned to a brother or sister who had been diagnosed with ADHD in order to obtain stimulant medicines for studying. A respondent described a situation where she used sedatives and painkillers obtained from her mother and aunt as follows:

> *"I had a lot of pain. Dafalgan and ibuprofen did not work. My aunt had painkillers with her because of her back problems. She offered me one and I took it. It happens only sporadically when there are no other painkillers* […]. *If my aunt offers me the prescribed painkillers she always asks if I really want a pill. She knows that I am old enough to make my own choices* […] *My mum and aunt take sleeping pills every night. These pills are prescribed by their doctor. They have several boxes in their drawers.* […] *They are very strict about giving them to me. My aunt was very hesitant at first, but once, I couldn't sleep and it was already 2 o'clock. She gave me a half of a sleeping pill."* (R05)

Although many respondents obtained their prescription drugs via family members, they did not always do so with their permission or awareness. We found several examples where respondents mentioned taking prescription medications from close family members such as parents without their knowledge, because of having unfettered access to the family medicine cabinet. For instance, one respondent mentioned that:

> *"It is kind of rude but sometimes my mum forgets where she had put the box with the sedative pills. Actually, it was me who took the box. And so she bought a new box. I had my stock in a cupboard in my room."* (R38)

6.1.2.2 Friends and acquaintances

Many interviewees obtained these medications from friends or acquaintances. Two types of transactions were described in the interviews: most received prescription drugs for free from friends or acquaintances, others bought the medicines or exchanged prescription drugs for something else (e.g. a drink or a joint). Most of the time, these friends or acquaintances gave their friends the leftover medicines from their own valid prescriptions which they needed for medical reasons, but because of having a surplus they were able to supply their friends. Regarding prescription stimulants in particular, many interviewees indicated that their friends who were diagnosed as having AD(H)D had leftover stimulants. When prescription medications were bought from friends or acquaintances, interviewees trusted their friends to give them a fair deal. Thus, small transactions and gifting or sharing prescription medication between friends were considered to be part of friendship and trust relationships, and not a criminal matter. Here, respondents typically did not identify these suppliers as 'dealers'. Such suppliers tended to be described in familiar and relatively informal terms, for example as a 'friend', 'friend-of-a-friend' or someone in the respondent's extended social network. One respondent put it as follows:

> *"Through friends… exchanging. It was a kind of supply chain where everyone was exchanging. It was not about monetary exchange, but we traded for a drink or so."* (R30)

6.1.3 Internet/online sources

The internet was not very often reported as a supply channel for prescription drugs among nonmedical users. Some respondents who reported buying prescription stimulants like Ritalin, and sedatives like Xanax, Temesta or Zolpidem on the dark web said it was a relatively easy way to obtain prescription medication. Some respondents pointed out that the dark web offers anonymity and that they only need to provide a delivery address. Payment can take place via bank transfer or using cryptocurrencies such as bitcoin. One of them explained:

> *"The dark web… you have to buy bitcoins and anonymise yourself. So that's a really long process at first, but once you've mastered it it's pretty easy."* (R43)

Some nonmedical users reported acquiring their medication via other online channels, such as social media (e.g. Instagram) and surface websites. These online sources of supply seemed to be more often used by nonmedical users of stimulants, in particular modafinil. For instance, one respondent told us:

> *"On Instagram, there are some private pages that offer Ritalin… and also cannabis. I contact my dealer on his private Instagram page. You can only have access to this page if you have a friend who knows and suggests the dealer."* (R07)

In general, the use of online supply sources seemed to be more common among respondents who were also involved in the (online) purchase and/or use of illicit drugs.

Respondents who usually bought online did not consider this channel inherently risky or dangerous, even when the package they received was not the original one and did not include a package insert. According to them, the trustworthiness of the online channel was guaranteed by reviews and ratings of the sellers and their products by previous purchasers. In contrast, respondents who did not use these sources of supply considered them too unsafe due to the perceived lack of quality control of the product and the illegality of the purchase. One noted that:

> *"Ordering sedatives online through the dark web is illegal. I don't want to participate in this. I can easily obtain my medication from my doctor – I don't have any reason to purchase my medication illegally."* (R39)

6.1.4 Dealer

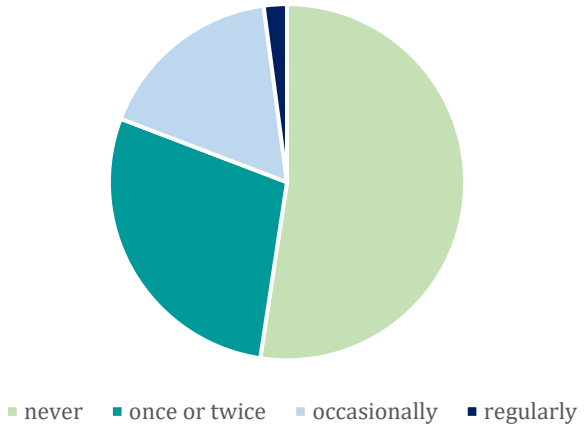
To an even lesser extent, a few nonmedical users of prescription drugs cited a dealer as a source for obtaining medication. According to some respondents, dealers themselves relied on a wide array of supply methods, including obtaining leftovers or overdue medication from pharmaceutical companies, working with employees to steal medication from distribution companies, obtaining medication online, or purchasing medicine that had been prescribed to people who had passed away. Again, as with the purchase of medication online (e.g. via the dark web), those respondents who engaged in obtaining medication from a dealer were more likely to use or to have used illicit drugs. For instance, one respondent told us:

"I bought it from youngsters. Don't know where they bought it. They had a huge stockpile, unlimited. It looked like they had a pharmacy at home. I could really buy everything." (R40)

6.2. Diversion

The diversion of prescription drugs involves channelling one's own prescribed, and thus legally obtained, medication to others, such as friends or relatives, or to the illegal marketplace in general (e.g. through online selling or in-person dealing). In the survey, respondents were questioned about this practice. In particular, we asked participants if they had diverted prescription drugs themselves. Almost half (47.6%, N=273) had given away, loaned or sold prescription drugs to others (see Figure 8 below).

Figure 8: Diverted prescription drugs (%)



In the interviews, we also asked the respondents whether and why they had diverted legitimately prescribed medications for nonmedical use. The nature of prescription medication diversion varied widely. In accordance with the finding that peers and family members were a key source of medications for nonmedical use (see Section 6.1: Sources of supply), most respondents reported transactions in which a friend or acquaintance had typically been given a small amount (e.g. only one or two pills) without the expectation of a monetary payment or other exchange. Frequently, such 'gifts' were expected to be consumed on a single (and often shared) occasion. For example, one respondent told us he/she had shared pain medication with a family member to help alleviate pain while another had shared sedatives with a friend in order to calm him down. In other instances, especially in terms of the nonmedical use of prescription stimulants, respondents described this transaction as a gift to support a friend or acquaintance who was in need (e.g. they need to study efficiently that day), or who was running out of their own supply of stimulants during examination periods. When sharing or gifting is involved, the motive of helping others was most often reported. For instance, one respondent told us:

"I offered some sleeping pills to my roommate who was having a difficult time and could not sleep. I had been prescribed these pills but had some leftovers. I remember the situation. She was describing her problem

> *and this was exactly what I had been prescribed those sleeping pills for. Then I said: 'I'll give you two pills, for two nights. If it works, you have to go to the doctor to get a prescription.' That's it."* (R39)

Gifting or sharing was sometimes also mentioned for the purpose of experimenting with prescription stimulants in recreational settings. Some respondents were also involved in interactions with a form of exchange. In other words, they reported the trading of prescription medication among peers. For instance, respondents seemed to trade their prescription medication for food or illicit drugs such as cannabis or cocaine:

> *"We used some of his cocaine together and then we took some Ritalin… He did not have to pay. He sometimes orders some food for the both of us, and then he uses some of my Ritalin. I do not count… that much, or that much… we just trade."* (R26)

Passing on prescription medication to others also sometimes involves selling. Some respondents were involved in more impersonal interactions with a monetary exchange. These transactions were sometimes more commercial and business-like in terms of the quantity involved (e.g. a full box of pills instead of one or two pills), and were sometimes connected to the use and/or purchase of illicit drugs, too. For instance, several respondents talked about the larger quantities of sedatives (e.g. Xanax) or stimulants (e.g. modafinil) that they buy online or from street-level dealers and the profits they make by selling these to their friends, relatives or even strangers. One explained:

> *"I have been dealing for a long time… and yes, you can buy big boxes full of Xanax* […] *Some dealers only sell medication. Yes, you buy it in bulk and you sell for profit."* (R40)

When we asked those who were involved in trading or selling medication about their motivations, we found that this type of transaction was often driven by the limited economic resources of the respondents.

Several respondents explicitly stressed that they did not divert their prescription medication. For them, offering others leftovers of own prescription medications is an important line that they do not want to cross. This was usually articulated in connection with the belief that someone who would go so far as proactively offering pills to friends or acquaintances might be responsible for ending or ruining friendships as well as for creating a physical dependence on the medication. For the most part, the risk of addiction was discussed in terms of the potential harm caused to friends or relatives who consumed the diverted medication. One respondent told us:

> *"I would never give my medication to friends. If they ask for it, I refuse… I do not want to be the person that supplies them. Personally, I know that using medication can lead to addiction. I don't want them to end up in a vicious circle of addiction."* (R17)

The risk of getting caught for diverting their medication was highlighted by several respondents. Their principal concern was that, as a direct consequence, they could lose their own prescriptions and face legal consequences. One put it as follows:

> *"I would never divert my own medication to friends, no. If I got caught, I would lose my own prescriptions, and I risk a criminal sentence… this is taking part in the distribution of substances."* (R01)

In addition, of particular concern for some respondents was their own supply. These respondents explained that they did not divert simply because their prescriptions were only sufficient for their own use and they were not willing to share their supply, as illustrated in the following:

> *"I have never diverted Ritalin so far. Because I do not have enough to divert."* (R13)

6.3. Prices

The supply source played an important role in the cost of the medication that respondents used nonmedically. Many reported using their own prescribed and reimbursed medication, which means that they paid the price that was fixed by the authorities. The prices from other supply channels, such as relatives, friends or online sources or dealers, varied.

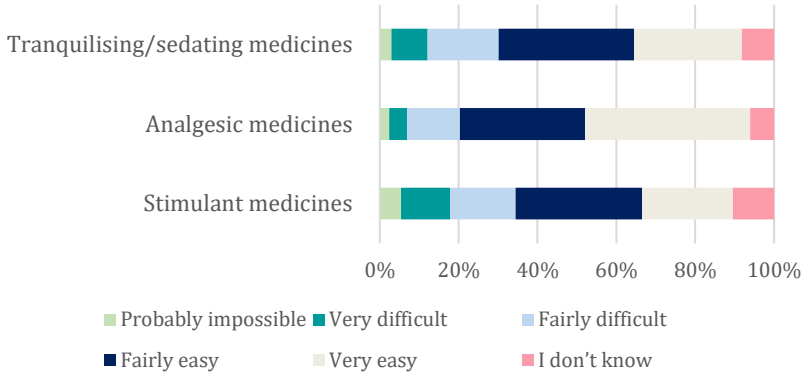
When prescription drugs were obtained from a friend or relative who had been prescribed the medication, they were very often provided free of charge. If any monetary or other exchange was involved, such as trading or buying, several respondents said they paid a 'special price for friends'. They said the price was affordable and cheaper than if they had obtained the medicines online or via a dealer, who may be selling other illegal drugs too. Purchasing prescription medication via dealers or online was not only considered more expensive but it often also required bulk-buying.

The prices of prescription sedatives and analgesics were similar, and prescription stimulants were slightly cheaper. For instance, when respondents paid or traded for prescription stimulants, the reported price or equivalent was 0.5 to 3 euros per pill (e.g. Ritalin, modafinil), and for sedatives or analgesics it was 2 to 5 euro per pill (e.g. Xanax, tramadol).

6.4. Perceived availability and accessibility

Perceived accessibility of the three types of medicines outside of the medical context was assessed with the following question in the survey: *'If you wanted to get the following prescription drugs and you didn't have a prescription, how difficult or easy would it be for you to get them?'* The majority of the sample believed that it was fairly or very easy to obtain prescription stimulants (55.1%, N=316), analgesics (73.5%, N=422) and sedatives (61.7%, N=354) without a prescription. In general, prescription analgesics were perceived as more accessible than stimulants and sedatives (see Figure 9 below).

Figure 9: Perceived accessibility without a prescription



Many interviewees reported no problems with the availability and accessibility of prescription drugs used nonmedically. Nonetheless, the interview data also illustrated that perceived availability depended on the type of prescription drug and the supply channel.

Based on their own experiences and stories they heard from others, many interviewees had the impression that prescription stimulants, in particular Ritalin, were very accessible and readily available. Whether stimulant medicines actually were easily accessible to particular individuals depended on their social network (e.g. a family member or friend). As two respondents noted:

> *"…everyone knows at least one person who has ADHD."* (R12)

> *"There is always someone who has it…, in the end almost everyone has it…. In my opinion, you can get it very quickly. In the room next door there are fifty pills or so. I have also often heard that during exams people literally say, 'I have leftover Ritalin, they are one euro per pill.' People then buy it. But, as far as I know, no one in my group of friends ever bought it from a dude in the library."* (R14)

7. Evolution

In this section we take a closer look at the interview data to unravel any 'evolution' or 'transition' patterns, differences or similarities that might appear, as respondents moved from initial towards more or less frequent nonmedical use of prescription medicines.

7.1. Transitions in NMUPD

It is important to note that, and as indicated above, many of the respondents in our sample had only used prescription medicines a few times in a nonmedical context (see Chapter 4, Section 4.2: Frequency of use). During the interviews, respondents said that they did not use these medications more frequently because they were not immediately available (anymore), and because they did not actively look for them (e.g. they did not really see a reason to; they did not have any intention to use them again; their initial experience did not have the expected or desired effects, or had more negative effects than initially expected). This was explained by one of the respondents as follows:

> *"I tried Valium once, and then two or three times after, sporadically, a little recreationally…. Just every now and then if the opportunity arose, or if someone offered it to me. I never went to get it myself."* (R10)

Other respondents did continue using. Among these participants, we observe transitions in use patterns such as reasons for use, frequency, products, supply channels, dosage, administration methods and, importantly, mental health risk perceptions. However, rather than demonstrating clear linear patterns, NMUPD appeared to ebb and flow through some respondents' lives, with periods of more or less frequent use of different substances and supply channels, and for different reasons, but often also with periods of abstinence.

Starting with evolutions in the reasons for nonmedical use, where curiosity about the effects and experimentation were often the motivation for initial nonmedical use, once respondents became more familiar with these effects and any positive or negative side effects, many of those who continued using nonmedically reported that they used them specifically to attain these effects. These effects did not necessarily correspond with the primary effect the medicines were known or prescribed for. For instance, one respondent commented that:

> *"In the beginning I only used* [Xanax] *to fall asleep. And, later, I also used it during the daytime to… it's just that little blanket that gets wrapped around you, that effect of a nice and cosy feeling."* (R40)

For many of the respondents in our sample, performance enhancement appeared to be a strong incentive for continued use. Some respondents who used prescription stimulants nonmedically to be able to focus or concentrate better actively looked for these products. They often experienced positive effects on their studies and exam results from their initial use of prescription stimulants, and mentioned that they worried they would not be able to pass exams without them, even sometimes instigating some sort of periodical dependency during exam times – as noted by the following respondent:

> *"In my first year I had retakes. So I realised, this is cool, it has helped me. I've passed. But at the same time, I also felt like, I don't want to use it every time, because I don't want to be dependent on it. I don't want to think I can't study because I don't have one. But I also have to admit, it is a gradual process. Now I'm definitely counting on it more than I used to."* (R03)

Some also mentioned that they continued to use prescription stimulants to enhance their performance in activities other than studying (e.g. for work, cleaning and sport).

As mentioned above, evolutions in the frequency of use appeared to ebb and flow with life experiences and phases, rather than following a clear linear path towards using more or less of the drugs. We observed this pattern particularly for prescription stimulants, which many respondents reserved for exam periods, and did not use in between exam periods or after finishing their studies. Many respondents also mentioned using analgesics or sedatives at certain periods (when 'the need is great') rather than it becoming a daily occurrence. For instance, as will be described later (Chapter 12: The effect of COVID-19 on NMUPD), the uncertainties of the current COVID-19 pandemic constituted one of these 'periods of need' for some of the respondents, as the following illustrates:

> *"A month ago when the lockdown was coming to an end, when we had a bit more freedom, it was much more difficult for me. Because I looked for a lot of social contact, and I didn't know very well how to behave myself suddenly. I hadn't heard or seen anyone for three months. And then I did notice that for a short period of time I used a lot more* [Rivotril]*. But now I hardly use it, except for last weekend, to level my sleep after having used Xanax for a week, but I can easily do a month or two without it. And every now and then there's a time I need it."* (R01)

Nevertheless, some respondents nonmedically used prescription drugs daily, and even those who used them more infrequently for limited periods sometimes used them daily. At times, these respondents were aware of this pattern of use, and some tried to use them less, whether by themselves or by asking for professional help. A respondent commented in this regard that:

> *"There have been times when I used it a lot more than now. Particularly at a later age I began to realise that it couldn't continue and I had to take it easier, even though it was very difficult, because it is a very nice effect. When you're in a darker period, it's very difficult to leave it there, and particularly when your doctor readily prescribes it whilst you know you don't really need it, it is hard to then say, 'I don't need it anymore.' Then it's very difficult to say 'Give me something lighter than Xanax.'"* (R40)

In between initiation and continued use, respondents sometimes familiarised themselves with, and evolved between, different types of medicines containing similar active ingredients. For a few respondents, finding the 'right type' of medicine was often a long search for 'balance'. The following respondent shared his/her experience as follows:

> *"The main reasons were to not have to feel anything anymore. I've never attempted suicide with medication, but if you're this medication resistant, then you kind of have to experiment with what works and what doesn't work, so to combine different substances or to take a pill more than actually allowed, to get that effect."* (R04)

One commented that:

> *"Sometimes we got codeine, we also got Xanax. But because of Xanax I also started using stronger things, because I had read Xanax, alprazolam, is the weakest. Then I thought, ok, what is stronger? I would like to try it. Then I tried bromazolam – that was similar, not necessarily much better. Then I ended up going stronger and stronger."* (R32)

This switching between medicines and illegal substances appeared to be the case particularly for stimulant substances. Illicit stimulants like amphetamine were often perceived as stronger and 'more dangerous', and their effects could be achieved to a lesser extent with prescription stimulants. A

couple of respondents had not evolved from one product to another; instead, they use different prescription stimulants, and sometimes illegal stimulants, intermittently to avoid dependency, and to counter some of the negative consequences of using the same product for too long. The side effects of Ritalin and/or illegal amphetamines (e.g. nervousness, comedowns), for instance, led some to start using other products, as the following respondent explained:

> **I:** "*Why did you change from Ritalin to modafinil?*" **R:** *"Because a friend of mine said, 'It's just a lot more relaxing. It works well.'* […] *And because I just had a breakdown on Ritalin too. My friend really doesn't like to use Ritalin, because it makes you very nervous and stressed. And with armodafinils that is not the case at all."* (R03)

Access appeared to be an important reason for (being able to) continuing to use prescription drugs nonmedically. Often they were used because they were there, 'left over', available – for instance, medicines that had been prescribed for medical reasons were kept in a medicine cabinet, or obtained from friends or family. A few respondents mentioned actively looking for these products, although many had continued access through prescriptions, or family members' supplies.

Respondents also mentioned transitions in the specific doses required to attain the effects they wanted. They increased or decreased their dosage as they explored their own physical and mental boundaries. Some respondents mentioned particular levels of tolerance, and needing more of a product to achieve desirable effects as time passed. One of them told us:

> *"Eventually I did start using more* [Xanax]*, but in the beginning… I can't remember how much those doses were exactly. Definitely in the beginning you experiment with just a little and the effect on me was already quite large and then I didn't have to take very much of it. It was actually always one pill I took in the end."* (R30)

Regarding administration methods, most respondents started and continued using their medicines orally. Nevertheless, a few respondents mentioned they had moved from oral administration to snorting prescription stimulants. More often, these respondents were looking to get a more intense, quicker effect, or to get more out of a dose with fewer side effects. Again, this did not appear to be a linear evolution, but was a method they resorted to at certain points in time. For instance, one respondent explained:

> *"After that I started snorting* [Ritalin]*, because it gives a rush. At the time, I couldn't compare it to anything, but it's comparable to a very small amount of cocaine. It's not really a heavy rush but… I enjoyed doing it."* (R34)

These evolutions were sometimes accompanied by changes in risk perceptions and confidence. As respondents continued using, particularly when they continued experiencing very few negative effects, or the perceived positives continued to outweigh the negatives, they started to appreciate using 'a little' every now and then. This does not necessarily means that respondents discussed taking additional risks; some actually referred to more 'responsible' use, as noted in the following:

> *"I think I used to be a lot more nervous about doing things like that.* […] *Eventually, through time, I noticed that that really is ok too. That it... that it doesn't cause problems. That it doesn't send me into the abyss. Um, and in that way it is also, it all happens a little easier. Like, I think like, I have something like, 'Ah I feel like it again, let's do it like last time.' And we're off again. I used to be a lot more nervous about that, and I used to do a lot more research on it like 'Am I doing ok'?* [laughs] *A little more*

information. But yeah, all that information is in my head now, and I know that's ok for my life and body at the moment." (R39, on analgesics)

Finally, as described earlier (see Chapter 2: Initiation), medical prescription use can evolve into nonmedical use of these prescribed medicines. Interestingly, a few respondents mentioned the opposite – evolving from nonmedical use to seeking medical prescriptions for these products. One interviewee contextualised it as follows:

"We went to a psychiatrist. Then I said, yeah, I can't concentrate, I have already seen a psychologist, I did that IQ test. I had a lower score on that part of, um, repeating numbers or something. Um, and I have already tried Ritalin once from friends, um, a few times. Yeah, more than a few times… um, to test whether it helped. And it helped and then the psychiatrist said, 'Ok, yes if it helps then I want to prescribe it.' Now I have a prescription for Ritalin, but I don't actually think I have ADD. No." (R07)

7.2. Stopping NMUPD

Among our interview sample there were several respondents who were no longer using prescription drugs nonmedically, or who had temporarily stopped at the time of the study. Respondents suggested different reasons for this.

Firstly, some respondents stopped NMUPD because of interrupted access to prescription drugs. For instance, they no longer used prescription stimulants for study or recreational purposes since their friends no longer had leftovers from their own prescriptions because they needed the medicines themselves. Secondly, respondents sometimes stopped because they had negative experiences (e.g. side effects, health risks). As explained by one respondent:

"*I became friends with someone whose mother had four hernias and who was very depressed. She had a medicine cabinet full of pills. So in a seven to eight month period I think we took everything that they prescribe for people with a hernia. There were syrups in there, plasters and pills in all shapes and sizes. We really took an outrageous amount of it. Afterwards, I fell into such a deep, dirty hole, purely physical withdrawal symptoms. I never wanted that again."* (R28)

Thirdly, after graduating, respondents stopped using stimulant medicines, as they had been using them solely for study purposes. They indicated that they did not need the medicines for their professional work. Some participants who were currently studying also stopped using stimulant medicines for study purposes because they were ineffective or the effects were negligible given the health risks. They believed that they should be able to study without psychoactive substances or that there were safer alternatives that also improved concentration. The following respondent explained it in more detail:

"At one point I just started to feel in my body that they were just drugs. I felt that something wasn't right when I took it and then I thought, if I have to get through my studies this way, it's not worth it. I'd rather not have a degree and be healthy than take Ritalin every day to get a diploma. It's just really not worth it. To screw yourself up to try and get a 10 and that kind of shit." (R35)

Fourthly, some interviewees stopped NMUPD not only because of negative experiences, but also because they did not achieve the desired effects. This was associated by respondents with the perceived low intensity of the psychoactive effects of these medications. One of them commented:

> "*It does so little, you don't feel anything decent. It's not that we're drug addicts, but if we do something then we do something decent. We use XTC or something, that is of much more use to you in the end.*" (R14)

As respondents got older, some of them stopped using drugs recreationally in general. Finally, one respondent stopped using codeine recreationally because of the associated high costs.

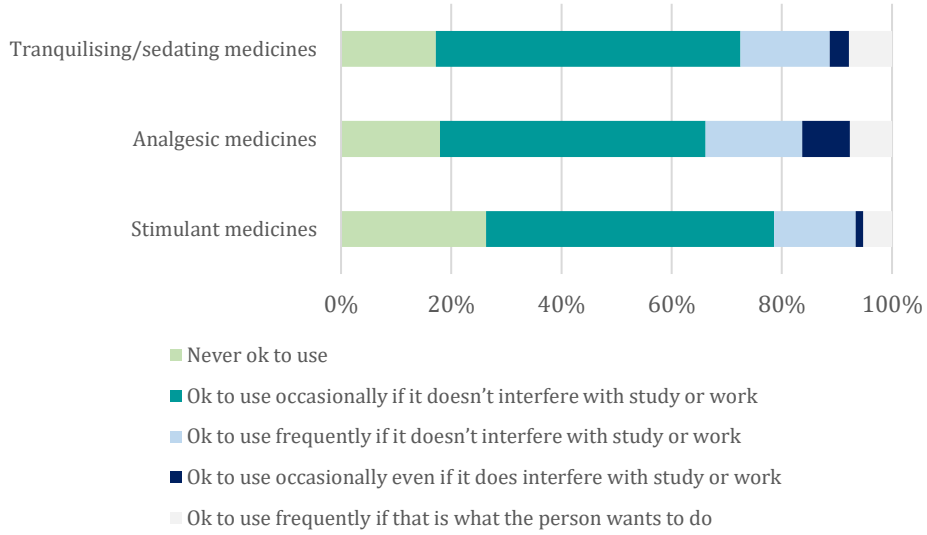
8. Attitudes and perceptions

In this chapter we examine young adults' attitudes and perceptions regarding NMUPD.

8.1. Acceptability and users' justifications

One module in the survey assessed participants' attitudes towards NMUPD. Participants were asked which of the following statements described their attitudes towards the nonmedical use of prescription drugs most accurately: *'Never ok to use', 'Ok to use occasionally if it doesn't interfere with study or work', 'Ok to use frequently if it doesn't interfere with study or work', 'Ok to use occasionally even if it does interfere with study or work', 'Ok to use frequently if that is what the person wants to do'*. This question was repeated for the three types of medicines.

Figure 10: Attitudes towards NMUPD



For all types of medicine, survey participants agreed most with the statement: 'Ok to use occasionally if it doesn't interfere with study or work'. Slightly more participants thought that it was 'never ok' to use stimulant medicines nonmedically (26.3%) compared to the use of prescription analgesics (18.3%) and sedatives (17.2%) (see Figure 10 above).

For each type of medicine, we used logistic regressions to estimate any differences between respondents who thought it was 'never ok' to use the medicine nonmedically and those that thought it was 'ok to use occasionally or frequently' nonmedically (see Appendix VII). The odds of thinking that prescription stimulants were 'ok to use' increased the most with having used them nonmedically (OR= 3.88, CI: 2.07- 7.27). The odds were also higher for respondents who reported recreational use motives (OR= 2.76, CI: 1.50- 5.07), who have used illicit drugs (OR= 2.25, CI: 1.34- 3.78) and who obtained prescription drugs from friends (OR= 1.99, CI: 1.07- 3.70). The odds decreased with age (OR=.90, CI: .82- .98). The odds of finding it 'ok to use' analgesics occasionally or frequently increased for respondents who have used analgesics nonmedically (OR= 2.29, CI: 1.35- 3.87) and decreased for participants who have used

stimulants nonmedically (OR=.44, CI: .23- .84). The odds of finding it 'ok to use' sedatives increased for respondents who have used sedatives nonmedically (OR= 2.02, CI: 1.20- 3.42), who have obtained prescription drugs from friends (OR=2.063, CI: 1.13- 3.77), respondents reporting no difficulties in making ends meet (OR=1.68, CI: 1.00- 2.81), and with having used prescription drugs nonmedically at least 10 times (OR= 1.95, CI: 1.16- 3.29).

The interview data provided insights into interviewees' attitudes toward others' NMUPD as well as their own use. Multiple interviewees were convinced that everyone should have the right and the autonomy to decide for oneself whether one wanted to use prescription drugs (nonmedically) or not. They believed they were not in a position to pass judgement on others' use. However, at the same time, they noted that it was important that this decision was informed. Therefore, they argued that information on the risks and benefits of prescription drugs should be available and accessible:

> *"If a person has been informed about the drug, the disease and the disorder, that person may give himself the right to medicate or treat himself."* (R43)

Several participants thought that NMUPD was currently a taboo. They were convinced that it was essential to break this taboo and to discuss it freely, as in their view it was also important for harm reduction.

In general, most respondents thought that psychoactive prescription drugs should still be used 'responsibly' when they are used nonmedically. Many interviewees justified their own use by arguing that they were knowledgeable and disciplined and therefore they were confident that their use was 'responsible', and the (health) risks of use were considered minimal. At the same time, they often discussed and distanced themselves from other users who they perceived as not adhering to their notion of 'responsible' use:

> *"I deal with it wisely and most people I know would also handle it wisely. I bet there are students who don't, but I certainly don't know them in my networks."* (R05)

In addition, several interviewees justified their NMUPD by referring to frequency of use, regardless of the motive for which the medicines were used. For instance, they noted that their nonmedical use was sporadic, low in frequency or exceptional. In the same vein, they were comfortable with their own NMUPD because they were only using temporarily. Sometimes, this argument was used by the interviewees to illustrate having control over their own use. Some also mentioned that, despite having access to prescription drugs (e.g. in the family medicine cabinet), they felt they could control their use. One told us:

> *"I suppose I have my use under control. Like I have a full package Ritalin. We have a full package of lorazepam, just in case… but I don't feel the need to open it."* (R09)

Among the interviewees, the moral acceptability of functional prescription drug use appeared to be higher than recreational or hedonistic use (e.g. partying or getting high). Multiple respondents' narratives revealed that they considered NMUPD morally acceptable when it served a 'functional goal', e.g. studying, working, health, taking a driving exam. One respondent explained it as follows:

> "*I've only used Ritalin. I'm actually completely opposed to anything that has to do with substance use. I don't drink or smoke. But I take this with a higher purpose, to study of course. When it comes to sedatives, I never take anything, except for my driving test. The first time I failed and then the second time, deliberately, with the goal in mind to pass, I took something. But it's really because it's for a higher purpose. I certainly don't do it because I'm too lazy to study or something. I really make a distinction*." (R33)

Similar to the respondent above, several interviewees indicated that they consumed prescription stimulants to promote a positive outcome, such as better academic results. In addition, prescription stimulants were framed as having less harmful side effects than illegal stimulants, or having no more effect than other commonly used stimulants such as coffee. Some framed stimulant medicines as a harmless alternative that affects how active you are or how well you concentrate:

> *"Stimulant medication should be used to help you to study, not to take care of oneself or to have a good time. That is completely different."* (R03)

In relation to that argument, and reflecting on their prescription stimulant use, interviewees also did not consider themselves as 'cheaters'. The use of prescription stimulants was thought to only improve concentration and energy levels, but not affect intelligence. As they said: "*You still had to study and stimulants were no panacea*", "*Ritalin is not going to study for yo*u" and it "*does not make you smarter*". In addition, they argued that other people tried other things to improve their concentration. Nonetheless, other interviewees were doubtful, or were leaning more towards agreeing with the statement that using prescription stimulants leads to unfair advantages or that people were fooling themselves. One respondent spoke of a 'moral grey zone':

> "*There are people that get their diploma purely on Ritalin. I understand if you have ADHD, then you really need it. However, there are people who abuse it, who don't have ADHD who take it to get very high grades. I really think it's cheating in some way. Also, people become dependent on it. So you will get through your studies this way, but will you also take Ritalin in the future at work when you get an assignment from your employer? That isn't possible. So that's just stupid of you.*" (R14)

There were fewer respondents who did not support the use of prescription stimulants for performance enhancement or had mixed feelings towards it. As one respondent said:

> "*I had doubts about that for a long time. Once I graduated, I said, I never want that shit again. I never felt good when taking it. Then I thought, you shouldn't need it at work. But now I really enjoy doing 95 per cent of my job, but I have difficulty with 5 per cent of it. If, because of Ritalin, I no longer had issues with that 5 per cent, then I would have no problems with it. However, I wouldn't be ok with having to use it every day.*" (R19)

A few interviewees using stimulant medicines for self-medication claimed that they probably suffered from ADHD (without having received an official diagnosis) and reported some undiagnosed symptoms of ADHD. One told us:

> *"I have reasons to believe that I have undiagnosed symptoms of ADHD. I've never had the diagnosis, though."* (R03)

In a similar way to how the use of prescription stimulants was justified, the nonmedical use of prescription sedatives and analgesics was considered acceptable because of its functionality, i.e. serving health purposes. In addition, several justified the use of sedating medicines for mental health purposes or analgesics for physical health problems by arguing that it only happened in exceptional circumstances when 'necessary'.

As indicated above, interviewees only rarely justified or defended their NMUPD by stating it served hedonistic or recreational purposes. However, prescription drugs were used recreationally among our interview sample and not everyone condemned recreational use. For instance, the following respondent defended his use:

> "*Relaxing on ecstasy can be just as good as on a Xanax. My psychologist was mainly talking about ways of relaxing, and drugs are a cheat, aren't they? When I take it I'm immediately relaxed and then I feel much better. But of course after that I feel worse again… while if you compare it with a walk, where I would get a lot more out of it in the long term, on which I have to work a lot more, that decision is always much easier with drugs."* (R31)

8.2. Risk perceptions

Respondents frequently assessed the mental and physical harmfulness of prescription drugs they used themselves based on their own experiences with the side effects of those substances. Since they experienced certain adverse effects when using prescription drugs, they believed that their use was not harmless. They also assessed the risks of prescription drugs using external information (see Chapter 10: Information). The fact that the medicines were only accessible via prescription was also considered as an indication of their potential harmfulness.

Frequency of use appeared to be an important factor in the perceived risks of NMUPD. Many respondents considered the health risks of NMUPD to be (relatively) low or even non-existent when used once, sporadically, in exceptional circumstances or temporarily. They believed that long-term frequent use did involve risks (including the risk of addiction). Most interviewees were also convinced that combining prescription drugs with other psychoactive substances (e.g. alcohol, prescription drugs) was hazardous. The combination of depressants with stimulants was considered especially dangerous (e.g. cardiovascular risks). Some of the interviewees had negative attitudes towards their own prescription drug use. They considered it unhealthy to use particular medicines or higher dosages than prescribed. Some respondents spoke of prescription drugs as '*junk*', because of the perceived health risks.

Most respondents' narratives indicated that the perceived risks or hazardousness of prescription drugs also depended on the type of prescription drug. More often, they made a distinction between sedatives/analgesics on the one hand, and stimulants on the other hand, often arguing that the risk of becoming addicted was higher for sedatives/analgesics. For instance, a nonmedical user of both prescription stimulants and sedatives commented:

> *"Sedatives… I use them nonmedically but not for recreational purposes. I just know that there is a high risk of addiction. In contrast, modafinil is harmless – I do not consider this use as risky."* (R20)

A few nonmedical users of stimulant medicines justified their use by arguing that they were using "less harmful" prescription stimulants while peers were using "bad and, especially, more addictive" sedatives or painkillers. In the interviews, only a few participants who used prescription stimulants nonmedically indicated that they suffered from addiction. More often, they expressed a belief that stimulant addiction was the result of long-term use, whereas analgesics and sedatives could cause dependence from the very first use. Some respondents thought that analgesics and sedatives were more addictive, because nonmedical users tended to take them in more situations than they did stimulants, which were reserved for specific contexts (such as exams, important professional appointments or workouts).

When participants in the survey were asked how much they think people risk harming themselves physically or mentally if they used these prescription drugs without a prescription or other than as instructed by a physician, the response "great risk" was more often selected for prescription sedatives than for analgesics and stimulants (see the next section on comparisons of risks).

In the following subsections the self-reported risks of the different types of prescription drugs are discussed.

Prescription sedatives, and in particular benzodiazepines (e.g. Xanax), were labelled most often as dangerous medicines, because of the risk of developing tolerance and the high potential for addiction. Multiple respondents spoke of a 'vicious circle' and the early onset of addiction or dependence. Some of these attitudes were based on interviewees' own experiences. They had taken sedatives in medical or nonmedical contexts and noticed that it was tempting to use them because they were highly effective, e.g. for sleep problems. Moreover, a few interviewees reported that they had been dependent on the medicines to be able to sleep. In some interviews, particular prescription sedatives such as Xanax were even compared to *"the dangerous and addictive drug heroin"* (R07). Multiple respondents indicated that they also preferred not to take sedatives and strong analgesics for medical purposes.

More often, **prescription analgesics** did not cause any concerns for participants who used them infrequently. The use of prescription analgesics was believed to be risky when done frequently, especially in the long term, or when using strong pain relief medicines. Opioid analgesics (e.g. tramadol) were considered dangerous substances, posing health risks such as overdoses.

Our interviewees rated **prescription stimulants** as less harmful than sedating and analgesic medicines. Prescription stimulants were seen as having little impact on physical or mental health. Interviewees indicated that they believed they were only physically harmful when large amounts were used. For instance, they mentioned that the loss of appetite caused by stimulant medicines was not healthy, but they thought that this issue was easily resolved. In general, the risk of dependence on or addiction to prescription stimulants was considered minimal or non-existent. Some respondents were happy to use prescription stimulants frequently in a specific time period because they felt they would be able to stop using them, as noted in the following:

> *"I've always had it under control. After a tough exam period, in the following days I never thought, 'Oh shit, now I really feel like a Ritalin" or 'I feel drowsy and I want....'"* (R43)

Other respondents, however, thought that stimulant medicines did have addictive potential, because of the possibility of not being able to perform (e.g. study, work) without them. Moreover, a few participants who used prescription stimulants nonmedically indicated that they had suffered from addiction. Finally, interviewees sometimes differentiated between types of prescription stimulants. For instance, one said:

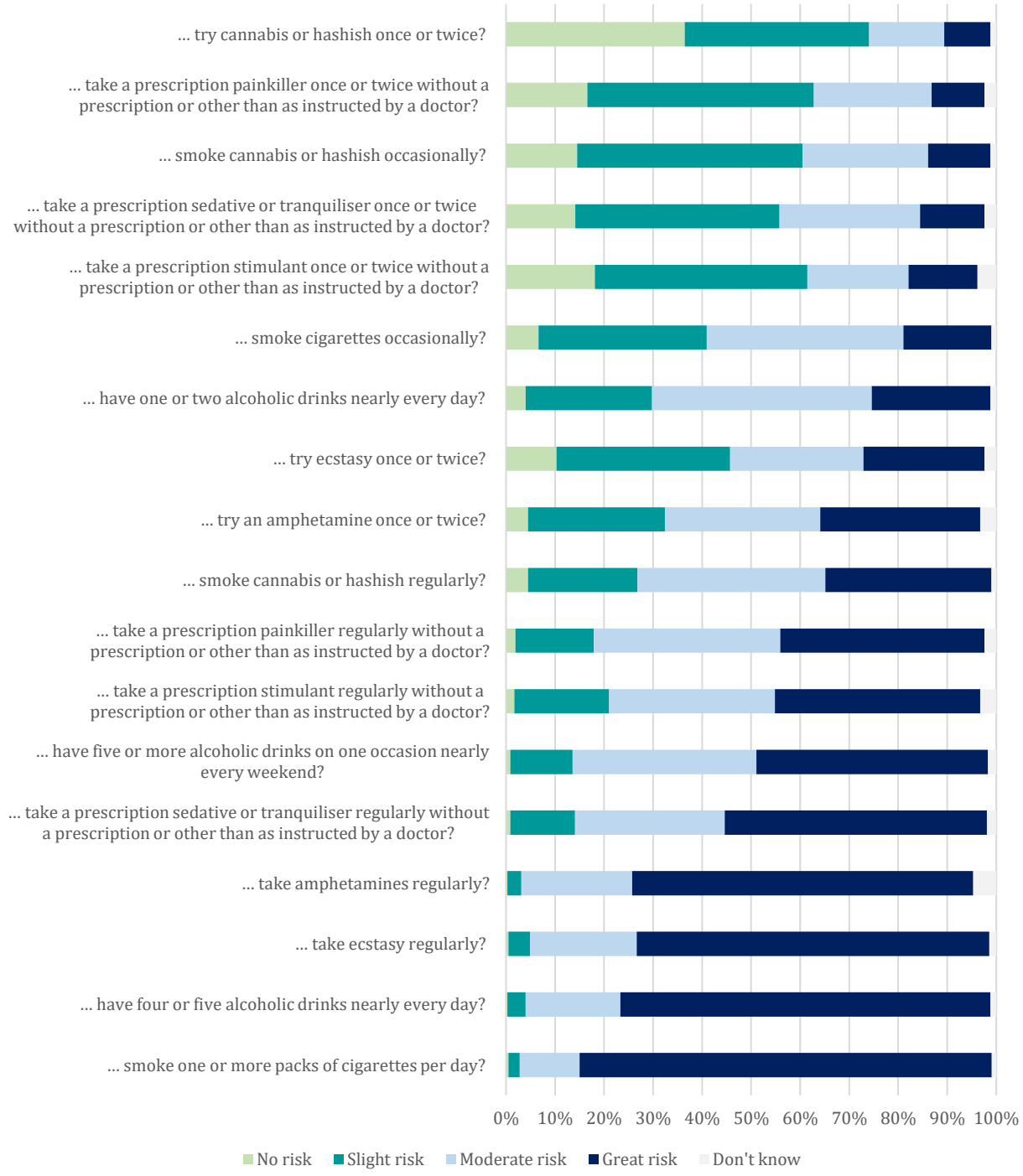
> *"Ritalin, that is addictive… that is different from modafinil and armodafinil… these are less addictive."* (R37)

8.2.1 Comparisons of risks

In the survey questionnaire, a set of questions was included that measured risk perceptions of the use of psychoactive substances. Participants were asked how much they think people risk harming themselves physically or mentally if they use, followed by different types of psychoactive substances (licit and illicit), use frequencies and units. Response categories included 'No risk', 'Slight risk', 'Moderate risk', 'Great risk' and 'Don't know' (see Figure 11 below).

Figure 11: Perceptions of risk of substance use:

How much do you think people risk harming themselves physically or mentally if they…



In line with these survey findings, many interviewees considered prescription drugs 'safer' than illicit ('hard') drugs (e.g. speed, cocaine, MDMA). When interviewees compared the risks of prescription drugs with illicit drugs, they thought mainly of cocaine, amphetamine and MDMA. They did not consider illicit drugs as a homogenous group of substances. For instance, cannabis was frequently considered less risky than prescription sedatives.

One first reason why prescription drugs were considered safer than illicit drugs was not related to the products themselves but to quality control. The interviewees considered prescriptions drugs relatively safe and less risky in terms of chemical composition, because they are controlled, regulated and clinically tested. They believed that the chemical composition of a prescription drug is reliable because it is produced by a pharmaceutical company under safe conditions, whereas illicit drugs could be contaminated with adulterants because of unsafe production processes, as noted in the following: *"You get what you expect*." Secondly, interviewees thought that the use of prescription drugs involved a lower risk than illicit drugs because they are 'medicines', have a legal status, are used by many people for health purposes, prescribed by physicians and delivered by pharmacies. In addition, more often their own friends, parents or other family members were using the medicines as well. Thus, they trusted prescription drugs' safety because they are medically, socially and legally accepted and not targeted by law enforcement. The pharmaceutical packaging and package insert also inspired confidence. One respondent explained:

> *"I thought the threshold was very low, because I know I'm not going to die immediately if I take this substance* [lisdexamfetamine]. *In the beginning, I believe this entire packaging, the fact that it comes from a girl, who was not my girlfriend at the time but almost, the combination of ADD, ADHD medication… I always thought, 'It's like Ritalin which you take during the exams' and then to party that's like taking nothing.... That's why I started…. I just kept taking it, because I had positive experiences and probably because nothing had gone wrong."* (R09)

Nonetheless, other interviewees acknowledged or referred explicitly to this as a 'false' sense of safety. One reflected on it as follows:

> *"It's definitely more readily available and it will really help some people, but... in a way that makes it as insidiously dangerous as other drugs."* (R30)

The medical status was even sometimes described as having adverse consequences. Some interviewees believed that this blind trust in prescription drugs and physicians might involve or even increase risks (e.g. addiction), because one might act less carefully and mindfully, and be more naïve and imprudent when using prescription drugs. One person commented:

> *"I think that people do not realise that, even if it has been prescribed by a doctor, it can still involve a lot of danger. We let the patient have a bit too much blind faith in the doctor and the prescription."* (R43)

In addition, multiple participants in the interviews thought that NMUPD was trivialised. To them, the main reason for this was the exclusive focus of drug policies and prevention on illicit drugs, and as such NMUPD belonged to a grey area. According to these interviewees, this resulted in a substantial lack of information and prevention initiatives related to prescription drugs.

Certain prescription drugs were considered safer than illicit drugs because of the lower intensity of the psychoactive effects. For instance, prescription stimulants were often described as less harmful and addictive than illicit stimulants, because the effects were considered much less intense. One respondent told us:

> *"Ritalin is ok.* […] *You are really awake…. Is that like taking drugs? No, not really… it is softer. But you are awake… let's say it is better than coffee."* (R15)

However, multiple participants agreed that prescription and illicit stimulants should be put on an equal footing regarding the side effects and the possible risk of addiction:

> "*Whether they are medications or illicit drugs, there is always a risk of addiction and some side effects."* (R54)

Several participants thought that the only difference between illegal drugs and prescription drugs was the legal status and the access mode. More often, this was considered as a more or less arbitrary social construction. According to them, this legal status did not give any indication of the drugs' safety and health risks. They thought that the risks of the psychoactive substances depended not only on the product (i.e. its chemical composition), but also on other factors, such as the amount used, a person's mood, the context and circumstances. They were convinced that all psychoactive substances should be used carefully, and that all types of psychoactive substances could become dangerous when used irresponsibly.

> "*I actually think Ritalin is very intense. I find it very intense that it is prescribed to children, because I see it really as hard drugs."* (R19)

8.3. Opinions on access and regulation

When participants were asked if they agreed with the way prescription drugs were currently accessed or whether the access should be more or less strict, most replied that the current system was broadly appropriate or that it should be stricter. However, at the same time, multiple respondents remarked that the current system failed:

> "*The system works well and at the same time it doesn't.... It has flaws for sure* [laughs]*, otherwise I wouldn't be able to get it."* (R23)

> **I:** *"Do you agree with the way it is now available?* **R:** *"I think it's a very good way, but it's not that difficult to obtain. You can just go to a website where you can order Xanax, I can order codeine…. It's really just that easy. I think that's good that it is sold in pharmacies, but the thing is, its usefulness is gone. Nowadays everything is available via the internet."* (R32)

According to our respondents, prescription drugs should not be more accessible because of the risk of misuse, especially by other people. They thought that if prescription drugs were more accessible this would involve risks for '*people who get more easily addicted*' or '*people vulnerable to abuse*'.

Some respondents stated that if a person is informed about the effects, risks and harms of prescription drugs, he or she should be able to decide whether or not to use prescription drugs. For instance, several

respondents believed that stimulant medicines should be available on prescription for people who do not have a medical condition (e.g. ADHD), but want to use them for study purposes. However, most participants agreed that none of the medicines investigated in this study should be freely available without a prescription. At the same time, some thought that the access to prescription drugs should not be made stricter, because this could make them less accessible to patients who need them for medical purposes.

As indicated earlier, interviewees identified shortcomings in the way prescription drugs were currently regulated and medically dispensed. They also took a critical view of the medical use of psychoactive pharmaceuticals. Multiple respondents indicated that physicians prescribed certain medicines (too) quickly and thought that the easy accessibility of prescription drugs in general was disturbing. Some even regarded some physicians' prescription behaviour as irresponsible and therefore held the doctors accountable when these respondents developed problematic prescription drug use patterns. Several believed that prescription sedatives and stimulants in particular should be prescribed less often, due to their health risks (e.g. addiction in the case of sedatives).

Interestingly, several respondents, including those using prescription stimulants nonmedically, noted that it was unhealthy for children to take (high amounts of) Ritalin, and some said they would never give it to their own children. They believed that the number of children taking (too much) Ritalin was problematic and they thought it was too easy to be diagnosed with AD(H)D. Multiple respondents were sceptical about labels such as 'ADHD' and about medicines being portrayed as the only solutions. In a nonmedical context, our interviewees believed that too many people were taking psychoactive substances for enhancement and self-medication:

> "*Why are so many people using stimulants to help them study?*" (R24)

> "*I have heard from people that they take speed to study, apparently, you know? I didn't know about it, so I thought, huh…* [laughs]*. Well…, people do all kinds of things nowadays at university. It is clear that people are really looking for options everywhere to study better.*" (R15)

Other interviewees did not question physicians' authority or expertise. These respondents thought it was not solely the responsibility of physicians and were convinced that high rates of medical and nonmedical prescription drug use, including the grey zone in between, was a structural and institutional problem and therefore the entire system should be re-evaluated. One respondent commented as follows:

> "*Nowadays, a lot is expected, and I think many people resort to things like that. I know people who study architecture and who snort speed in the morning to be able to perform, because they do not have a prescription for Ritalin* […]. *But… if you have so many people who actually do it, and not on prescription – I know people who get it indirectly – then I wonder whether it is our problem that we cannot handle everything, or whether there is something wrong with the whole system we're in, and the amount that we have to process. I've never wanted to admit that this amount of studying might be too much for me, but on the other hand I know so many people who also have to do extra years because they can't do it in those six years. Erm… it's bizarre to think that we are all doing it the wrong way. It's crazy that we have to take it in order to perform."* (R24)

These interviewees challenged what they thought was the medicalisation and pharmaceuticalisation of contemporary society. One offered the following remark:

> *"I think that you will be less likely to tackle the actual problem, because you can get medications so easily. It's like sticking a Band-Aid on if you take a sleeping pill. Then you think you'll be better the next day. Eventually you'll keep trying or you'll increase the dose, but you never address the initial problem."* (R17)

8.4. Perceptions about future use

Many interviewees had similar perceptions about their NMUPD: they saw it as temporary and believed it would stop over the long term. They also wanted their use to end at some point, because long-term, frequent NMUPD was considered to pose health risks.

Prescription stimulants were mainly taken for study purposes, when the young adults saw it as the only way to manage their studies. Most of these participants indicated that they would probably take the medicines when studying for exams in the near future, but not after their graduation. They believed they would not need stimulant medicines anymore because they hoped they would find an interesting and motivating job. However, a few others reported that it was possible that they would take stimulant medicines in very specific contexts in the future, such as before a job interview. Prescription sedatives and painkillers were mainly seen as a form of self-medication for physical and mental health problems from which the young person wanted to escape in the long term. These medicines were considered as unsustainable solutions to health problems and only to be used in exceptional circumstances.

> *"I'm, like, starting to play a pharmacist on my own and lugging those pills around, that's probably not the solution."* (R38)

Regarding perceptions about future recreational prescription drugs use, interviewees noted that it was possible they would use prescription drugs occasionally recreationally when there was an opportunity.

8.5. Social acceptability and peer use

8.5.1 Peer knowledge and approval

Frequently, interviewees were transparent with their close friends about their NMUPD. However, they felt it was important not to boast about their use. Their peers were informed, but they did not necessarily have deep conversations with them about NMUPD. Some accepted friends' advice to be careful, but this was not always the case:

> *"People don't make a big deal out of using Ritalin. If there are people who say, 'I'm going to try it' they never say anything such as 'Be careful', it's always, 'Ok, tell me how you felt about it.'"* (R38)

Friends' approval of a person's NMUPD appeared to be easy to obtain for most participants. They indicated their friends simply asked questions about the effects but they did not condemn their use. Some young people justified this attitude by the widespread use of stimulant prescription drugs in university settings:

"*Among students, I think it is socially accepted.*" (R48)

Generally, interviewees reported receiving very few negative comments from friends about their NMUPD. A few participants noted that friends or fellow students thought using prescription stimulants for academic purposes was unfair and considered this behaviour as cheating:

"*It improves our abilities and therefore they consider it cheating, it is amoral.*" (R56)

Prescription drugs were not commonly used recreationally in interviewees' social networks or nightlife activities. Although recreational prescription drug use often had a social component, several respondents who experimented with them recreationally (mainly sedatives and analgesics) also stated that they were the only ones among their friends who did so. A few respondents noted that there was '*no such culture*' in Belgium.

8.5.2 Parental knowledge and approval

Whether parents were informed about their children's NMUPD varied widely between the interviewees and the motives for which prescription drugs were used. For instance, typically when prescription drugs were used recreationally participants concealed it from their parents, whereas this was not always the case when the medicines were used for performance enhancement or self-medication.

Interviewees did not inform their parents about their NMUPD when they thought they would be disappointed or disapprove of their use. These participants did not see the point of telling their parents, or they knew their parents would react negatively. Multiple respondents noted that they did not want to worry or hurt their parents, as they knew they would be concerned. A few interviewees said they were embarrassed to tell their parents about their NMUPD.

Other participants indicated that they could discuss their NMUPD freely with their parents. They argued that their parents considered them responsible and/or had received tacit approval from their parents for the use of prescription stimulants for study purposes. The interviewees also pointed out that their parents' approval was linked to the visible positive impact of the stimulant medicines on their performance:

"*They could see that it worked a little but without any real impacting side effects.*" (R46)

Nonetheless, when prescription stimulants were used for study purposes, parents were frequently not aware of how much their children used.

8.5.3 Physicians' knowledge and approval

Most participants did not seek medical approval from their general practitioners for their NMUPD. This was considered not necessary or important, in particular when interviewees did not think they had substance use problems (e.g. addiction) or mental health disorders (e.g. ADHD). Interviewees also sometimes claimed that their GPs were not informed because they did not consult them very often. Interviewees who obtained prescription drugs from their physicians for medical purposes stated that if

they were to tell their physicians about their nonmedical use (e.g. using higher amounts than prescribed), it was likely that their physicians would stop prescribing the medicines to them.

A few interviewees had discussed their nonmedical use with their GPs. According to some of these interviewees, when physicians were informed about their patients' nonmedical use, they were unsupportive and considered it unhealthy:

> *"I had already said that I took it* [Ritalin] *and she doesn't support it anyway. Because I probably don't have ADHD. I mentioned that my concentration is not good without it, but I don't know if that is enough to get a prescription."* (R23)

9. Risk management strategies

Risk management or harm reduction strategies incorporate a spectrum of strategies that aim to minimise problems associated with NMUPD.

In using prescription medication nonmedically, many respondents reported making reasoned choices related to the physical and social context in which use took place and how a particular medication should be used, including administration methods, activities undertaken before and during use, etc. Some respondents emphasised their self-control by making comparisons with their controlled behaviour related to other psychoactive substances. For instance, some respondents said they did not drink alcohol when they had to work or drive, and they adopt a similar strategy for prescription medication. They considered themselves responsible, and accountable for the consequences of their use, as noted in the following:

> *"That is why I never take such a heavy medication when I work. Because I really know what the consequences can be.*[…] *Also, I will never take the car out then. I know this is not responsible."* (R04)

However, respondents often explicitly claimed to manage their consumption by relying on several strategies, as this individual alludes to, and we discuss further below:

> *"I think you need to be careful when using prescription medication. I gave myself some general guidelines, like what is acceptable and what is not."* (R20)

9.1. Use and conditions for use

One cluster of strategies of how interviewees reportedly controlled their use and limited related harms relates to how they use prescription drugs nonmedically.

A very commonly reported risk management strategy in the interviews was the limitation or adaptation of the frequency and/or dosage of nonmedical use to limit the risks of acute adverse effects and dependence. Some respondents indicated that they wanted to avoid the possibility of losing control of their use. They claimed that they moderated how often they used and the amount of pills they took because of the perceived physical and mental health risks. One respondent noted:

> *"I have a preference for the principle 'Start with a low dosage and increase slowly.' So, you have control if something goes wrong… you never know. It is important not to put yourself in danger."* (R43)

The limitations in terms of dosage seemed to be particularly important. For instance, some nonmedical users discussed setting limits directly after experiencing any side effects or after a period in which they believed they had used too frequently:

> *"At the beginning, after the exams when I stopped using it suddenly, I felt that I was more aggressive or I came down, so now I gradually decrease the dose."* (R56)

In other interviews, respondents talked about how they managed the time schedule of the next dose consistently with what was recommended. They counted the number of hours in between the

consumption of a particular medication in order to avoid any dangerous levels of dosage and combinations of effects, as explained by this respondent:

> *"Sometimes I go to three or a maximum of four per day. But I always take into account the number of hours… if I feel that the effects are gone."* (R16)

Apart from dosage, some respondents also discussed what they would consider to be controlled regular use. Most saw long-term daily or almost daily use as unacceptable. Several limited their nonmedical use to weekly or monthly use, while others aimed to limit their use to defined periods, such as examination periods. Being able to stick to the limited frequency is seen as a way of preventing problematic effects. In addition, some respondents explained that they sometimes took a longer break from use from time to time, in order to lower tolerance and avoid addiction. This technique seemed to be most prevalent among nonmedical users of sedatives. One of them told us:

> *"If I use, I take care of my timing, my frequency. If I take medications several days in a row, then I make sure I take a break."* (R13)

Rather exceptionally, but worth mentioning, some respondents who also used illicit drugs substituted their illicit drug use with the use of particular prescription medication in order to lower tolerance for particular illicit drugs such as cannabis. One of them commented that:

> *"Once in two months I bought Xanax to limit my use of weed. I changed, I used Xanax to sleep, for a week or so. It helps me to lower my tolerance for weed…"* (R34)

Another strategy was setting limits on the administration methods for use. Some of the respondents elaborated on which administration methods were likely to produce the intended effects while posing the least dangerous health risks. In most cases respondents argued that they were most familiar and comfortable with oral consumption and that snorting prescription medications was a 'bridge too far', often referring to this administration method as a more 'dangerous' or even 'unnatural' way of using prescription medications. One respondent commented that:

> *"Pulverising and snorting medication – that is not natural. That is not how it is intended to be used. Also, it involves a dangerous component. And it is bad for your nose, too* [smiles]*. Those pills are made to be swallowed and that works."* (R39)

Furthermore, other harm reduction strategies employed by the respondents included analysing beforehand what they were going to take and anticipating its effects. For instance, when taking the stimulant medication Ritalin, respondents sometimes drank more water beforehand in an attempt to prevent dehydration.

In a similar vein, respondents avoided concurrent use, or mixing prescription medication with other psychoactive substances (e.g. alcohol, prescription drugs or illicit drugs). Another strategy that contributed to the perception of reduced harm related to the brands or types of medication. Respondents sometimes reported that they consciously replaced a medication with another type or brand to obtain a so-called 'better' or 'less negative' effect. Some were cognisant of the range of effects of different types of medication and selective about specific brands. They would substitute one brand they were not

satisfied with (e.g. because of the side effects) with another one. For instance, a respondent had stopped using the sedative lorazepam because it made him both chilled and aggressive. Because of these effects, he aimed to obtain and use Temesta instead. One respondent told us:

> *"Concerta 27mg was a bit too hard so I decided to use Ritalin."* (R56)

According to many respondents, managing nonmedical use also involved taking into account the context or motive most appropriate for the use of the particular prescription medication. For instance, some respondents only used prescription medication to study, while others used it only for recreational purposes. Accordingly, several respondents clearly described in which contexts they would not take particular medications. For instance:

> *"I don't need it to have fun. It is meant for studying, and I don't want to use it in other contexts. I sometimes use the medication at work, but I am not comfortable with it. So, I want to keep its use as limited as possible. The medication helps me to study, and I want to keep it like that."* (R08)

Many respondents who had (medical) experience with analgesics acknowledged the risks and tried not to use them for reasons other than pain relief.

> *"I'm telling you, in hospital they gave me tramadol for pain. So I got a box of tramadol. I used it longer than necessary, I noticed that too. Last Wednesday even, I ended up using it. But I try to save it for emergencies, when I'm in a lot of pain and have slept very little. Because it can give you a 'high' effect too. Pain that goes away can give someone the feeling that they…. A bit like drugs, really. Um, tramadol is almost an opiate, so that comes closer to, like, heroin or morphine. So that's also a really dangerous one I think."* (R01)

Other respondents said that they stuck to the same routines of use. For instance, one said that he used sedatives only in the evening in order to fall asleep easier. Similarly, when stimulant medication was used for performance enhancement purposes, it was mostly taken in the morning and its use avoided in the late afternoon or evening, in order to be able to sleep properly. For some respondents, the decision to use also seemed to depend on their mood that day. For instance, some noted that they would avoid using sedatives while depressed or in a bad mood, because they feared the medication would exacerbate their depressed feelings.

Finally, from a harm reduction perspective, some respondents clearly preferred to use their prescription medication in a safe, well-known environment, whether this was alone or sometimes with the presence of trusted friends/family members, but hidden away from anyone who would be judgemental or disappointed.

9.2. Disclosure to other people

A second harm reduction strategy used by a number of respondents, as described earlier (see Chapter 8, Section 8.5: Social acceptability and peer use), was to disclose their NMUPD to other people. Some shared their intention to use proactively, not only if it came up in conversation. This gave them a feeling of being safe, as the other people could then keep an eye on them. These 'other people' were not only those using

the drugs with them or supplying the medication, but also non-users who were open to or did not condemn their nonmedical use. One of them told us:

> *"I try to take as few drops as possible, and certainly if I go out. Or I let someone know that I have taken something, or I just don't take it* […] *I hope that other people, who use the same medication on prescription, also have someone to talk to. That is very important, that honesty. You feel guilty somehow. You have the feeling that there is social control which supports you to take decisions. If no one knows what you are doing…."* (R01)

Disclosure of nonmedical use to health professionals such as physicians was rarely reported by the respondents. It is clear that they did not often discuss their use for other purposes, such as self-medication, performance enhancement or recreation. Nevertheless, from a harm reduction perspective, the frequency of GP consultations was considered to be an indirect control mechanism by a few who obtained prescription drugs via their physicians. In these instances, respondents assumed that their GP, with whom they had a good relationship, would notice if they asked for more prescriptions. In other words, respondents assumed that GPs would take note of rapid increases in the amount of medication needed or should be alert to the fact that use was leading to negative consequences, such as addiction. Their GP was described as an important protective observer of their use patterns:

> *"He really takes into account which medications I have to take. He knows my past. I really would like to obtain Xanax, honestly, but I know this is not a good idea. Before, when I had another doctor, I just asked for some medication while faking some symptoms, and I got a prescription. So yes, yes,… now, it is better, my doctor offers me a very important protection."* (R40)

To protect their own health, multiple interviewees indicated that they would inform physicians about their NMUPD in the following circumstances: when experiencing side effects, when having health problems or when undergoing certain treatments (e.g. surgery). They considered it important to be transparent and that physicians were fully informed in those cases.

9.3. Informing oneself

Another commonly reported harm reduction strategy was associated with informing oneself. For instance, informing oneself about the risks and side effects of the use of prescription drugs, in particular when using for the first time, was considered to be an important precautionary measure. More experienced users stressed the importance of being informed. The types of information obtained from a wide variety of sources are discussed more thoroughly in the next chapter (Chapter 10: Information).

9.4. Supply source

Safe access to prescription medication, or in other words obtaining prescription medication from so-called reliable or trustworthy sources, also seemed to be a harm reduction strategy. Those respondents without a doctor's prescription or without a social supply source (e.g. friends, close family members) sometimes turned to (online) sources that may lack any quality controls. Obtaining prescription medication on the street or from unregulated online sources was considered to pose serious health risks, such as receiving

medications contaminated with extraneous chemicals or other drugs. Several respondents explained as follows:

> *"Xanax from a dealer. I would not buy that, it is shifty. I am sure that the sedatives are contaminated with dangerous rubbish."* (R13)

Nevertheless, as discussed in *Chapter 6: Supply*, some respondents argued that the comprehensive review systems on the dark net held vendors accountable and may help avoid possible risks with products acquired through that channel. Some respondents trusted their own ability to check the quality of the medication they bought. This process was generally based not on objective information but on the visuals such as the package or the inclusion of an package insert, as illustrated in the following:

> *"Modafinil, that is the original package. First of all, I check the reviews. You can evaluate, like…, if 10,000 or 1,000 add a positive review like 'I bought this, it is good stuff, I got it tested in a lab.' And there are only two bad reviews like 'Order is not delivered, bad rating.' In that case you know, and you can be sure that it is ok. Of course, if 500 reviews tell you that the package is not what they have ordered, you know that it is problematic, so you don't order."* (R43)

10. Information

So far, very few studies have explored the sources of information that nonmedical users consult or rely on about prescription drugs. Our survey and interviews bring insights into the sources of information nonmedical users turn to.

The survey indicates that three in four respondents had ever sought information about prescription drugs used nonmedically (76%, N=436). Information was mostly sought online, in particular via large search engines such as Google (66.6%, N=382), and via the specialised websites of professional organisations or pharmacies (49.3%, N=283). The next most common sources of information were friends (24.4%, N=140) and physicians (19.9%, N=114). Participants mostly sought out information about adverse effects (35.4%), addiction (33.3%), health risks (28.2%) and dosage (24.6%) (see Table 15 below).

Table 15: Information practices and sources (N=574)

	N	%
Looked for information about prescription drugs used nonmedically		
Yes	436	76.0
No	138	24.0
Sources consulted for information about prescription drugs used nonmedically		
Online search engines (e.g. Google)	382	66.6
Online specialised websites (e.g. www.apotheek.nl)	283	49.3
Online discussion forums (e.g. Erowid, 9lives, drugsforum)	160	27.9
Friends	140	24.4
Medical doctor or specialist (e.g. GP, psychiatrist, neurologist)	114	19.9
Family	77	13.4
Other medical professional (e.g. nurse, psychologist)	73	12.7
Social media (e.g. Facebook, Twitter, Instagram)	35	6.1
Topics on which information was searched		
Adverse effects	203	35.4
Addiction	191	33.3
Health risks	162	28.2
Dosage	141	24.6
Concurrent substance use (e.g. alcohol)	111	19.3
Therapeutic/clinical effects	92	16.0
Contraindications	72	12.5
Medical indications	62	10.8
Recreational uses	55	9.6

10.1. Information-seeking behaviour: types of information

In the in-depth interviews, some respondents mentioned they had a basic knowledge about the psychoactive medications they were using nonmedically, while others were less confident of their knowledge. Despite these different views, almost all respondents pointed out that learning about the medications was an essential factor in managing their own use and any potential risks or harms (see also Chapter 9: Risk management strategies). Most respondents looked for information such as chemical structure, effects and side effects, dose limit, administration methods (e.g. oral or nasal) and risks and

harms associated with use, most often conceived of in terms of dangerous combinations and addiction potential. One respondent explained:

> *"I'm not a person who thinks, 'Here is a pill, I don't know what effect it has, I'll take it and wait and see.' No, no, no* [laughs]*. That's too dangerous. I do some research, I check websites with chemical information, with information about side effects, the combination of products, etc. In a way, it makes use safer."* (R39)

Some respondents mentioned that they strategically looked for information about a new (type of) medication they were curious about and/or intended to use nonmedically. For instance, one respondent indicated that he/she looked for targeted information, e.g. about the effects of particular types of psychoactive medications, in order to obtain a doctor's prescription:

> *"Drug forums or pharmacy websites. If you Google 'sleeping medication', you have a whole list.* […] *If I mentioned some of those symptoms, the doctor prescribed me the medication quite easily."* (R40)

A few respondents mentioned that they looked for information about the 'recreational value' of prescription drugs. In these instances, they wanted to gain information about the potential influence of different dosage levels and modes of administration; respondents talked about searching for information on which substances and which combinations would be 'fun to do' or which combinations increase or decrease the effects of their prescription drugs. This was explained as follows:

> **I:** *"How did you learn about the combination of Xanax and cannabis? Your own experience?"* **R:** *"No. It is a classic story that you can find online. Xanax and weed, the best combo. There are many people who think this is the best combo."* (R13)

In contrast, a limited number of respondents explicitly reported that they did not look for information. Some did not inform themselves simply because they were not interested, while others who were worried about possible adverse effects did not want to know the health risks of their NMUPD. Other respondents who did not report information-seeking behaviour argued that they trusted their prescribing physician or that they relied on the fact that psychoactive medications were strictly regulated and controlled by the authorities. This was explained as in the following comment:

> *"I trust the prescriber… I do not feel the need to look for more information* […] *the package insert? I don't read it."* (R45)

10.2. Channels or sources of information

In general, interviewees mentioned a number of information sources that they had used to inform themselves, both online and in-person. These different channels of information include online search engines, the websites of professional organisations or pharmacies, friends or family (who often have both indirect and direct experience with a particular medication), physicians, package inserts and forum-based online platforms.

For instance, as discussed earlier, the first encounter with prescription medication was often through friends or family members with previous (non)medical experience with these medicines. In those situations, respondents primarily constructed their knowledge based on the advice of family or friends.

For instance, when particular prescription drugs were offered during a party or social event with friends, or when it was offered to improve concentration in the context of examinations or to improve sleep, respondents were likely to learn from those family members and friends they trust and who are willing to share their knowledge about the dosage and the (side-)effects of the particular medication with them. One respondent told us that:

> *"I got Ritalin from a friend of mine. I first asked my dad, who is a bio-engineer, if this was harmful. He said it wasn't.* […] *I asked my dad and then I searched the internet too."* (R02)

However, it is important to note that most respondents did not rely solely on their initial sources, but consulted other sources of information too. Respondents stressed that plenty of information is readily available on the internet. As a result, the emphasis in the interviews was placed on online sources such as online search engines, websites and online platforms as key sources of information.

Firstly, many respondents sought information from internet sources by 'googling' – entering the name of the psychoactive medicine into the Google search engine at www.google.com. Directed by the key words that were googled, the electronically available package insert was an important source that most respondents used. Furthermore, they also searched for information from general websites such as drugs.com and pyschonautwiki.org, or, to a lesser extent by checking websites of online pharmacies or professional organisations (e.g. *Belgisch Centrum voor Farmacotherapeutische Informatie*, VAD – Drug info line, Safe 'n Sound, Jellinek). A limited number of interviewees reported that they consulted scientific articles (e.g. Web of Science, NCBI, Google Scholar) and academic books online.

Respondents recognised the value of the (online) package insert and professional websites as an important objective source of information, giving standard indications of the chemical structure, the dosage and the (side) effects of the psychoactive medicine. Nevertheless, at the same time, some respondents said that these sources offered too much generalised information and not enough about what users actually experienced, and contained difficult language or terminology that was not always easy to understand. In a similar vein, respondents sometimes criticised these sources because they were seen as putting forward a one-sided discourse that depicts nonmedical use as a 'problem' and nonmedical users as deficient in some manner. One of the interviewees commented in this respect that:

> *"On pharmacological sites, they say that if it's not prescribed by a doctor, well, it's the devil. But on forums there are real people who are testing and giving their own points of view. "* (R54)

For the respondents, the key was to effectively sort through all of the available websites found and to locate clear and trustworthy sources. For this purpose, some respondents seemed to evaluate the information in light of their own experiences and cross-checked the information coming from different online sources:

> *"Different websites… you cannot trust just one website, so I always try to search for different sources and look for similarities."* (R18)

Second, forum-based online platforms (such as www.reddit.com, www.bluelight.org, www.drugsforum.nl, www.psychonaut.fr, www.psychoactif.org and www.erowid.org) were also

consulted by our respondents (see also Chapter 11 Rapid analysis of online discussion forums). Even the online video-sharing platform YouTube and the microblogging and social networking website Tumblr were sometimes consulted as a source of information. Information based on the personal experiences of peers was prominent in these online sources. It is clear that several respondents were specifically looking for user experiences in order to inform themselves. In particular, those respondents indicated that peer-based online forums contained useful information such as 'trip' reports, personal stories or experience-based advice from peers. Some respondents considered this source trustworthy enough for managing their own use and/or said that they actively used online forums to post and share their own experiences with the nonmedical use of psychoactive medicines:

> *"Users often describe 'I feel like…' or 'The problem I experience is…'. These users have obtained prescriptions, yes, but these descriptions show what to expect exactly."* (R44)

Nonetheless, several respondents had reservations about the trustworthiness of these peer witnesses, partly because they are individual experiences. Although the quality of the product was mostly well known, most respondents seemed well aware that the dosage and the (side) effects still depended on the person taking the medication. Therefore, they believed that caution should be exercised before deciding to experiment based on such information:

> *"If you read 700 reactions coming from people who are using medication, there will be plenty of different experiences.* […] *Based on your own experiences, you know what or what not to believe.* […] *That is interesting. Some people who have been experimenting share their knowledge. The more you read those experiences, the more untrue stories you discover. After a while, you learn how to filter these stories, I think."* (R01)

Objective medical knowledge was therefore considered important, as were more subjective reports. But it is noteworthy that most respondents seemed to critically consult and use internet-based information. In a similar vein, a few of the respondents recognised physicians as generally good information sources, but indicated that these medical professionals were not easy to approach with questions about nonmedical use and may have differing opinions. For instance, except for respondents who used psychoactive medication with a medical prescription (but nonmedically), professionals such as physicians, psychologists or pharmacists were less often mentioned as a source of information that can be easily turned to. These professionals were described as experts using a different language, and as not always accepting of this type of use:

> *"Because then they will pop the question, 'Why are you taking that? Do you really need that?' I don't feel the need to have such a conversation* [laughs]*."* (R44)

11. Rapid analysis of online discussion forums

The internet and online forums, in particular, are important sources of information about NMUPD. As discussed in Chapter 10, online platforms from which respondents sought information (e.g. the effects and side effects, the different administration methods and the risks and harms associated to use), allowed people to share personalised experiences and feedback. In this chapter we focus on the online forums that discuss the nonmedical use of prescription medication and which were identified (1) through an online explorative search and (2) via the respondents in the survey and interviews. While these findings provide some relevant insights, they are not generalisable.

11.1. Online forums in interviews/survey results

As described in Chapter 10, forum-based online platforms were a popular information source among our respondents. In particular, almost 28% (N=160) of survey participants reported consulting online discussion forums. In an open survey question we asked respondents to provide the names of the online discussion forums that they consulted, and we list these below (see Table 16 below).

As outlined in Table 16, online discussion forums such as Reddit, Erowid, Drugsforum, Psychonaut, Bluelight and Pschoactif were most often mentioned by participants in the survey (and the top six were also the most frequently discussed during the interviews). In addition, some participants revealed how they initially found out about these forums. It is clear that they often used a search engine such as Google to find relevant forums or threads on forums, and that they did not stick to just one forum. Survey participants often mentioned more than one online forum when answering this question.

Table 16: Online forums reported by survey participants

Forum name	Number of times mentioned among respondents who provided names of online forums (N=86)
Reddit	20
Erowid	14
Drugsforum	12
Psychonaut, Psychowiki, Psychonautwiki	9
Bluelight	7
Psychoactif, Psychoactif.fr, Psychoactif.org	5
Doctissimo	4
Quora	3
Tripsit	3
4Chan, 420chan	3
9lives	1
BCFIwikipedia	1
Compedium	1
Dokter.nl	1
Fok!	1
Facebook group 'harm reduction'	1

Our findings showed that forum users often consulted multiple forums to look for information and, importantly, that they very often consulted English language forums. They often used a search engine such as Google to find relevant forums or threads on forums. Also, there seemed to be a clear preference for online forums with a particular focus on drug-related topics. As a result, it appears that participants most often consulted drug-related English language forums as described in the following:

> *"There are Dutch forums but my English is good enough. Articles in English mostly are more legible.* […] *There are many famous websites people turn to. Erowid is a well-known example."* (R01)

One person told us:

> *"I prefer to consult English language forums like Reddit. I can easily find testimonies from users who have experienced combination of substances. Furthermore, they share their emotional life and their 'bad trips'."* (R54)

11.2. Explorative analysis of online forums

An online search was conducted to identify online forums that discussed NMUPD. The inclusion criteria and key search terms used to retrieve these online forums are included in the Methods section of this report.

In order to obtain an overview of the identified online forums and a general sense of their features, we first made an inventory of a limited number of variables: language/country of origin, forum structure, focus of forum, and the number of members and messages. Second, a thematic analysis of the threads (i.e. strings of posts) was conducted to identify the main themes used to discuss or to communicate about NMUPD online.

11.2.1. General forum characteristics

Language / country

Through our explorative online searches we identified 27 online forums, of which 19 were in Dutch and 8 in French. It should be noted, however, that a key feature of online forums is that people from anywhere in the world can read or post in any forum they wish, so they are usually not country-specific. However, the domain name extensions at the end of website URLs helped us to categorise them. For instance, of the 19 forums in Dutch one appeared to originate in Belgium, while 18 might be based in the Netherlands. All eight of the French language forums seemed to originate in France.

Table 17: Characteristics of online forums

Name of forum	Language	Country	Structure and focus of forum	Years active
9lives	Dutch	BE	Discussion forum – general	2001–2021
Fok!	Dutch	NL	Discussion forum – general	1999–now
Drugs-forum	Dutch	NL	Discussion forum – drug-related	2003–now
Drugsforum voor en door gebruikers	Dutch	NL	Discussion forum – drug-related	2000–now
Drugsinfoteam	Dutch	NL	Q&A forum – drug-related	n.a.
Dreamers forum	Dutch	NL	Discussion forum – general	n.a.
Partyflock	Dutch	NL	Discussion forum – drug-related	2002–now
Indepressie	Dutch	NL	Discussion forum – drug-related	2009–now
Mijnmedicijn.nl	Dutch	NL	Discussion forum – drug-related	2008–now
jointjedraaien.nl	Dutch	NL	Discussion forum – drug-related	2015–now
Psytopia.nl	Dutch	NL	Discussion forum – drug-related	2015–now
Verslavingdebaas.nl	Dutch	NL	Q&A forum – drug-related	2017–now
Girlscene	Dutch	NL	Discussion forum – general	2011–now
Scholierenforum	Dutch	NL	Discussion forum – general	2001–now
Forum ADHD Blog Nederland	Dutch	NL	Discussion forum – general	2016–now
DPH Forum	Dutch	NL	Discussion forum – drug-related	2004-2019
Animewolkenforum	Dutch	NL	Discussion forum – general	2011–2012
Drugsforum	Dutch	NL	Discussion forum – drug-related	2010–now
Hoe zit dat. Info	Dutch	NL	Discussion forum – drug-related	2019–now
Psychonaut	French	FR	Discussion forum – drug-related	2002–now
PsychoActif	French	FR	Discussion forum – drug-related	2006–now
Benzo Forumactif	French	FR	Discussion forum – drug-related	n.a.
Soutienbenzo	French	FR	Discussion forum – drug-related	n.a.
Doctissimo	French	FR	Discussion forum – general	2000–now
Addict'Aide le Village des addictions	French	FR	Discussion forum – drug-related	2018–now
Jeuxvideo	French	FR	Discussion forum – general	1997–now
Lucidstate	French	FR	Discussion forum – drug-related	n.a.

Forum structure: discussion or Q&A

A distinction can be made between forums depending on their structure. We found that most of these were discussion forums (N=25), defined as an online discussion site where people can hold

conversations in the form of posted messages. The structure of a discussion forum is hierarchical: it consists of several threads, which are topics or themes about which a discussion or conversation is started and where people can add posts and reply to others as often as they wish. Thus, threads in online discussion forums consist of strings of posts that are connected by a central theme. Users can be anonymous or may have to register and then subsequently log in to post messages. On most of these online forums, users do not have to log in to read existing messages.

In addition to the online discussion forums, we also found two online question-and-answer forums (or Q&A forums) that included issues about the nonmedical use of prescription drugs. In these Q&A forums, questions are posed by users and discussions are moderated by professionals or professional organisations. An example of a Q&A forums is Drugsinfoteam.nl.

Focus of the forum: drug-related or general

Given the broad scope of our analysis, one of the important findings to emerge is the principal focus of these 27 forums. We observed a clear preponderance of online forums dedicated to drug-related topics only (N=18), in which sharing drug-related information – whether about prescription drugs or illicit drugs – was a prominent feature. In particular, the drug-related online forums typically included threads about experiences with prescription medication (e.g. mijnmedicijn.nl) and illicit drugs such as cannabis (e.g. jointjedraaien.nl) or psychedelics (psytopia.nl), or about the risks and harms associated with drug use (e.g. drugs-forum, drugsforum voor en door gebruikers). Drug-related forums are an accessible way to access information for anyone who is interested in the nonmedical use of prescription drugs, whether or not he/she consumes illicit drugs or prescription drugs nonmedically him/herself. Further, it seems that these online forums offered a place where a community of individuals with similar interests in illicit and licit drug use could connect.

We also found relevant threads about the nonmedical use of prescription medication in online discussion forums with a much broader focus. Gaming and health or well-being, for instance, are part of everyday conversations, but online forums about these topics also seemed to also attract people wanting to discuss drug-related topics. In particular, in nine examples – forums about ADHD (e.g. Forum ADHD Blog Nederland) or forums about everyday topics such as fashion, studying or gaming (e.g. Girlscene, Scholierenforum, 9lives, Doctissimo, Jeuxvideo.com) – we found posts and reactions to posts that were related to NMUPD.

Number of messages and members

There was a broad range of interactions in the online forums – quantified in the number of messages and the number of members. As these numbers are incomplete, we can only provide some general trends observed regarding the total volume of the forums included in this analysis.

Our searches resulted in an overview of 27 online forums, which covers threads about nonmedical use of prescription medication within a time period of about 20 years. The oldest online forums, Jeuxvideo and Fok!, were started in the late 1990s, and most of the others (N=8) were set up during the early 2000s (e.g. 9lives, DPH Forum, Drugs-forum, Drugsforum voor en door gebruikers, Partyflok, Scholierenforum, Doctissimo, Psychonaut). A few forums (N=4) had been set up more recently, with the first message posted in the last five years (> 2016). The vast majority of these online forums are still active, but three (DPH Forum, Animewolkenforum, 9Lives) seem to have no recent posts or activity.

When considering the number of messages, it is important to note that these figures capture the total number of messages appearing on the forum, not those specifically related to the nonmedical use of prescription drugs. Apart from some outliers, the total number of messages was quite limited, although this was affected by the number of active years of the forum. In almost half of the reviewed forums the total number of messages exceeded 10,000. Many had 5,000 or fewer, and some had only 50 messages. Among the drug-related discussion forums, it is worth mentioning that the French forum 'Psychonaut' and the Dutch forums 'Drugs-forum', 'Drugsforum' and 'Drugsforum voor en door gebruikers' seemed to be the most popular, with the highest number of messages (> 100,000).

11.2.2. Threads in online forums: principal focus on advice and personal experiences

We now turn to the thematic coverage in these forums related to NMUPD. The primary source of data for this explorative analysis was the discussion threads.

Forum members were willing to share information that came from their personal experiences of prescription stimulants, sedatives or analgesics. Each type of medication (sedatives, stimulants or analgesics) was discussed. In total, we identified 131 relevant threads which have been included in the analysis. As outlined in Table 18 below, we found the highest number of threads for Ritalin (stimulant), Xanax (sedative) and tramadol (analgesic).

It is important to note here that we only selected those threads that can be associated with the nonmedical use of prescription medication. However, this is often a thin line and not always easy to determine based on the title of the threads, or even when reading the first post within a thread.

Table 18: Type of medication mentioned in online forums' threads

Type of medication	Total number of threads*	Brands or names occurring in a thread*		Main focus in threads**
Stimulants	39	***General*:**		Performance enhancement (14) and recreation (14)
		Not specified ADHD medication	7	
		Specific name:		
		Ritalin	27	
		Concerta	3	
		Methylphenidate	2	
		Amfexa	2	
Sedatives	51	***General*:**		Self-medication (including addiction/tolerance/withdrawal symptoms) (39) > recreation (9)
		Benzodiazepines	7	
		Calming substances	1	
		Specific name:		
		Xanax or alprazolam	22	
		Temesta or lorazepam	8	
		Valium or diazepam	5	
		Chlordiazepoxide – Librium	2	
		Oxazepam	2	
		Tranxene	1	
		Bromazepam	1	
		Nitrazepam	1	
		Clonazepam	1	
Analgesics	41	***General:***		Recreational (20) > self-medication (10)
		Pain medication	3	
		Opiate use	1	
		Specific name:		
		Codeine	8	
		Tramadol	17	
		Oxycodone	5	
		Morphine	3	
		Fentanyl	2	
		Paracodine	1	
		Dexmedetomidine	1	

*Notes: * Title of threads including a brand or a type of medication. ** The missing numbers, if any, are threads that could not be categorised.*

In threads associated with the nonmedical use of **stimulant medication** such as Ritalin or Concerta, there was a clear emphasis on questions and discussions about the effects, including side effects and desired effects. For instance, in some threads, losing weight due to the use of Ritalin was discussed as an unwanted side effect, while in other threads it was seen as a desired effect. What is more, the observed threads were very often closely linked to study performance enhancement, which has been found to be the main motive of use for stimulant medication in this study (see Chapter 3). In particular, among the desired effects, most threads referred to how Ritalin or Concerta may improve concentration and alertness, or how these medications may help increase someone's energy or make them more productive. For instance, illustrative examples of threads were: "*Using Ritalin for a test*", "*Exams…what should I take?*", "*Drugs that enhance your capability to learn?*" In addition, some threads went beyond performance enhancement motives and focused on the use of stimulant medicines in recreational contexts. In particular, these threads seemed to focus on the concurrent use of stimulant medication and other substances, such as illicit drugs (e.g. cannabis, psychedelics), tobacco and alcohol. Exemplary threads were: "*Ritalin and weed*", "*Ritalin and smoking*" and "*Concerta and alcohol*". Here, threads covered questions about concurrent use 'out of curiosity' as well as questions

about the potential harms of using stimulant medication together with, for example, alcohol or cannabis. Also, some forum members sought advice about snorting prescription stimulants as an administration method and perceived tolerance to stimulant drugs like XTC or amphetamines when using stimulant medication nonmedically. These forum members started threads such as "*Snorting methylfenidate?*" or "*XTC vs ADHD*". Finally, another category of threads contained questions about the supply of stimulant medication. Threads such as "*Do you need a prescription for Ritalin?*", "*Asking to buy Ritalin*", "*Can I buy Ritalin if I don't have ADHD?*" or "*Trying Ritalin without diagnosis*" included posts about how to obtain Ritalin without a prescription. Several forum members were willing to share their strategies in obtaining the medication, often through private posts or by giving general tips on where to obtain it (e.g. in the university library).

The nonmedical use of **prescription sedatives** such as Xanax, Temesta and Diazepam was also discussed in several online forums. While these threads focused on advice and personal experiences, their content was often more related to other aspects of nonmedical use than we have seen with stimulant medication. Here, far more threads addressed topics concerning the risks and harms of the nonmedical use of sedatives. Threads, and underlying posts in particular, included many questions about the risk of addiction, tips about quitting the use of sedatives or even how to recognise and handle withdrawal symptoms. Illustrative threads are, for instance, "*Taking less oxazepam*", "*Diazepam: cold turkey quitting or more slowly?*", "*I think I am addicted to Xanax*", "*Help me. Anxiety caused by stopping the use of Xanax*" and "*Relapse on benzos*". Furthermore, another theme that regularly seemed to occur in these threads was the risks associated with the concurrent use of sedatives and alcohol and the concurrent use of several sedatives. For example, we retrieved threads such as: "*Xanax, dosage and alcohol?*", "*Alcohol + Xanax: which risks?*", "*Alcohol/Temesta*". Threads about any negative experiences were not isolated to just physical effects: members also openly talked about any negative mental health effects they were experiencing from particular sedatives or combinations of sedatives. In many of the threads, forum members guided other members in how to prevent or minimise harm or how to recover from drug addiction.

Apart from exchanging personal experiences and advice regarding addiction or recovery, some threads aimed to provide some general information about different types of sedatives. Some forum members seemed to use the forum to summarise information about the chemical structure, effects, side effects and effectiveness of sedatives. In those instances, members did not refer people to a specific health service or did not advise them to seek further health information. In contrast, they started their thread by providing internet links or by posting information taken from different online sources. For instance, a forum member started a particular thread like this:

> *"I describe the characteristics of benzos, what they are, why you can use them. Also, you can find some advice about nonmedical use, and reasons not to use them. In fact, here you can find all you need to know about this topic."* (Benzodiazepinen – thread; Drugsforum voor en door gebruikers)

Furthermore, some online forums also informed peer-users by reviewing and rating their own personal experiences with a particular prescription sedative. The users, then, reviewed and rated their latest use of a particular sedative by indicating their percentage of satisfaction with the sedative, its effectiveness and the amount of side effects. In several examples, forum members compared the self-perceived effects of different sedatives. Short threads with the brand name of the sedative were often created to this end. For instance, threads on the online forum 'medicijnman' were named: "*Xanax*", "*Chloordiazepoxide Libruim*". Generally, the use referred to in all these threads regarding sedatives

mainly occurred in a context of self-medication, particularly covering the use of prescription sedatives in order to cope with (self-diagnosed) mental or physical health problems.

However, in some of these threads we also unveiled a connection with the recreational use of sedatives. As discussed earlier (Chapter 3), sedatives are sometimes used recreationally for relaxation and pleasure purposes, for instance 'to get high' or 'to have fun'. In threads such as: "*Favourite benzodiazepines*" and "*How much Xanax to have a good trip?*" forum members explicitly asked about experiences with new or unknown sedatives in recreational settings. Also, in a thread named "*Benzodiazepines and their interactions*", a forum member sought advice about the use of prescription sedatives in order to sleep after having taken stimulant substances such as cocaine or speed to party. Similarly, in the context of the use of sedatives for recreational purposes, some threads (e.g. "*Snorting benzodiazepines*", "*Can you snort Xanax*?", "*Ketamine and Xanax*") turn out to be conversations or questions about the pros and cons of snorting as an administration method for particular sedatives or about combining sedatives with illicit drugs (e.g. concurrent use of Xanax and ketamine).

Rather exceptionally, supply was also a topic observed in a thread related to sedatives. For instance, in the thread: "*Who can help me out with Xanax?*", a forum member specifically asked whether there was someone he could obtain Xanax from.

The way the nonmedical use of **prescription painkillers or analgesics** was discussed in online forums was again different from the other types of prescription medication. If we look at the questions and themes involved in these threads, we found a clear emphasis on the recreational use of painkillers. These threads focused on how forum members could create the 'best high' or 'most euphoria' by using painkillers. The desired effects of different painkillers were broadly discussed and compared. Most of these threads started conversations about the ideal dosage and desired effects of the following painkillers: oxycodone, fentanyl, tramadol, codeine and morphine. We often observed that the effects of tramadol were compared to the effects of codeine and oxycodone, and vice versa. Oxycodone was also often compared to the effects of morphine. Examples of these threads are the following: "*Fentanyl and recreational drug use*", "*Oxycodone vs morphine*", "*What's the difference between oxycodone and tramadol?*", "*Mix tramadol + codeine*". Also, threads about the recreational use of painkillers included questions about the combination of painkillers and alcohol, as well as about which other substances could generate the same desired high (e.g. the thread *"Smartshop replacer for oxycodone?"*). Furthermore, in two examples ("*My addiction to tramadol and the trip*", "*First trip on tramadol*"), the threads start with a 'trip report' focusing on the experience of being 'high' on painkillers. Other threads (*"Hydrocodon experiences"*, *"Tramadol experiences"*) were created to ask for any trip reports or reports of recreational experiences with these particular painkillers. Similarly, in threads such as *"Injecting caps tramadol"* and *"Snorting tramadol"*, forum members asked for any advice about the 'high' effect that can be reached when using a different administration method.

Apart from the many threads about the recreational use of painkillers, we found several examples of threads where nonmedical users of painkillers simply shared their personal story without posing any questions. These personal stories included a description of their use, the evolution of their use, the problems they faced and how they tried to deal with their use and personal life. It was clear from these descriptions that these forum members used these medicines for self-medicating purposes. In addition, as with the threads about sedatives, we found some threads that included questions about the risks of addiction and the willingness and/or difficulties of quitting, especially when the use of

oxycodone was discussed. Exemplary are threads such as: *"Quiting* oxycodone*"* or *"Addicted to pain medication"*. Those forum members who self-medicated with painkillers also seemed to start threads about the side effects of particular painkillers or the combination of sedatives and painkillers: *"Tramadol + lorzepam?"*, *"Codeine + Xanax"* and *"Tramadol, impossible to get some sleep*".

Finally, as with threads about prescription sedatives, one thread was associated with supply issues. In the thread *"Paracodine 10mg"*, the strategy of feigning symptoms of pain in order to receive prescriptions was discussed. Also, we found one thread where a forum member just informed other members about the effects, the chemical structure, etc., of painkillers by means of providing an internet link. Again, references to professional health organisations or any advice to seek further health information were not found.

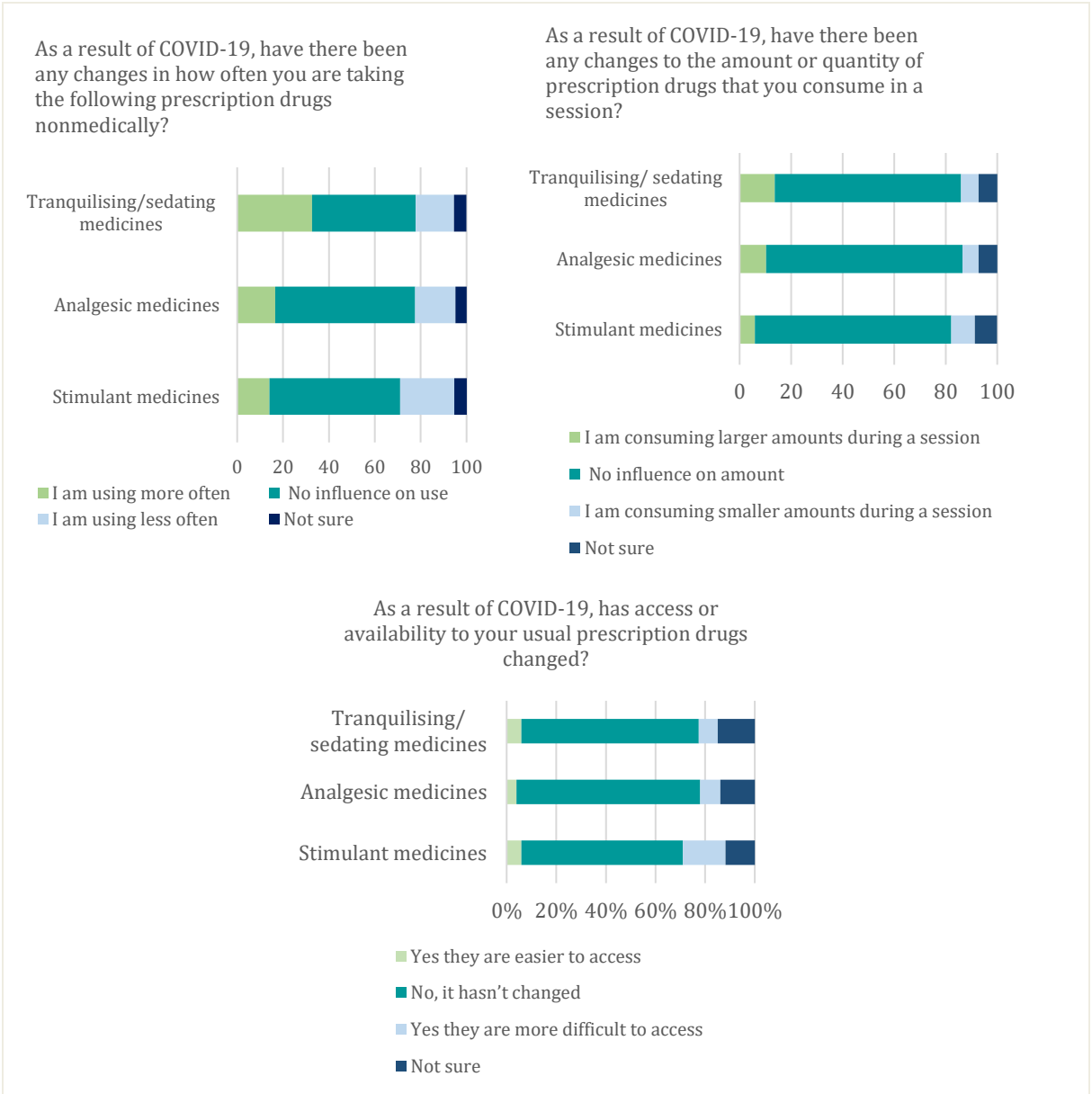
11.2.3. Anonymity of the forums

Anyone can search for threads and read the posts and replies. In order to actually participate in the discussion and add posts, one is required to create an individual account. An individual may choose to reveal as much or as little about themselves as they wish. While online forums allow everyone to gain information from a large number of peers, those who actually make threads and aim to gain specific and detailed responses from other forum members about NMUPD value the anonymity of the online forums. In exploring the threads, it became clear that the anonymity that forums provide seems to build some trust that allowed members to discuss important topics related to their experiences which may not come up in open forums. For instance, in particular cases, we observed that the moderator of the forum had to confirm to a member that his message would be anonymous. After starting a thread about his risk-taking behaviour regarding oxazepam (sedative) and its connection to addiction, a moderator wrote to the member who expressed his concerns about the anonymity: *"Dear X, your name and location are only visible to yourself. Other members cannot see this. You can be sure."* (Source: Forum Verslavingdebaas).

12. The effect of COVID-19 on NMUPD

The COVID-19 pandemic has profoundly impacted our daily lives in many ways. In this study, we also looked into the impact of the pandemic and associated measures on NMUPD. In the analysis of this section of the survey, we excluded participants who had not used prescription drugs in the past 12 months. According to our survey results, the majority of the sample indicated that there was no clear influence of COVID-19 and its associated measures on their frequency of use, the amounts of prescription drugs used nonmedically and on accessibility and availability. However, we noticed some smaller changes regarding frequency and amounts used in relation to prescription sedatives and stimulants. Sedatives were used somewhat more often and in larger amounts, while stimulants were used less often and in smaller amounts (see Figure 12 below).

Figure 12: The impact of COVID-19 on NMUPD (%)



*Only for those respondents who indicated having used the particular medicine in the past 12 months.

12.1. Access and availability

According to the respondents, the COVID-19 pandemic and related confinement measures had no significant effect on their access to or the availability of all types of psychoactive medications. A small number of survey participants indicated that stimulant medicines were more difficult to access (17.2%, N=32). Even in the instances where a higher use was reported (see below), respondents mainly turned to their usual sources of supply, e.g. the leftovers from the prescriptions of family or friends. One of them told us:

> *"I don't see any difference regarding availability. I still get tramadol from close friends and I still get sedatives via the internet."* (R48)

Some interviewees who used psychoactive medications with a medical prescription, but outside the medical guidelines, mentioned that they had consulted their doctor more frequently during the COVID-19 pandemic period in order to obtain more dosages of their medication.

12.2. Patterns of use

The small changes in how often and in what quantities respondents were taking prescription drugs nonmedically may be related to the motives for use, with COVID-19 having the largest impact on NMUPD for recreational and self-medication purposes.

For many of the interviewees, a part of socialising is centred around going out to meet friends and family. With the closure of late-night venues and bars, these users reported that they simply had no more reason to use prescription medications **recreationally** (e.g. to have fun or to party longer). In particular, they reported using less stimulant medication during the period of the COVID-19 pandemic.

As some of our respondents indicated that they used prescription medication in order to cope with (self-diagnosed) mental or physical health problems, their use also seemed to be affected by how they succeeded in coping with the lockdown measures, for instance. Several respondents who used prescription medication for **self-medicating purposes** (e.g. to cope with (self-diagnosed) mental or physical health problems) clearly highlighted the burden of the COVID-19 pandemic on their mental or physical health and on their overall daily lives.

Some of the respondents reported small changes to the amount of use or type of medication taken during the early period of the COVID-19 pandemic ('strict lockdown') in spring 2020. In particular, some respondents who used sedatives for self-medicating purposes experienced particular consequences as positive, such as the freedom to deviate from what they considered as society's expectations. They reported that they were less stressed and felt more comfortable when living in social isolation. These respondents felt relieved of certain social stressors, such as parties and appointments, and indicated that they were more able to cope with (self-diagnosed) mental or physical health problems. Accordingly, these respondents reported using less during the strict lockdown phase. In those cases, they also described their changing behaviour when society slowly transitioned back to 'normal' life over the summer of 2020. In particular, some reported a slightly higher use of sedatives directly after the strict lockdown was lifted in order to cope again with their anxiety, acute stress reactions, or panic attacks. One of them told us that:

> *"Two months of lockdown, I was completely calm. There was nothing to do. There was no more stress, I had no obligations, no responsibilities. And my day consisted of: getting up at 8 o'clock, going to the store, cooking something, watching a TV series,… it didn't matter because I had nowhere to be the next day. So it didn't matter if I slept badly or had too little or too much sleep.* […] *And, then, the moment you could go outside again, see friends, had responsibilities, had appointments,… I got a lot of panic attacks.* […] *I realised, 'Wow, I'm trying things here to calm down, to deal with the panic or deal with the fear'* […] *When I go to a social event I want to show up happy and energetic.* […] *But I'm just afraid, if I'm having a bad day, I'll be stigmatised again with 'Ah, but he has depression'. And that is what I want to avoid and that is why I use more."* (R01)

At the same time, the stress of not being able to see friends or family and feeling 'unbalanced' by social isolation negatively affected the mental or physical health of other respondents. For them, using sedatives was a way to manage this anxiety-provoking and stressful time, as noted by this respondent:

> *"During the lockdown, my use increased from 0.25 milligrams to 0.50 milligrams. That is not too bad* [laughs]. *It is the double amount. I admit.* […] *the lockdown really threw me off balance."* (R39)

The impact on the use patterns of respondents who used prescription medication, mostly stimulants, for **performance enhancement** (i.e. to improve concentration, to have more energy and to perform better) seems to have been twofold. On the one hand, several respondents, particularly those who occasionally used prescription medication for general study/work performance enhancement, cited some changes in their use patterns. These respondents referred to the fact that during the lockdown courses were taught online or people were mainly working from home. Some respondents found it easier to focus on their job or school assignments. In particular, they reported that the restriction measures helped them to build some good routine habits and to improve their general performance.

On the other hand, some respondents whose prevalence and frequency of stimulants use was highest during examination periods reported using those medications in a similar frequency and dosage. One commented that:

> *"My use did not change, the purpose remained the same: a better performance… whether these examinations were held during the COVID-19 pandemic or not."* (R26)

12.3. Impact on the use of illicit drugs

When discussing whether and how the COVID-19 pandemic affected NMUPD, several respondents also discussed their use of alcohol and illicit drugs. In the absence of public gatherings, most respondents self-reported drinking slightly less alcohol compared to before. Many respondents reported a decreased use of illicit drugs commonly used in 'party' settings (e.g. cocaine, ecstasy, MDMA) as they stayed at home. In contrast, we found greater self-reported use of cannabis during the period of the COVID-19 pandemic. In particular, most respondents who used cannabis before reported an increased consumption of cannabis. Boredom was the main reason for turning to cannabis more often. In particular, respondents said they were smoking more because they had more time on their hands.

CONCLUSIONS

Prescription drugs are increasingly used for both medical and nonmedical purposes (Griffiths et al., 2014; Rönka & Katainen, 2017), and their impact on the individuals who use them has been assessed quite widely. So far, most research in this field has been conducted in the United States though, where the context, in particular regarding the use and regulation of prescription drugs, is very different from that in Europe and Belgium. To the best of our knowledge, this is the first study to explore the nonmedical use of prescription drugs (NMUPD) among young adults (aged 18 to 29) in Belgium. Our study explored: (1) what young people thought about their nonmedical use practices (e.g. types of medications used, settings of use and supply), associated risks and social acceptability; (2) what information they consulted and relied on about prescription drugs; (3) how online communities of (potential) users discussed the nonmedical use and supply of prescription drugs; and (4) measures to help prevent or reduce NMUPD and related harms. More specifically, we focused on the following groups of prescription drugs: sedatives, analgesics and stimulants, as they seem to have been most predominantly associated with nonmedical use. Nonmedical use has been defined in this study as: (i) use without a prescription, (ii) or use in ways not intended by the prescriber, such as using prescribed medications in higher quantities, in a manner other than as prescribed, or for purposes other than as prescribed.

Utilising mixed methods, including an online survey, in-depth interviews and a rapid analysis of online forums, this study aims to contribute to the currently limited knowledge about NMUPD among young adults residing in Belgium. Given the limitations of our research approach and study sample (outlined in detail in the Methods chapter), our findings are not generalisable to all young adults who use prescription drugs nonmedically in Belgium. Nonetheless, they are broadly in line with the results of previous studies conducted outside Belgium on NMUPD.

Young adults' perceptions of their nonmedical use practices (e.g. motives for use, settings of use and supply), associated risks and social acceptability

Corroborating previous study findings (Boyd & McCabe, 2008), our study confirms that the phenomenon of NMUPD is heterogeneous: we found that the young adults were using one or more psychoactive medication (sedatives, analgesics or stimulants) in different contexts, and their motives for use varied. Prescription drugs were used for self-treatment, performance enhancement and sometimes for recreational purposes. Prescription analgesics and sedatives were mainly used for self-treatment, whereas stimulants were mostly used for study purposes and (to a lesser extent) for recreation, a finding consistent with earlier studies (Boyd et al., 2006; Lord et al., 2011; Brandt et al., 2014; McCabe et al., 2007; Papazisis et al., 2018). While analgesics are designed to relieve physical health problems, participants also used them to alleviate psychological issues (Lord et al., 2011; Peck et al., 2019; Cutler & Kremer, 2017; Daniulaityte et al., 2009; McCabe & Cranford, 2012). The young adults were primarily using these pharmaceutical products as solutions for problems that they encountered in daily life (e.g. sleep and study problems). Unsurprisingly, a number of young adults who used prescription drugs nonmedically also reported legitimate medical use (see also Bardhi et al., 2007; Brands et al., 2010; Kokkevi et al., 2008).

A particularly interesting area in this study was young people's reported initiation patterns, including initiation age, sources of supply and motives. As other studies conducted in Europe and the US (Kokkevi

et al., 2008; Frank et al., 2015) also found, the age of initiation for nonmedical use of prescription drugs is during adolescence; in the case of this sample it was 16 to 18 years old. In our study, in line with, for example, Dertadian et al., 2017, initiation of NMUPD occurred both with and without a prescription: in the former case, nonmedical use was often initiated using leftovers from the young person's own prescriptions; and in the latter, prescription analgesics and sedatives were often obtained from a family member, while prescription stimulants were more often given by friends. It is notable that the initial supply channel often seemed to be someone that the young person knew well and trusted, whether that was a friend, a family member or a GP. In addition, initiation to NMUPD was commonly associated with motives of self-medication and performance enhancement. Recreational initial use, i.e. using these prescription drugs to experiment, party or get high, was mentioned less frequently. On the occasions when initiation had occurred in a recreational context, this usually involved prescription stimulants.

In this study we also elaborated on the patterns of NMUPD, focusing on the frequency of use, dose patterns, administration methods, concurrent substance use and setting of use. NMUPD among young adults can be defined as opportunistic. Our findings show that most young adults who used prescription drugs nonmedically did so occasionally or sporadically, and their overall experience with NMUPD was quite limited (see also Kelly et al., 2013b; Benotsch et al., 2011; Wu et al., 2008). Most stressed that their use was temporary and likely to cease over the long term. Because the prescription drugs were primarily used for performance enhancement or self-medication, nonmedical use most often seemed to occur in a solitary context at home, with the knowledge of a few friends/family members. Prescription drugs were used recreationally both alone and with roommates, friends or acquaintances. The vast majority of the young adults administered prescription drugs via the conventional oral route (see also McCabe et al., 2007; Teter et al., 2006; Faraone et al., 2020). When the drugs were administered through non-oral routes, such as snorting, this was typically associated with recreational use, confirming previous research (McCabe et al., 2007; McCabe & Cranford, 2012). In line with previous studies, we found that these young people sometimes used larger amounts of their prescription drugs (Holloway & Bennett, 2012; Holloway et al., 2013; Sepulveda et al., 2011) to intensify the effects associated with the medicines. They seemed to be less mindful of dosages and more likely to increase the dose when prescription drugs were used for recreation than when they were used for self-medication or performance enhancement.

Overall, also in line with previous research, our results show that prescription drugs might be used concurrently with other psychoactive substances (Bardhi et al., 2007; Quintero, 2009; Brandt et al., 2014; Egan et al., 2013; Frank et al., 2015). In the transitional period of 'emerging adulthood', young adults are often considered as a vulnerable group prone to taking risks and driven by curiosity and experimentation. In this experimentation phase, the use of prescription medicines and illicit drugs is connected; in line with previous research (Lankenau et al., 2012; Brandt et al., 2014), the young people in our study who used prescription drugs nonmedically also reported higher rates of illicit drug use compared to the same age cohort in the general population (Gisle & Drieskens, 2019). Within our sample, tobacco, alcohol and cannabis were used most often together with prescription drugs, and participants only rarely combined illicit drugs other than cannabis with prescription drugs. Combining psychoactive substances purposely to alter the substances' effects, i.e. in order to increase or decrease their psychoactive effects, typically occurred in recreational contexts. When prescription drugs were mixed with other substances in order to enhance performance or self-medicate, this was done mainly in an attempt to counteract their psychoactive effects. However, it is worth noting that, in some

instances, using psychoactive substances concurrently also happened more coincidentally rather than intentionally. In these instances, multiple substances were taken in the same timeframe, or the substances were taken for the same purpose.

This study provides some insights into how prescription drugs for nonmedical use are obtained, which sources of supply are most common, and if and why respondents divert medication. In line with previous studies, we found that the young adults obtained prescription drugs for nonmedical use mainly through family members (including the medicine cabinet at home) and from friends for free (e.g. Boyd, McCabe, & Teter, 2006b; Faraone et al., 2020; Garnier-Dykstra et al., 2012; Gunter, Farley, & O'Connell, 2013). Another important source of supply was their own prescriptions for medical problems. The purchase of prescription drugs via other illicit channels (e.g. online, dealer) was less common (see also Holloway & Bennett, 2012; McCabe et al., 2006, 2007; Lord et al., 2011; Novak et al., 2016; Faraone et al., 2020). Finally, respondents only rarely obtained their prescription drugs fraudulently via physicians (e.g. malingering) or pharmacies.

As in previous studies into NMUPD (Faraone et al., 2020), our study found that it is quite common for young people to divert their medicines to friends and family members. Almost half of the study participants had ever diverted prescription drugs, and the majority had been offered prescription drugs in a nonmedical context, mainly prescription stimulants. More specifically, transactions mostly involved the sharing or trading of small amounts of medication with friends or acquaintances without the expectation of a monetary payment or other exchange. Only a minority were involved in more impersonal interactions with a monetary exchange, or reported that they did not proactively offer pills to friends or acquaintances.

Our study also explored young adults' perceptions of NMUPD. Earlier research has shown that users perceive prescription drugs as inherently safer and less addictive than illicit drugs because they undergo robust clinical research, are used medically, are widely available, and are produced by legal pharmaceutical companies (Mui et al., 2004; Quintero, 2012; DeSantis & Hane, 2010; Quintero, 2009; Lord et al., 2011; Cutler & Kremer, 2017; Frank et al., 2015; Compton & Volkow, 2006). Our results confirmed this perception of the superior safety of prescription drugs. In particular, respondents considered the use of prescription drugs for self-treatment and performance enhancement to be safer, and more morally acceptable, than recreational use. An individualistic, performance-oriented culture, together with the increasing 'pharmaceuticalisation' of society, might explain these permissive attitudes towards self-treatment and performance enhancement (see also Dertadian, 2019). Also, the facts that the majority of the young adults believed that prescription drugs were easy accessible without a prescription, and that they were mainly obtained from sources close to or trusted by the young adult, including parents, friends and GPs, might reinforce this perceived sense of safety. Nonetheless, the young adults interviewed for this study were also aware of the health risks associated with the NMUPD and some also acknowledged that their sense of safety might be false. Many respondents described their own use as responsible and reported making reasoned and informed choices about NMUPD. For instance, they carefully considered their supply sources and the context in which their use took place, in order to reduce possible health risks. These risk management strategies can inform harm reduction policies (Pawson, 2019).

Finally, as the COVID-19 pandemic has unexpectedly and profoundly impacted our daily lives in many ways, the study also looked into its potential effects and associated measures on NMUPD. Among

participants in our study, the pandemic and related confinement measures had no significant effect on perceived access to or availability of all types of psychoactive medications. There were only small changes in how often respondents were taking prescription drugs nonmedically and how much they took, with COVID-19 reportedly having the largest impact on NMUPD for recreation and self-medication. In particular, sedatives were used somewhat more often and in larger amounts, while stimulants were used less often and in smaller amounts.

Information needs and sources

This study adds to the currently very limited body of research investigating the information needs and information-seeking behaviour of people who use prescription drugs nonmedically (Dertadian et al., 2017; Quintero & Bundy, 2011). We found that young adults searched for both objective medical knowledge and more subjective reports about prescription drugs. Generally, they wanted accessible, reliable and unbiased information sources about prescription drugs' adverse effects, health risks including addiction, and dosage. They consider themselves active agents with the right and freedom to make informed and autonomous decisions regarding prescription drug use. This finding is consistent with research investigating youth perceptions on alcohol and drug policies (Lancaster, Ritter & Matthew-Simmons, 2013).

The study findings indicate that young adults are likely to learn from trusted family members and friends, who are willing to share their knowledge about the dosage and the (side-)effects of a particular medication. This makes sense, as the first encounter with prescription medication was often through friends or family members, who often had previous (non)medical experience with these medicines. However, the young adults in our study did not rely solely on their initial sources, but also consulted other sources of information. They usually used the internet to search for information, in particular search engines (e.g. Google), and specialised websites,[27] and online forums to a lesser extent. This finding is consistent with existing literature in suggesting that the internet has become central to young people's lives (Dertadian et al., 2017; Quintero & Bundy, 2011; Lancaster et al., 2013). Official medical sources, such as medical professionals or the (online) package insert, were sometimes considered less suitable as sources of information, when the information provided was difficult to understand, too general (i.e., no information on personal experiences) and did not include harm reduction approaches. Instead, young adults consulted online forums, which offer personal experiences and testimonies.

The young people said they were particularly keen on using the internet for this purpose because it offers a large volume of information that is readily available and easily accessible. Some of the information that can be found online is provided by trusted websites such as the Ministry of Health and pharmacy associations. Nonetheless, the internet also features health information from less authoritative sources. Social media, forums, online health communities, etc. serve as platforms where anecdotal evidence and personal health opinions are commonly and widely shared, which may increase the risk of disseminating misinformation. However, importantly, the young adults in this study seemed to critically consult the internet. They tried to locate clear and trustworthy sources, by evaluating the information in light of their own experiences and cross-checking information coming from different online sources (see also Quintero & Bundy, 2011).

[27] Some examples include: www.apotheek.nl; https://psychonautwiki.org/wiki/Main_Page [15 July 2021].

Discussions about NMUPD in online communities of (potential) users

Online forums give peers the opportunity to discuss NMUPD. In addition to being sources of information, forums allow individuals to share personalised accounts and experiences. Online forums should in fact be considered an important 'location' for drug prevention among the NMUPD community, as they provide accessible information about the nonmedical use of prescription drugs, their effects and the motivations for using them. A substantial proportion of young adults who used prescription medicines nonmedically in this study (slightly more than a quarter of the survey participants) indicated that they consulted online discussion forums. Hence, we felt it important to include a rapid, explorative analysis of Dutch- and French-language forums in this study (see the Methodology chapter for a detailed description).

While our explorative analysis deliberately focused on forums in Dutch and French, with the expectation that this would allow us to investigate the Belgian context, it became clear that most participants in our study often consulted international drug-related forums. In particular, international online discussion forums such as Reddit, Erowid, Drugsforum, Psychonaut, Bluelight and Psychoactif were most often mentioned by the young adults in this study. They often used a search engine such as Google to find relevant forums or threads on forums and used more than one forum, including those in languages other than Dutch or French.

In the forums documented for this study, discussions about NMUPD mostly occurred in the more general drug-related forums that were structured to allow discussions, and in which sharing information about the use, effects or harms of (il)licit drug use was a prominent feature. Information exchanges mostly contained anecdotal evidence, and threads rarely included findings from the scientific literature or advice from health professionals.

If we focus on the threads associated with nonmedical use, the subject matter seemed to differ depending on the type of medication being discussed, and in the case of prescription stimulants and sedatives was very often similar to the main motives of use identified in this study. For instance, the threads associated with the nonmedical use of stimulant medication showed a clear emphasis on questions and discussions about the effects, including side effects and desired effects, related to study performance enhancement. A similar number of threads went beyond performance enhancement motives and focused on the use of stimulant medicines in recreational contexts and supply strategies for this medication. Threads about sedatives mainly discussed self-medication, particularly the use of prescription sedatives in order to cope with (self-diagnosed) mental or physical health problems. Accordingly, the content of these threads was often more related to topics such as the risk of addiction, tips about quitting the use of sedatives or even how to recognise and handle withdrawal symptoms. The way the nonmedical use of prescription painkillers or analgesics was discussed in these forums was quite atypical and not linked to the main motives for use uncovered in this study (primarily pain relief, followed by sleep and relaxation). For instance, surprisingly, we observed a focus on recreational motives for use. These threads focused on how forum members could create the 'best high' or 'most euphoria' when using painkillers.

Policy recommendations to prevent or reduce NMUPD and related harms among young people

Our study findings echo several approaches that can be considered as helpful tools to prevent and reduce NMUPD at the Belgian level, but also at the European level (EMCDDA fact sheet/ EU-funded project CODEMISUSED) and worldwide (UNODC, 2011; OECD, 2019). The policy recommendations set out in this chapter are structured around seven thematic areas: society, education, household, healthcare, online communication, recreational contexts of use, and future research. Integrated efforts by multiple outlets may be more effective than efforts delivered solely within one setting. At the same time, it is crucial to emphasise that there are several actors who could contribute to reducing NMUPD and associated harms among young people, not least the young adults themselves. Designing strategies that draw on the opinions and input of young people themselves may enhance their impact (Lancaster, Ritter & Matthew-Simmons, 2013; Dunne, Bishop, Avery & Darcy, 2017). It is important to note that this study did not evaluate prevention and intervention efforts per se and therefore the implementation of these recommendations is yet to be evaluated.

Policy area: Society

In recent years, more attention seems to have been paid to the (mis)use of psychoactive medicines and increasing prevalence rates in policy, prevention, treatment, harm reduction, research and by medical associations in Belgium at national and regional levels (e.g. BELPEP, 2014). As with most West European countries, the Belgian national drug strategy has a broader focus than illicit drugs only and includes licit psychoactive substances as well. In 2018, the EMCDDA monitored the national drug strategy documents of 30 European countries. Belgium is one of the nine countries that includes psychoactive medicines in these documents (EMCDDA, 2019). The 2001 Federal Drug Policy Note was designed to provide a comprehensive approach by focusing on illicit and licit drugs, and specific subsections are dedicated to psychoactive medicines. This increasing trend of national drug policies including psychoactive medicines in their prevention or treatment strategies is to be welcomed.

Nevertheless, in educational, prevention and harm reduction discourses, a distinction is often made between ‘illicit drugs’, ‘alcohol and tobacco’ and ‘medicines’. However, this terminology/classification may be contributing to the general view – also corroborated by some of our research participants – that medicines are intrinsically safer than other (illicit) psychoactive substances. Illicit psychoactive substances may create important additional risks for users deriving from their production process in illicit contexts and the lack of quality control (e.g. the presence of adulterants), but the health risks of using psychoactive substances depend on other factors as well as their chemical composition, including use patterns, context and motives for use (cf. set, substance and setting (Zinberg, 1984)). In our study, we observed that one of the reasons why young adults believed NMUPD was safe related to medication’s accepted medical and legal status – which is also consistent with the findings of earlier research (Sanders et al., 2014; Compton & Volkow, 2006). The use of prescription drugs was considered by our research participants to involve a lower risk than the use of illicit drugs, and this tended to be associated with the way they were produced, their medically sanctioned use, their legal status, and their relatively widespread use by many people for health purposes, prescribed by physicians and delivered by pharmacies. The societal image that is built around the use of medication (‘it is legal, it is safe, it is OK’), also known as the ‘medicalisation and pharmaceuticalisation of contemporary societies’,

which was also commented on by some of our interviewees, may have negative consequences for the use of prescription medications and the perception of harms caused by their use.

'Pharmaceuticalisation' might contribute to increased NMUPD, as people have more access and exposure to the medical use of prescription drugs, and become more accepting of them (Powell et al., 2020).

Therefore, it is important that, on the one hand, the general public remain assured that the medical use of prescription drugs can be safe when taken as prescribed, but, on the other hand, they should also be informed that this level of safety no longer holds true when the same prescription drugs are taken nonmedically (e.g. using alternative administration methods, higher use frequencies). It is crucial that the general public are correctly informed about the benefits, side effects and health risks of prescription drug use. A more nuanced understanding of psychoactive substance use can help tackle the incorrect assumption that prescription drugs are always safer than other psychoactive substances. To achieve this goal, a shift in public perception is needed so that there is a more all-round understanding that the mental and physical risks of using a substance go beyond a consideration of the product itself (cf. 'soft' vs 'hard' drugs) and its legal status (cf. licit (including medicines and alcohol) vs illicit drugs).

Neutral terminology and correct conceptualisations specific to NMUPD are also important. The concept of drug use is often oversimplified. Similar to illicit drug use, which is frequently labelled as abuse, regardless of the way and the context in which the drugs are used, the use of prescription drugs outside of what are medical accepted guidelines should not automatically be considered equal to abuse (Quintero, 2012). It is important to acknowledge the heterogeneity of the use motives, contexts and use patterns of NMUPD and that not every type of use is necessarily problematic (Pawson, 2019). This is important for the effectiveness of tailored prevention, harm reduction and intervention efforts. In addition, it would be valuable to embed these nuances in the practice of healthcare professionals when prescribing psychoactive medicines, particularly when they become aware of patients' NMUPD or illicit drug use.

Several prevention and harm reduction initiatives and awareness campaigns have already been launched by the FPS Public Health, VAD, FAMPH and de Druglijn (Seys, 2017; Goesaert & Baitar, 2018; FAGG, 2020; de Druglijn, 2015; Federal Public Service Health Food Chain Safety and Environment, 2018). The continued promotion of these initiatives could contribute to the general public's increased awareness of the health risks of NMUPD. To ensure broad dissemination, sensitisation campaigns are needed at different levels, including society and healthcare professionals such as prescribers, pharmacists, psychologists and those providing first line care (Ranjbar, Aslanpour, Kostrzewski & Cooke, 2017). Prevention and educational messages should be tailored to target audiences – for instance, information about the benefits and health risks of NMUPD should be presented differently for physicians and for potential users. The literature review and our own study findings show that NMUPD covers a heterogeneous group of behaviours (Boyd & McCabe, 2008). For instance, profiles, motives and use patterns differ by the types of medicine used nonmedically. It is therefore important that intervention and prevention programmes are diversified and tailored to the specific target groups using prescription drugs nonmedically. It is recommended that these campaigns are disseminated broadly through different levels. Since health matters are a federal as well as a regional responsibility

in Belgium, cooperation between the federal level and the regions is necessary and it is important that initiatives are aligned in Flanders, Wallonia and Brussels.

In setting up future public health campaigns, in order to challenge 'the pill popping culture', it is of equal importance to increase awareness of non-pharmacological alternatives for prescription drugs among the general population (e.g. the role of good sleep hygiene, the importance of healthy coping strategies to relieve stress and anxiety) and to encourage the public not to turn to medications as the immediate 'solution' for mild symptoms.

When striving to ensure the population is well informed about the benefits and the risks of nonmedical use, advertising considerations also need to be taken into account. As with alcohol, strict regulation of advertising and marketing may be an important policy tool in protecting (young) people against exposure to adverts about medication and their subsequent nonmedical use of particular prescription medication. Existing legislation relating to medicines[28] prohibits the advertising of prescription drugs to the general public, but allows non-prescribed medicines to be advertised. It is important to be aware of the potential impact of such advertising on the normalisation of the use of medicines in daily life and the broader phenomenon of the 'medicalisation' of society.

Finally, our study findings show that young people may become interested in the use of prescription drugs when they hear stories reporting that the medicines are (commonly) used nonmedically by peers, and when positive experiences are shared, in particular relating to the use of medical stimulants to enhance academic performance. It is therefore important that the prevalence of NMUPD is not overestimated in public dialogue. In this context the media can play a role in the prevention of NMUPD, as media messages can indirectly contribute to the initiation of (prescription) drug use, particularly among young people predisposed to try psychoactive substances (Lancaster, 2004; Inciardi & Goode, 2003). Media reports with sensational headlines about NMUPD such as "*Thousands of students taking Ritalin during exams*"[29] have the potential to spark some individuals' interest and curiosity and encourage them to experiment with their use. Studies conducted in the US point out that the media mainly reports the benefits of prescription stimulants, and this has helped to spread messages of tacit approval and of widespread use (Partridge et al., 2011; Arria et al., 2008b). Previous research illustrates that young adults who use prescription drugs nonmedically overestimate the prevalence of use among their peers (Helmer et al., 2016; Lehne et al., 2018; Sanders et al., 2014; McCabe, 2008; Kilmer et al., 2015). More careful and sensitive reporting of NMUPD by the media, for instance including experts and a more nuanced contextualisation of the use of medicines, might help to reduce that effect.

Policy recommendations

1. Improve information for the general public about the risks of using psychoactive medications outside of medical guidelines, associated with the context of use, administration method and dosage.
2. Increase the general public's awareness of non-pharmacological alternatives to psychoactive medicines.
3. Study the impact of public advertising of over-the-counter medicines on the normalisation of the use of medicines in daily life.
4. Increase awareness among media professionals about the need to sensitively report on NMUPD.

[28] The Medicines Law of 25 March 1964 and the Royal Decree of 7 April 1995 relating to the information and advertising concerning medicinal products for human use.

[29] *Duizenden studenten aan de rilatine tijdens de examens*, headline in the newspaper De Morgen, 25 May 2016.

Policy area: Education

A crucial component in the approach to NMUPD is education.[30] Young users should be educated about the risks and harms of using prescription drugs. Early prevention among children and adolescents is necessary (Yedinak et al., 2016), especially given that first NMUPD occurs at a relatively young age (Kokkevi et al., 2008; McCabe et al., 2007). In our study, the median age for using prescription drugs for the first time nonmedically was 16 for analgesics, and 18 for sedatives and stimulants. Schools and other educational institutions can play an important role in driving the effort to prevent NMUPD by young people.

School-based strategies could be designed to reach youth at different stages of their education, including middle school, high school and college. In middle and high school, it is recommended that existing education and prevention packages and teaching materials be expanded, if necessary, to include the use of psychoactive medications. In 2017, the VAD made a useful inventory of education, prevention and curative materials about psychoactive medicines that could help to inform teachers and other professionals about NMUPD as well as to implement related content in lessons or activities (Seys, 2017). Although studies have shown that the lifetime prevalence and last year prevalence of the medical and nonmedical use of medicines remains quite low among children and high school students (Van Damme et al., 2018; Stévenot & Hogge, 2019a; Stévenot & Hogge, 2019b; ESPAD Group, 2020), teachers are important role models and therefore they can be in an important position to prevent NMUPD and reduce harms among youth. It will be important to continue raising awareness among educators and to inform them about NMUPD and associated health risks.

Young adulthood is a key developmental period, when individuals are generally exposed to new social contexts with greater freedom and less social control than they experienced during their high school years. Since the prevalence of nonmedical use of prescription drugs is higher among young adults compared to other age groups (Martins et al., 2015; McCabe et al., 2018; Schepis et al., 2018; Ford & Pomykacz, 2016), it is clear that intervention and prevention efforts should target college settings in particular. In line with previous research (Kroll, 2019; LeClair et al., 2015; Dertadian, 2019), we found that the pressure to achieve and perform well in every area of life (e.g. at school, at work, in social contexts) appears to be an important motivating factor for NMUPD among young adults, students in particular. A large-scale quantitative survey among university and university college students in Flanders also illustrated that the main motivations for nonmedical stimulant use are academic and use tends to follow periods of peaks in academic workload (e.g. exam periods) (Van Damme et al., 2018; Van Hal et al., 2013). It is clear that universities and university colleges could play an important role in informing their students about the risks of using prescription drugs nonmedically. Nevertheless, it does not appear to be common practice for universities and university colleges to discuss issues such as the misuse, diversion, potential risks and side effects of prescription drug use. NMUPD is a difficult issue to manage on college or university campuses, as nonmedical use is often hidden and/or students may come to university or university college with legitimate diagnoses and prescriptions. Unlike with alcohol and illicit drugs, however, few universities or university colleges have established a clear policy about the use of psychoactive medications. While such a policy may be difficult to enforce, it is critical

[30] Youth risk behaviour survey - data summary & trends report 2007-2017 retrieved from: https://www.cdc.gov/healthyyouth/data/yrbs/pdf/trendsreport.pdf [15 July 2021].

that these centres for education at least address the use of psychoactive medication by outlining their policies on the nonmedical use and diversion of prescription drugs.

In addition, NMUPD should be viewed in the context of the larger issue of physical and mental health problems on college or university campuses. Students are especially vulnerable to the academic and social pressures that can spur health risk behaviours, including NMUPD. Campus administrators, campus health professionals (e.g. psychologists, physicians), teachers, student support services and resident advisors should be educated about health risk behaviours. These behaviours might be associated with poor academic performance, thus highlighting the importance of ensuring access to student support services on campus with health professionals. It is vital to raise awareness among these professionals and to inform them about NMUPD and associated health risks, because they should also be involved in dispelling myths about nonmedically using stimulants to improve academic performance. Campus health professionals in particular should discuss the risks of the nonmedical use of prescribed medications with the students they treat. Likewise, colleges and universities should be able to refer students to appropriate treatment off campus, if necessary.

Furthermore, additional efforts should be invested in helping students to develop effective study habits and coping skills for managing stress, and they should be encouraged to use the available and accessible mental health resources if they are suffering from anxiety, stress or depression – all factors that place students at greater risk of using prescription drugs nonmedically. The current crisis related to the COVID-19 pandemic might have increased those underlying mental health risks for some, and the need to address them. Universities and university colleges should invest more in the organisation of workshops and courses dedicated to study methods, stress management and help for students with concentration or motivation issues. In this context, student support services play an important role in addressing the link between studying, coping with stress and anxiety and NMUPD. Students' awareness and discussion of the problem of prescription stimulants may be increased if student support services inform those who seek their advice or support that there is no scientific evidence to support the idea that prescription stimulants improve grades, and that their use may have adverse academic consequences (Arria et al., 2017).

In addition to these efforts, awareness campaigns with prevention and harm reduction messages targeting all students should be promoted at the start of the academic year and during periods of peaks in academic workload (e.g. exam periods). Universities and university colleges must aim to change student misperceptions that prescription stimulants improve grades and that a majority of students use stimulants or other prescription drugs nonmedically. In these awareness campaigns, it is important that students are told about the actual rates of use of NMUPD. While our results may inform these awareness campaigns, universities and university colleges should also make better use of existing materials from professional organisations such as VAD, FEDITO, Modus Vivendi, etc. Materials such as flyers or posters are available and can be easily distributed among the university and university college students.[31] Targeted messages on university or university college websites and social media pages should also be part of these general awareness campaigns. Student associations could also be involved in providing informal support and communicating educational and prevention messages on NMUPD to students in higher education.

[31] E.g. Flyer from de Druglijn (2015). Studeren en medicatie gaan niet hand in hand. Retrieved from: https://www.vad.be/assets/studeren-en-medicatie-gaan-niet-hand-in-hand-1 [29 April 2021].

Finally, it is crucial for this issue to be addressed in health-related or pharmacology-related courses. One should be mindful that some of these courses might trigger curiosity about (prescription) drugs in students; however, communicating educational and prevention messages is most effective when the information comes from fellow students, and the message is consistent and comprehensive. Therefore, one component of a wider approach could be to set up projects on particular relevant courses. Studies have shown that integrating course-related material into an activity that students are able to relate to can have a number of positive learning outcomes (Kennedy, 2018). For instance, students' knowledge of the problem of prescription stimulants can be enhanced by asking them to undertake activities such as: writing an article in a student magazine aimed at their peers designed to increase awareness of the problem of prescription stimulant use; creating flyers informing students of the possible risks of the nonmedical use of prescription stimulants; or working with the campus health professionals and student support services to encourage other students to complete a course or workshop on improving their studying skills. Students would become more aware of important issues within their communities/campuses, and the projects would 'enliven one's sense of agency' by having students participate in projects that take place outside of the classroom.

Policy recommendations

1. Encourage the training of educators (e.g. teachers) in middle and high schools about NMUPD and associated health risks.

2. Include and/or further consider prescription drugs in universities' and university colleges' strategic policy documents.

3. Encourage campus administrators, health professionals (e.g. psychologists, physicians), teachers, student support services and resident advisors to be vigilant about prescription stimulants, by training them in NMUPD, associated health risks and how to deconstruct myths about the nonmedical use of stimulants for studying.

4. Introduce NMUPD in the context of the larger issue of physical and mental health problems on college or university campuses. Include NMUPD as a topic in workshops and courses dedicated to study methods, stress management and help for students with concentration or motivation issues.

5. Improve the availability and accessibility of health and/or student support services through targeted communication campaigns or by setting up projects within courses.

6. Promote awareness campaigns that target all students at the start of the academic year and during periods of peaks in academic workload (e.g. exam periods). Aim to change student misperceptions that prescription stimulants can be used to improve grades, and that a majority of students take stimulants nonmedically.

7. Raise awareness about NMUPD and associated health risks through promoting projects within health-related or pharmacology-related courses.

Policy area: Household

Our study found that prescription medications, especially sedatives and analgesics, were initially, and also subsequently, often obtained through adult family members, parents in particular. The respondents' knowledge about these medicines was largely based on these people's advice. Parents and guardians are important role models for their children, and it is therefore important that parents and other close family members are aware of the importance of their potential role in prevention, education and harm reduction (Zimmerman, 1991). There are a number of ways that parents could be supported in protecting their children against the impact of NMUPD. They should be encouraged to use their own prescription drugs properly and as instructed by their physicians. They should be given

information about the risks of NMUPD to their children and should be encouraged not to take a permissive attitude toward NMUPD. In particular, they should be encouraged not to consider supplying their children with unused or leftover prescription drugs. In the case of prescription stimulants, parents should be made aware that the nonmedical use is not beneficial for academic performances (Arria et al., 2017). If parents do give their own prescription drugs to their children, or if they are aware that their children use prescription drugs taken from home, they can reduce possible harms by supervising their children's use. Parent-targeted prevention and educational messages should stress non-pharmacological alternatives to psychoactive medicines, such as good sleep hygiene and healthy coping mechanisms, and could be communicated through schools (e.g. parent council, parent–teacher conference), child welfare agencies (e.g. Kind en Gezin or Office de la Naissance et de l'Enfance) and youth organisations, such as sports organisations and youth clubs.

Some young adults in this study took prescription drugs from the home medicine cabinet without the knowledge of their parents. They were curious about the medicines and started experimenting with them, whether for self-medication or recreational purposes. Therefore, education efforts among parents should focus in particular on safe medication storage and disposal (Boyd et al., 2006b; Brands et al., 2010; Schepis et al., 2018), to avoid diversion. Strategies could include storing prescription drugs in locked medicine cabinets or other similar devices (e.g. locking bags), and returning leftover or unused medicines promptly to pharmacies for disposal (Brands et al., 2010). In Belgium, pharmacists are obliged to accept unused medicines when presented correctly.[32] Other organised drug disposal efforts (e.g. Disposal of Unwanted Medicines Properly (DUMP) Project, 2020) such as take-back events (e.g. prescription drug take-back days) and permanent drug donation boxes (e.g. at pharmacies, hospitals, GP practices) might influence norms and behaviours involving the storage and disposal of prescription drugs. These efforts should be combined with appropriate prescribing to have a fully rounded impact on the availability of prescription drugs (Egan, Gregory, Sparks & Wolfson, 2017). In Belgium, the pharmaceutical sector and the regional authorities regularly organise awareness campaigns to inform the general public about the correct disposal of unused medicines (e.g. practical sorting guide for medicines, OVAM, 2021) (APB, 2021). These existing and new initiatives can be further promoted, for instance by the distribution of posters and leaflets at GP practices, hospitals and pharmacies (e.g. NHS Wales, 2010). Current initiatives to protect young children from accidental poisoning from dangerous household products by storing these dangerous products securely (e.g. Kind en Gezin, 2021) could be further expanded to the protection of young people from NMUPD and promoted through public campaigns.

Policy recommendations

1. Increase parental awareness of NMUPD and its risks and about the non-pharmacological alternatives to psychoactive medicines.
2. Improve the safe storage and disposal of unused medicines by setting up drug disposal programmes and public awareness campaigns.

Policy area: Healthcare

The study found that physicians were an important supply source of prescription drugs used nonmedically. Firstly, prescription drugs were often obtained from physicians for medical purposes but

[32] Royal Decree of 21 January 2009 concerning instructions for pharmacists.

used outside of medical guidelines. For instance, sedatives and analgesics were mainly used for their intended therapeutic effects, but young adults did not adhere to medical instructions, e.g. they used them at higher doses or frequency than was prescribed. Secondly, while some respondents believed that physicians overprescribe, a few tried to acquire prescription medications from physicians fraudulently using a variety of methods (e.g. 'doctor shopping', malingering, 'pharmacy shopping').

These findings highlight the important role of supply controls, and the prescription system is, in this regard, of paramount importance. For instance, in the US studies show that increasing medical access to opioids contributed to the opioid epidemic (Powell et al., 2020). Regulations for prescribing and dispensing psychoactive medicines should remain strict, while not undermining patients' access to essential treatments. This is a difficult balancing act. Prescribing practices must be careful and appropriate, particularly for psychoactive medicines with high abuse potential, such as opioid analgesics. Existing guidelines and training for prescribing psychoactive medicines, including opioids (e.g. Leysen, Rydant, Dom, Robberechts, Matheï, 2020), sedatives (e.g. Domus Medica, 2010) and stimulants (e.g. FAGG, 2014), should be further promoted among healthcare professionals. Caution should be exercised when patients request repeat prescriptions, to mitigate malingering by patients trying to obtain medicines for nonmedical use.

Healthcare professionals should also be aware of the link between illicit drug use and NMUPD. Most of the young adults in this study who used prescription drugs recreationally had experience with recreational illicit drug use as well. When these young adults had easy access to psychoactive prescription drugs – for instance, leftovers from their own prescriptions for previous medical treatments – they experimented with these medicines, often out of curiosity. Physicians who prescribe psychoactive medicines to young people should be cognisant when their patients show an interest in or have experience of illicit drug use, and follow existing guidelines (Matheï, 2008). Brands et al. (2010) suggest that physicians should use standardised assessments and screening tools for substance abuse to identify people at risk.

Physicians and pharmacists should be educated about the health and legal consequences of NMUPD and the diversion of medicines, and should inform their patients about these risks. Another crucial element to challenge 'the pill-popping culture' is to increase awareness among physicians and pharmacists of multidisciplinary approaches, including non-pharmacological alternatives to psychoactive medicines, such as referrals for psychological therapies. For instance, the VAD has published a guide to developing a policy for psychotropic drugs in residential facilities in which the authors emphasise the importance of non-pharmacological alternatives as a preventive approach (Popelier & Peeters, 2018). For future physicians and pharmacists, information about NMUPD should be included in their study programmes at university, and those already working in the field could attend specialised training courses. Pharmacists play an important role in the early detection of NMUPD, and particularly regarding problematic use. They should educate and increase awareness among young adults who have been newly prescribed them, and be alert to any signs of problematic use. In this context, good communication and coordination between physicians and pharmacists is essential.

Prescription drug monitoring programmes (PDMPs) and databases that include information about prescribed medicines can also provide information about trends in prescribing behaviours, and could help identify fraudulent practices like "doctor shopping" and detect "overprescribing". In the US, while

earlier studies report that the evidence regarding the effectiveness and impact of PDMPs is mixed (Deyo et al., 2018; Finley et al., 2017), recent research has shown that comprehensive, fully implemented PDMPs can be associated with a reduction in opioid dispensing (Winstanley et al., 2018), opioid prescription rates and related hospital use (Wen et al., 2019).

In this study we found that most young adults received leftover or unused medicines from peers or family members or took them from the medicine cabinet at home. These medicines had originally been prescribed for medical purposes. One possible measure to help prevent young adults' access to leftover/unused medication would be to encourage physicians to prescribe medicines per unit or in smaller amounts (cf. research regarding unit dispensing of antibiotics, e.g. Treibich et al., 2017). This would make it less likely that patients have leftover psychoactive medicines at home. In addition, previous research shows that prescribing larger quantities of opioids for initial use is associated with transitions to continued use (Shah et al., 2017). Thus, guiding physicians to prescribe smaller amounts of prescription opioids (e.g. by lowering default opioid quantities in electronic medical record systems) could reduce continued use, nonmedical use and diversion (Delgado et al., 2018; Montoy et al., 2020). This type of initiative would require pharmacies and pharmaceutical companies to make some changes to their sales practices – for example, pharmaceutical companies would need to customise their production processes to adjust the number of solid unit doses in blister packs, and pharmacies would need to sell drugs in smaller units. At the moment, although there are different sizes of medicine packages, patients can still only purchase entire packages, even when they do not need all the pills inside.

Most of the young adults in this study had access to prescription stimulants through their friends. The stimulants were mostly obtained from young people diagnosed with AD(H)D who had prescriptions for those medicines. These young people supplied others with their own prescriptions, most often out of altruistic or non-profit driven motives. The majority of our sample had been offered prescription stimulants in a nonmedical context. Although passing on medicines in this way may be well-intentioned, it is important that these patients are educated about the risks of diverting their own prescription stimulants. General practitioners or other physicians who prescribe the medicines will have an important educational role here as well. Firstly, this includes informing their patients of the health risks when people use diverted prescription stimulants without medical supervision. Secondly, the patients should be informed about the legal risks, as even sharing prescription drugs for free may constitute a criminal offence.[33] Our study findings suggest that the young adults do not see themselves as 'dealers' or sharing prescription drugs as 'dealing' or a criminal act, but rather it is done as a gesture of friendship – they are able to supply others because they have a surplus. Therefore, it is important that physicians closely follow up their patients' adherence to how their medication should be taken, and if they are concerned that patients are not taking it as prescribed, they could lower the total number of pills prescribed.

Finally, most participants in our study obtained information about prescription drugs from online sources and rarely from medical professionals. The interview findings showed that they also consulted the package insert. However, sometimes these might be difficult for lay people to read and understand, because of the medical terminology used. Even if some respondents recognised physicians as generally good information sources, they found these medical professionals were sometimes

[33] Under the law of 24 February 1921 on drug trafficking and the Royal Decree of 6 September 2017, possession or acquisition of substances without medical authorisation is punishable.

difficult to approach with questions about nonmedical use and also were concerned they may be unsupportive. Nevertheless, physicians and pharmacists can play a key role in identifying and preventing NMUPD and problematic use. They are important credible sources of information on prescription drugs and therefore can play an important role in harm reduction. Young people who use prescription drugs nonmedically could benefit from being able to discuss their use of these medicines with their physicians in a non-threatening environment and using accessible language.

Policy recommendations

1. Improve healthcare professionals' awareness of NMUPD (including general practitioners and pharmacists).
2. Facilitate the production, distribution, prescription and sale of small(er) medicine packages, with fewer units.
3. Create opportunities for young people to talk about NMUPD with their physicians.

Policy area: Online communication

Users' information-seeking behaviour is a crucial component in the policy approach to NMUPD. Young adults participating in our study sought information mostly online, in particular via search engines such as Google, on specialised websites of professional organisations or pharmacies, and through online forums to a lesser extent (see also Quintero & Bundy, 2011). However, even though they recognised the value of professional websites as important objective sources of information, some respondents thought these sources provided information that was too generalised (with unfamiliar wording/terminology) and lacked insights on how the drugs are actually experienced by users.

Given the reliance on online information sources by youth, useful engagement strategies include making sure that the information available on professional websites is comprehensible and evidence-based (e.g. drawing on current efforts by VAD or Modus Vivendi), and supporting the more prominent engagement of (health) professionals (e.g. GPs, pharmacists, professional health organisations, Federal Government) on websites, forums and other online platforms. It is important to support ongoing initiatives where healthcare professionals engage with youth through online platforms, such as De Druglijn (VAD), which has a chat function and also offers online knowledge and self-assessments tests on the use of psychoactive medicines. Another strategy could be to financially invest in getting professional websites on the first pages of search engine results.

Our study found that some young adults were specifically looking for 'trip' reports, personal stories or experience-based advice from peers, free from moral censure. Online forums in particular could be relevant settings for harm reduction interventions (Davitadze, Meylakhs, Lakhov & King, 2020; Dertadian, Dixon, Iversen & Maher, 2017) – we found that young people were clearly seeking advice or further information using those channels. Harm reduction initiatives through online forums that target drug-using young people already exist in Belgium. For instance, the INTERREG project "PARTY", a European collaboration between Flemish, Walloon and French drug services (Safe 'n Sound, Service Prévention Ville de Mons and Spiritek), offers harm reduction on forums through online peer-to-peer interventions (Project Party, 2020). The main focus of the project is illicit drug use in nightlife scenes. Drawing on the experiences of these projects, similar initiatives could be set up for people who use psychoactive medicines nonmedically. This could also include health education professionals engaging with online drug forums to provide health advice on NMUPD, as mentioned above.

Finally, our interview data offered concrete examples of initiatives that research participants positively valued, for example prevention campaigns disseminated through online social networks (e.g. Instagram), and the use of online platforms such as a Twitch channel or a reliable YouTube account where young people feel comfortable expressing their doubts and concerns. The need to preserve anonymity was a fundamental condition for many young people when accessing information. In French-speaking Belgium, research participants also stressed the importance of having access to harm reduction videos in French.[34]

Policy recommendations

1. Increase the presence and engagement of different professionals (e.g. healthcare, social care) on online platforms.
2. Design and implement online harm reduction initiatives.
3. Improve access to anonymised channels of information.

Policy area: Recreational contexts of use

Our study findings show that, of the three types of prescription medicines we investigated (stimulants, analgesics and sedatives), prescription stimulants were the most likely to be used for recreational purposes. Prescription drugs were mostly used recreationally out of curiosity or experimentation, and young adults were able to use the medicines recreationally because they had easy access to them.

Many times, respondents used medicines recreationally when no illicit drugs were present. Prescription drugs were also sometimes considered a step lower than illicit drugs. Since our study shows that people who used prescription drugs recreationally were more likely to have experience with illicit drug use, we recommend similar prevention and harm reduction efforts for the recreational use of NMUPD as those already existing for illicit drugs (e.g. VAD, Safe 'n Sound). Our findings also illustrate that prescription drugs were used concurrently with other psychoactive substances; therefore, interventions should focus particularly on the risks of simultaneous polysubstance use (Dertadian et al., 2017; Edwards et al., 2017; Jiao et al., 2009).

Policy recommendation

1. Adapt and expand existing prevention and harm reduction efforts on illicit drugs to also consider prescription drugs.

Policy area: Future research

Young people who use prescription drugs nonmedically can be considered a hidden population. As was the case in previous research (Bardhi et al., 2007), most of the young adults who participated in our study seemed to lead a conventional life and had not come to the attention of law enforcement or treatment services. This can create additional challenges around reaching this group, both for research and for prevention and intervention efforts. This study's recruitment process has proven that people who have used prescription drugs nonmedically are a hard-to-reach population, in particular because they do not have distinctive characteristics. Despite applying diverse recruitment strategies over an extended period of time, the final sample size of our study was still relatively small (N=574). Further,

[34] YouTube channel of the Dutch broadcaster BNNVARA, active between 2016 and 2019, with a weekly episode devoted to drug experimentation accompanied by a video describing recommended and inadvisable practices when using the drug.

the sample was biased towards higher-educated young adults, perhaps due to our approach to dissemination (e.g. the survey was announced through student associations and Facebook groups of study programmes). Future research should devote particular attention to reaching different profiles of young users, particularly lower-educated and working young adults. Young adults not in education are more difficult, and more costly, to reach. Nevertheless, previous research suggests that, at least in the US, nonmedical use of opioids and sedatives and the incidence of opioid and stimulant use disorders are higher among young adults not in education (Martins et al., 2015; McCabe et al., 2018; Schepis et al., 2018). In this sample, we also found a positive association between problematic prescription drug use and difficulties in making ends meet, suggesting that, in the Belgian context too, further research into lower-educated young adults and young adults with low socioeconomic status is warranted. Studies in the US have used 'time–space sampling' to recruit specific populations, such as young adults in nightlife venues, as explained in Kelly et al. (2015a) and LeClair et al. (2015). This type of sampling strategy could be repeated in Belgium to develop a better understanding of NMUPD among this particular population.

Representative surveys are useful in revealing population differences in the prevalence and incidence of nonmedical use, and to identify any differences regarding age, socioeconomic and educational status. In our study, we performed some indicative analyses, but cannot assert whether these differences reflect patterns in the real population, as we attained a convenience sample of nonmedical users of prescription medicines that was not intended to be representative of young adults. As described in the literature review, a number of representative surveys already exist in Belgium (e.g. HIS). If a better understanding of NMUPD among Belgian young adults in particular is sought, these existing surveys could boost their targeting of young adults, to enable more robust analyses of this subgroup of the population.

The current study applied a wide focus on the nonmedical use of three types of psychoactive medicines used for varying motives. While this gives us valuable insights into the overlaps and intersections between the use of different types of medicine and allows us to compare the specific results for each type, it also results in heterogeneous findings, which may be challenging when attempting to draw strong(er) conclusions. Use patterns seem to vary between prescription stimulants, analgesics and sedatives. For instance, there are some suggestions that nonmedical users of sedatives in our sample reported more problematic use patterns, warranting further research. Focusing on several types of psychoactive medicines that are used for distinct purposes may have obscured the particularities of use for each type of medicine. Future studies could focus in more detail on the nonmedical users of one class of medicine and/or on specific motives of use. So far, much more research in Belgium has been conducted on the nonmedical use of prescription stimulants for study enhancement (Van damme et al., 2018; De Bruyn et al., 2019; Ponnet et al., 2021) than on other types of medicines and uses. It would be of added value if future research efforts explore NMUPD for purposes other than study enhancement.

In our study, we observed that young adults sought objective medical information concerning NMUPD. Only a minority of the survey participants who had used prescription drugs nonmedically mentioned medical professionals as a source of information they could easily turn to. Young adults who participated in the interviews more often referred to the package insert as a source of information. However, this answer option was not included in the survey (in the question about information

sources). Therefore, as it might be relevant to learn more about young people's reliance on that information source, it is recommended that future surveys include it as an answer category.

Overall, with the exception of the present research project, no other studies have focused specifically on NMUPD in Belgium other than the use of stimulants for study performance (De Bruyn et al., 2019; Ponnet et al., 2021). Several health and drug surveys include NMUPD (e.g. HIS; In Hogere Sferen), but this has not been the main focus in existing research. Therefore, there is a need to obtain more, and particularly more consistent, data about this heterogeneous population. It is recommended that NMUPD is monitored systematically by keeping track of mortality and prescription data, developing specific studies into NMUPD and adding questions to already existing general population and student surveys. Because existing surveys use different definitions of 'nonmedical use' and include different types of medicines this limits the comparability between research results and obstructs the process of knowledge production. Therefore, we highly recommend that existing data collection efforts are reviewed (our literature review can inform this) and these and future studies use consistent terminology, and that the research questions driving those inquiries are sufficiently specific to allow for the verification of different subtypes of NMUPD.

Furthermore, while this study provides valuable insights drawing on young adults' perceptions on NMUPD, it will be important to complement this knowledge base with healthcare professionals' perceptions and experiences of NUMPD-related issues, in order to construct a more complete picture of this phenomenon (e.g. De Bruyn et al., 2020). Therefore, additional research among this professional population, and in particular into the way they prescribe the medicines, in which circumstances and to whom, is warranted.

Finally, while the explorative analysis provides some insights into how NMUPD is discussed in online forums and thus why online forums may be considered as a useful tool for rapid monitoring, as well as an important location for drug prevention among the NMUPD community, there are also strong reasons to further investigate these online forums and the ongoing discussions in greater depth.

Policy recommendations

1. Provide more resources to develop research into NMUPD among young adults, particularly with regard to:
    a. lower-educated young adults, or young adults currently not in education;
    b. the nonmedical use of sedatives and analgesics;
    c. use purposes other than study enhancement.
2. Build and/or strengthen the systematic monitoring of NMUPD, based on prescription and survey data.
3. Research the perceptions of NMUPD among healthcare professionals.
4. Explore how NMUPD is discussed in online forums.

REFERENCES

Addiction Research Foundation (1982) *Drug Abuse Screening Test (DAST-10)*.

Agentschap Zorg en Gezondheid (2016) Gezondheidsconferentie preventie 16–17 Decmeber 2016, Omgevingsanalyse eindrapport, Brussel: Agentschap Zorg en Gezondheid.

Anthierens, S., Habraken, H., Petrovic, M. & Christiaens, T. (2007) The lesser evil? Initiating a benzodiazepine prescription in general practice: A qualitative study on GPs' perspectives, *Scandinavian Journal of Primary Health Care*, 25(4), 214–19.

Antoine, J., Plettinckx, E., van Baelen, L. & Gremeaux, L. (2019) *De TDI-registraties in België: Jaarlijks rapport registratiejaar 2018*, Brussel: Sciensano. Retrieved from: https://workspaces.wiv-isp.be/tdi/Documenten%20voor%20TDIRegistratie/2019_tdi_NL_final.pdf [18 February 2020].

APB (2021). Vervallen en ongebruikte geneesmiddelen. Retrieved from: https://www.apb.be/nl/corp/De-Algemene-Pharmaceutische-Bond/Actualiteit/nieuws/Pages/Vervallen-en-ongebruikte-geneesmiddelen.aspx [25 May 2021].

Arbour-Nicitopoulos, K., Kwan, M., Lowe, D., Taman, S. & Faulkner, G. (2010) Social norms of alcohol, smoking, and marijuana use within a Canadian university setting, *Journal of American College Health*, 59(3), 191–96.

Arria, A. M., Caldeira, K. M., Vincent, K. B., O'Grady, K. E., & Wish, E. D. (2008a) Perceived harmfulness predicts nonmedical use of prescription drugs among college students: Interactions with sensation-seeking. *Prevention science*, *9*(3), 191.

Arria, A., O'Grady, K., Caldeira, K., Vincent, K. & Wish, E. (2008b) Nonmedical use of prescription stimulants and analgesics: Associations with social and academic behaviors among college students, *Journal of Drug Issues*, 38s.

Arria, A. M., Caldeira, K. M., Vincent, K. B., O'Grady, K. E., Cimini, M. D., Geisner, I. M., ... & Larimer, M. E. (2017) Do college students improve their grades by using prescription stimulants nonmedically?. *Addictive Behaviors*, *65*, 245-249.

ATOME (Access to Opioid Medication in Europe) (2014) *Access to Opioid Medication in Europe: Final report and recommendations to the Ministries of Health*, Bonn, Germany: Pallia Med Verlag.

Babcock, Q. & Byrne, T. (2000) Student perceptions of methylphenidate abuse at a public liberal arts college, *Journal of American College Health*, 49, 143–45.

Bardhi, F., Sifaneck, S., Johnson, B. & Dunlap, E. (2007) Pills, thrills and bellyaches: Case studies of prescription pill use and misuse among marijuana/blunt smoking middle class young women, *Contemporary Drug Problems*, 34(1), 53–101.

Bawin, F. (2020) *Self-reported medicinal cannabis use in Flanders. A study of user profiles and patterns of use* (Doctoral dissertation). Ghent University, Ghent. Retrieved from: https://lib.ugent.be/en/catalog/pug01:8643278?i=0&q=bawin&type=phd [4 April 2020].

BelPEP (Belgian Psychotropics Experts Platform) (2014) *Globale visienota en actieplan van de 3 werkgroepen*, Brussel: BelPEP.

Benotsch, E., Koester, S., Luckman, D., Martin, A. & Cejka, A. (2011) Nonmedical use of prescription drugs and sexual risk behavior in young adults, *Addictive Behaviors*, 36(1–2), 152–55.

Bjønness, J. (2019) Gendered aspects of Danish students' non-medical use of prescription pharmaceuticals for enhancement purposes in the 'performance society'. *Drugs: Education, Prevention and Policy*, *26*(4), 309–318.

Borsari, B. & Carey, K. (2001) Peer influences on college drinking: A review of the research, *Journal of Substance Abuse*, 13(4), 391–424.

Boyd, C. & McCabe, S. (2008) Coming to terms with the nonmedical use of prescription medications, *Substance Abuse Treatment, Prevention, and Policy*, 3(1), 22.

Boyd, C. J., McCabe, S. E., Cranford, J. A. & Young, A. (2006a) Adolescents' motivations to abuse prescription medications, *Pediatrics*, 118(6), 2472–80.

Boyd, C. J., McCabe, S. E. & Teter, C. J. (2006b) Medical and nonmedical use of prescription pain medication by youth in a Detroit-area public school district, *Drug and Alcohol Dependence*, 81(1), 37–45.

Brands, B., Paglia-Boak, A., Sproule, B. A., Leslie, K. & Adlaf, E. M. (2010) Nonmedical use of opioid analgesics among Ontario students, *Canadian Family Physician*, 56(3), 256–62.

Brandt, S., Taverna, E. & Hallock, R. (2014) A survey of nonmedical use of tranquilizers, stimulants, and pain relievers among college students: Patterns of use among users and factors related to abstinence in non-users, *Drug and Alcohol Dependence*, 143, 272–76.

Califano J. (2004) *You've got drugs! Prescription drug pushers on the Internet. A CASA white paper.* The National Center on Addiction and Substance Abuse; New York, Columbia University.

Casati, A., Sedefoy, R. & Pfeiffer-Gerschel, T. (2012) Misuse of medicines in the European Union: A systematic review of the literature, *European Addiction Research*, 18(5), 228–45.

Cerdá, M., Santaella, J., Marshall, B. D., Kim, J. H., & Martins, S. S. (2015) Nonmedical prescription opioid use in childhood and early adolescence predicts transitions to heroin use in young adulthood: a national study. *The Journal of pediatrics*, *167*(3), 605-612.

Chan, G., Leung, J. & Hall, W. (2019) Non-medical use of pharmaceutical opioids with and without other illicit substances in Australia: Prevalence and correlates, *Drug and Alcohol Review*, 38(2), 151–58.

Compton, W.M. & Volkow, N.D. (2006) Abuse of prescription drugs and the risk of addiction, *Drug and Alcohol Dependence*, 83(1), 4–7.

Cutler, K. & Kremer, J. (2017) Safety, generous doctors, and enabling parents: A perfect recipe of justifications for college students' nonmedical use of prescription painkillers, *Journal of Drug Issues*, 47(4), 587–605.

Daniulaityte, R., Carlson, R. & Kenne, D. (2006) Initiation to pharmaceutical opioids and patterns of misuse: Preliminary qualitative findings obtained by the Ohio Substance Abuse Monitoring Network, *Journal of Drug Issues*, 36, 787−808.

Daniulaityte, R., Falck, R. S., Wang, J., & Carlson, R. G. (2009) Illicit use of pharmaceutical opioids among young polydrug users in Ohio. *Addictive Behaviors*, *34*(8), 649-653.

Davis, R., Bass, M., Ford, M., Bentley, J. & Doyle, N. (2019) Recreational prescription opioid misuse among college students in the USA: An application of the theory of planned behavior, *Journal of Health and Social Sciences*, 4(3), 389–404.

Davitadze, A., Meylakhs, P., Lakhov, A., & King, E. J. (2020) Harm reduction via online platforms for people who use drugs in Russia: a qualitative analysis of web outreach work. *Harm Reduction Journal*, *17*(1), 1-9.

De Bruyn, S., Wouters, E., Ponnet, K. & Van Hal, G. (2019) Popping smart pills in medical school: Are competition and stress associated with the misuse of prescription stimulants among students? *Susbstance Use & Misuse*, 54(7), 1191–202.

De Bruyn, S., Wouters, E., Ponnet, K., Tholen, R., Masquillier, C., Remmen, R., & Van Hal, G. (2020) Off-label prescribing of stimulant medication to students: a qualitative study on the general practitioner perspective. *Sociology of Health & Illness, 42*(7), 1657-1672.

Decorte, T., Mortelmans, D., Tieberghien, J. & De Moor, S. (2009) *Drug Use: Overview of general population surveys in Europe*, Thematic Papers, Lisbon: EMCDDA.

de Druglijn (2015) Studeren en medicatie gaan niet hand in hand. Retrieved from: https://www.vad.be/assets/studeren-en-medicatie-gaan-niet-hand-in-hand-1 [29 April 2021].

Delgado, M. K., Shofer, F. S., Patel, M. S., Halpern, S., Edwards, C., Meisel, Z. F., & Perrone, J. (2018) Association between electronic medical record implementation of default opioid prescription quantities and prescribing behavior in two emergency departments. *Journal of general internal medicine*, *33*(4), 409-411.

Dertadian, G., Dixon, T., Iversen, J. & Maher, L. (2017) Self-limiting non-medical pharmaceutical opioid use among young people in Sydney, Australia: An exploratory study, *Drug and Alcohol Review*, 36, 643–50.

Dertadian, G. C. (2019) A *Fine Line*: *Painkillers* and *Pleasure* in the *Age* of *Anxiety*. Singapore: Palgrave Macmillan.

DeSantis, A. D., Webb, E. M., & Noar, S. M. (2008) Illicit use of prescription ADHD medications on a college campus: a multimethodological approach. *Journal of American college health*, *57*(3), 315-24.

DeSantis, A., Anthony, K. & Cohen, E. (2013) Illegal college ADHD stimulant distributors: Characteristics and potential areas of intervention, *Substance Use & Misuse*, 48(6), 446–56.

DeSantis, A. & Hane, A. (2010) 'Adderall is definitely not a drug': Justifications for the illegal use of ADHD stimulants, *Substance Use & Misuse*, 45, 31–46.

Disposal of Unwanted Medicines Properly (D.U.M.P.) Project, (2020). Waitemata District Health Board Retrieved from: http://www.saferx.co.nz/assets/Documents/8a1b8877b7/DUMP-leaflet.pdf [7 April 2021].

Domus Medica (2010) Naar een rationeel gebruik van benzodiazepines. Retrieved from: https://www.domusmedica.be/actueel/naar-een-rationeel-gebruik-van-benzodiazepines [29 April 2021].

Drazdowski, T. (2016) A systematic review of the motivations for the non-medical use of prescription drugs in young adults, *Drug and Alcohol Dependence*, 162, 3–25.

Dunne, T., Bishop, L., Avery, S., & Darcy, S. (2017) A review of effective youth engagement strategies for mental health and substance use interventions. *Journal of Adolescent Health*, *60*(5), 487-512.

Edwards, K., Vowles, K. & Witkiewitz, K. (2017) Co-use of alcohol and opioids, *Current Addiction Reports*, 4(2), 194–99.

Egan, K., Reboussin, B., Blocker, J., Wolfson, M. & Sutfin, E. (2013) Simultaneous use of non-medical ADHD prescription stimulants and alcohol among undergraduate students, *Drug and Alcohol Dependence*, 131(1–2), 71–77.

Egan, K. L., Gregory, E., Sparks, M., & Wolfson, M. (2017) From dispensed to disposed: evaluating the effectiveness of disposal programs through a comparison with prescription drug monitoring program data. *The American journal of drug and alcohol abuse*, *43*(1), 69-77.

Eickenhorst, P., Vitzthum, K., Klapp, B., Groneberg, D. & Mache, S. (2012) Neuroenhancement among German university students: Motives, expectations, and relationship with psychoactive lifestyle drugs, *Journal of Psychoactive Drugs*, 44(5), 418–27.

EMCDDA (European Monitoring Centre for Drugs and Drug Addiction) (2018) *Perspectives on Drugs: The misuse of benzodiazepines among high-risk opioid users in Europe*, Lisbon: EMCDDA.

EMCDDA (2019a) *Belgium Drug Country Report 2019*, Lisbon: EMCDDA.

EMCDDA (2019b) *Drug-related Deaths and Mortality in Europe*, Lisbon: EMCDDA.

EMCDDA (2020) *Policy and Practice Briefings: Addressing the misuse of medicines*, Lisbon: EMCDDA. Retrieved from: http://www.emcdda.europa.eu/best-practice/briefings/addressing-misuse-medicines_en [20 January 2020].

ESPAD (2015) Questionnaire on substance use. ESPAD report 2015.

ESPAD (European School Survey Project on Alcohol and Other Drugs) Group (2016) *ESPAD Report 2015: Results from the European School Survey Project on Alcohol and Other Drugs*, Luxembourg: Publications Office of the European Union.

ESPAD Group (2020) *ESPAD Report 2019: Results from the European School Survey Project on Alcohol and Other Drugs*, Luxembourg: EMCDDA Joint Publications, Publications Office of the European Union.

European Commission (2011) Directive 2011/24/EU on patients' rights in cross-border healthcare. Retrieved from: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32011L0024 [16/03/2020].

Eurostat (2014) Medicine use statistics. Retrieved from: https://ec.europa.eu/eurostat/statistics-explained/index.php/Medicine_use_statistics [5 March 2020].

Eurostat (2020) Students in tertiary education – as % of 20–24 years old in the population. Retrieved from: https://ec.europa.eu/eurostat/web/education-and-training/data/database [10 February 2020].

EUR-Lex (2019a) Directive 2001/83/EC of the European Parliament and of the Council of 6 November 2001 on the Community code relating to medicinal products for human use.

EUR-Lex (2019b) Regulation (EC) No 726/2004 of the European Parliament and of the Council of 31 March 2004 laying down Community procedures for the authorisation and supervision of medicinal products for human and veterinary use and establishing a European Medicines Agency.

EUROTOX (2017) *L'Usage de drogues en Wallonie et à Bruxelles*, Bruxelles: Eurotox ASBL Observatoire Socio-Épidémiologique Alcool-Drogues.

Evenepoel, T. (2019) *De Druglijn. Jaarverslag 2018*, Brussel: VAD.

Evenepoel, T. (2020) *De Druglijn. Jaarverslag 2019*, Brussel: VAD.

FAGG (2014) Educatief materiaal voor methylfenidaat. Retrieved from: https://www.fagg-afmps.be/sites/default/files/downloads/MPH%20HCP%20NL.pdf [29 April 2021].

FAGG (2020) Melden van misbruik of van verkeerd gebruik van een geneesmiddel. Retrieved from: https://www.fagg.be/nl/melden_van_misbruik_of_van_verkeerd_gebruik_van_een_geneesmiddel [29 April 2021].

FAMHP (Federal Agency for Medicines and Health Products) (2019) Un étudiant universitaire sur 20 utilise des médicaments stimulants pour mieux étudier. Retrieved from: https://www.afmps.be/fr/news/un_etudiant_universitaire_sur_20_utilise_des_medicaments_stimulants_pour_mieux_etudier [19 April 19 2020].

FAMHP (2020a) How to recognise an authorised medicinal product? Retrieved from: https://www.famhp.be/en/public_information/medicament_autorise [19 February 2020].

FAMHP (2020b) Information for the public: What does the FAMHP? Retrieved from: https://www.famhp.be/en/public_information/que_fait_afmps [19 February 2020].

FAMHP (2020c) Information for a proper use. Retrieved from: https://www.famhp.be/en/human_use/medicines/medicines/proper_use/information_proper_use [20 February 2020].

Faraone, S. V., Rostain, A. L., Montano, C. B., Mason, O., Antshel, K. M. & Newcorn, J. H. (2020) Systematic review: Nonmedical use of prescription stimulants – risk factors, outcomes, and risk reduction strategies, *Journal of the American Academy of Child & Adolescent Psychiatry*, 59(1), 100–12.

Federal Government (2001) *Beleidsnota van de Federale Regering in verband met de drugproblematiek* [Federal Drug Policy Note], Brussel: Federale Regering.

Federal Public Service Health Food Chain Safety and Environment (2018) Slaap- en kalmeermiddelen, denk eerst aan andere oplossingen. Retrieved from: https://www.health.belgium.be/nl/news/slaap-en-kalmeermiddelen-er-bestaan-betere-oplossingen [14 April 2020].

Federal Public Service Health Food Chain Safety and Environment (2020a) Prescriptions. Retrieved from: https://www.health.belgium.be/en/health/taking-care-yourself/patient-related-themes/cross-border-health-care/healthcare-another-eu-1#new-rules [19 February 2020].

Federal Public Service Health Food Chain Safety and Environment (2020b) Regulated healthcare professions in Belgium. Retrieved from: https://www.health.belgium.be/en/health/taking-care-yourself/patient-related-themes/cross-border-health-care/healthcare-providers-0 [20 February 2020].

Ford, J. A., & Pomykacz, C. (2016) Non-medical use of prescription stimulants: A comparison of college students and their same-age peers who do not attend college. *Journal of psychoactive drugs*, *48*(4), 253-260.

Frank, D., Mateu-Gelabert, P., Guarino, H., Bennet, A., Wendel, T., Jessell, L., et al. (2015) High risk and little knowledge: Overdose experiences and knowledge among young adult nonmedical prescription opioid users, *International Journal on Drug Policy*, 26(1), 84–91.

Frank, R. & Mikhaylov, A. (2020) Beyond the 'Silk Road': Assessing illicit drug marketplaces on the public web, in *Open Source Intelligence and Cyber Crime* (pp. 89–111), Cham: Springer.

Franke, A. & Lieb, K. (2010) Pharmacological neuroenhancement and brain doping: Chances and risks, *Bundesgesundheitsblatt, Gesundheitsforschung, Gesundheitsschutz*, 53(8), 853–59.

Garnier, L. M., Arria, A. M., Caldeira, K. M., Vincent, K. B., O'Grady, K. E., & Wish, E. D. (2010) Sharing and selling of prescription medications in a college student sample. *The Journal of clinical psychiatry*, *71*(3), 262-269.

Garnier-Dykstra, L., Caldeira, K., Vincent, K., O'Grady, K. & Arria, A. (2012) Nonmedical use of prescription stimulants during college: Four-year trends in exposure opportunity, use, motives, and sources, *Journal of American College Health*, 60(3), 226–34.

Ghandour, L. A., El Sayed, D. S., & Martins, S. S. (2012) Prevalence and patterns of commonly abused psychoactive prescription drugs in a sample of university students from Lebanon: An opportunity for cross-cultural comparisons. *Drug and alcohol dependence*, *121*(1-2), 110-117.

Gisle, L. & Drieskens, S. (2019) *Gezondheidsenquête 2018: Druggebruik*. Brussel, België: Sciensano; Rapportnummer: D/2019/14.440/59.

Gisle, L., Drieskens, S., Demarest, S., & Van der Heyden, J. (2020) *Geestelijke gezondheid: gezondheidsenquête 2018.* Brussel, België: Sciensano; Rapportnummer: D/2020/14.440/4.

Glaeske, G. (2005) Psychotrope und andere Arzneimittel mit Missbrauchs- und Abhängigkeitspotential (Psychotropic and other pharmaceuticals with abuse or dependence potential), in *Deutsche Hauptstelle gegen die Suchtgefahren: Jahrbuch Sucht 2005*, Geesthach, Neuland, pp 52–68.

Global Drug Survey (2019) GDS key findings report 2019. Retrieved from: https://www.globaldrugsurvey.com/gds-2019/ [16 March 2020].

Godderis, L., Lambrechts, M. C., Vanmeerbeek, M., Ketterer, F., & Remmen, R. (2017) *"Up To Date 2" Suite du projet* (No. DR/00/72). Service public fédéral programmation scientifique.

Goesaert, G., Baitar, A. (2018) Dossier: opioïde pijnstillers. Brussel: VAD.

Griffiths, P., Evans-Brown, M. & Sedefov, R. (2014) The (mis)use of psychoactive medicines: Getting the balance right in complex systems, *Addiction*, 109 (2), 182–83.

Gunter, W., Farley, E. & O'Connell, D. (2013) Self-treatment vs recreational motives: Differentiating nonmedical use of prescription drugs among youth, *International Journal of Child, Youth and Family Studies*, 4(2), 245–58.

Häkkinen, M., Launiainen, T., Vuori, E., & Ojanperä, I. (2012) Benzodiazepines and alcohol are associated with cases of fatal buprenorphine poisoning. *European journal of clinical pharmacology*, *68*(3), 301-309.

Helmer, S., Pischke, C., Van Hal, G., Vriesacker, B., Dempsey, R., Akvardar, Y., et al. (2016) Personal and perceived peer use and attitudes towards the use of nonmedical prescription stimulants to improve academic performance among university students in seven European countries, *Drug and Alcohol Dependence*, 168, 128–34.

Holloway, K. & Bennett, T. (2012) Prescription drug misuse among university staff and students: A survey of motives, nature and extent, *Drugs: Education, prevention and policy*, 19, 137–44.

Holloway, K., Bennett, T., Parry, O. & Gorden, C. (2013) Misuse of prescription drugs on university campuses: Options for prevention, *International Review of Law, Computers & Technology*, 27, 324–34.

ICPSR (2016) *Monitoring the Future: A Continuing Study of American Youth (12th-Grade Survey), 2016. From 1 Data Codeboo*k. Michigan: Inter-university Consortium for Political and Social Research.

IDPC (International Drug Policy Consortium) (2014) Access to opioid medication in Europe: Final report and recommendations to European Ministries of Health. Retrieved from: https://idpc.net/publications/2014/12/access-to-opioid-medication-in-europe-final-report-and-recommendations-to-european-ministries-of-health [26 April 2020].

INCB (International Narcotics Control Board) (2020) *Report of the International Narcotics Control Board for 2019*, United Nations: Vienna, 2020.

Inciardi, J. A., Goode, J. L. (2003) Miracle medicine or problem drug? OxyContin and Prescription Drug Abuse. *Consumers' research*, 7, 17-21.

Inciardi, J. A., Surratt, H. L., Kurtz, S. P., & Cicero, T. J. (2007) Mechanisms of prescription drug diversion among drug-involved club-and street-based populations. Pain Medicine, 8(2), 171-183.

Intego (2016) *Psychofarmaca in de huisartsenpraktijk in 2015: Resultaten van het INTEGO netwerk*, Leuven: Intego.

Inter-Ministeriële Conferentie Drugs (2010) *Gemeenschappelijke Verklaring van de Inter-Ministeriële Conferentie Drugs: Een globaal en geïntegreerd drugsbeleid voor België*, Brussel: Inter-Ministeriële Conferentie Drugs.

Jiao, X., Velez, S., Ringstad, J., Evma, V., Miller, D. & Bleiberg, M. (2009) Myocardial infarction associated with Adderall XR and alcohol use in a young man, *The Journal of the American Board of Family Medicine*, 22(2), 197–201.

Johnston, L. D., O'Malley, P. M., Bachman, J. G. & Schulenberg, J. E. (2009) Teen marijuana use tilts up, while some drugs decline in use, University of Michigan News Service, Ann Arbor, MI, 14 December.

Katz, N., Dart, R., Bailey, E., Trudeau, J., Osgood, E. & Paillard, F. (2011) Tampering with prescription opioids: Nature and extent of the problem, health consequences, and solutions, *The American Journal of Drug and Alcohol Abuse*, 37(4), 205–17.

Kelly, B., Wells, B., LeClair, A., Tracy, D., Parsons, J. & Golub, S. (2013a) Prescription drug misuse among young adults: Looking across youth cultures, *Drug and Alcohol Review*, 32(2), 288–94.

Kelly, B., Wells, B., LeClair, A., Tracy, D., Parsons, J. & Golub, S. (2013b) Prevalence and correlates of prescription drug misuse among socially active young adults, *International Journal of Drug Policy*, 24(4), 297–303.

Kelly, B., Rendina, H., Vuolo, M., Wells, B. & Parsons, J. (2015a) Influences of motivational contexts on prescription drug misuse and related drug problem, *Journal of Substance Abuse Treatment*, 48, 49–55.

Kelly, B., Trimarco, J., LeClair, A., Pawons, M., Parsons, J. & Golub, S. (2015b) Symbolic boundaries, subcultural capital and prescription drug misuse across youth cultures, *Sociology of Health & Illness*.

Kenne, D., Hamilton, K., Birmingham, L., Oglesby, W., Fischbein, R. & Delahanty, D. (2017) Perceptions of harm and reasons for misuse of prescription opioid drugs and reasons for not seeking treatment for physical or emotional pain among a sample of college students, *Substance Use & Misuse*, 52(1), 92–99.

Kennedy, S. (2018) Raising awareness about prescription and stimulant abuse in college students through on-campus community involvement projects. *Journal of Undergraduate Neuroscience Education*, *17*(1), A50.

Kilmer, J., Walker, D., Lee, C., Palmer, R., Mallett, K., Fabiano, P., et al. (2006) Misperceptions of college student marijuana use: Implications for prevention, *Journal of Studies on Alcohol*, 67, 277−81.

Kilmer, J., Geisner, L. G., ML & Lindgren, K. (2015) Normative perceptions of non-medical stimulant use: Associations with actual use and hazardous drinking, *Addictive Behaviors*, 42, 51–56.

Kind en Gezin (2021) Giftig voor kinderen. Retrieved from: https://www.kindengezin.be/veiligheid/huis-en-tuin/giftig-voor-kinderen/ [29 April 2021].

Kokkevi, A., Fotiou, A., Arapaki, A. & Richardson, C. (2008) Prevalence, patterns, and correlates of tranquilizer and sedative use among European adolescents, *Journal of Adolescent Health*, 43(6), 584–92.

Krøll, L. T. (2019) Students' non-medical use of pharmaceuticals to manage time in everyday life crises. *Drugs: Education, Prevention and Policy*, *26*(4), 339-346.

Lancaster, A. R. (2004) What does curiosity really do to the cat? A look at how message exposure can lead to illicit drug trial among college students. *Mass Communication & Society*, *7*(1), 77-95.

Lancaster, K., Ritter, A., & Matthew-Simmons, F. (2013) *Young People's Opinions on Alcohol and Other Drugs Issues*. Australian National Council on Drugs.

Lankenau, S. E., Teti, M., Silva, K., Bloom, J. J., Harocopos, A. & Treese, M. (2012) Initiation into prescription opioid misuse amongst young injection drug users, *International Journal of Drug Policy*, 23(1), 37–44.

Larimer, M., Turner, A., Mallet, K., Geisner, L. & Gasser, M. (2004) Predicting drinking behavior and alcohol-related problems among fraternity and sorority members: Examining the role of descriptive and injunctive norms, *Psychology of Addictive Behaviors*, 18(3), 203.

LeClair, A., Kelly, B., Pawson, M., Wells, B. & Parsons, J. (2015) Motivations for prescription drug misuse among young adults: Considering social and developmental contexts, *Drugs*, 22, 208–16.

Lehne, G., Zeeb, H., Pischke, C., Mikolajczvyk, R., Bewick, B., McAlaney, J., et al. (2018) Personal and perceived peer use and attitudes towards use of non-prescribed prescription sedatives and sleeping pills among university students in seven European countries, *Addictive Behaviors*, 87, 17–23.

Leysen, B., Rydant, S., Dom, G., Robberechts, A., Matheï, C., De Loof, H. (2020) Hoe opioïden veilig voor-schrijven? Huisartsen en apothekers samen op Medisch-Farmaceutisch Overleg. *Huisarts Nu, 49,* 12-16.

Liakoni, E., Müller, S., Stoller, A., Ricklin, M., Liechti, M. E., & Exadaktylos, A. K. (2017) Presentations to an urban emergency department in Bern, Switzerland associated with acute recreational drug toxicity. *Scandinavian journal of trauma, resuscitation and emergency medicine*, *25*(1), 1-9.

Lord, S., Brevard, J. & Budman, S. (2011) Connecting to young adults: An online social network survey of beliefs and attitudes associated with prescription opioid misuse among college students, *Substance Use & Misuse*, 46(1), 66–76.

Martens, M., Page, J., Mowry, E., Damann, K., Taylor, K. & Cimini, M. (2006) Differences between actual and perceived student norms: An examination of alcohol use, drug use, and sexual behavior, *Journal of American College Health*, 54(5), 295–300.

Martins, S. S., Kim, J. H., Chen, L. Y., Levin, D., Keyes, K. M., Cerdá, M. & Storr, C. L. (2015) Nonmedical prescription drug use among US young adults by educational attainment, *Social Psychiatry and Psychiatric Epidemiology*, 50(5), 713–24.

Mateu-Gelabert, P., Guarino, H., Jessell, L., & Teper, A. (2015) Injection and sexual HIV/HCV risk behaviors associated with nonmedical use of prescription opioids among young adults in New York City. *Journal of substance abuse treatment*, *48*(1), 13-20.

Matheï C. (2008) Richtlijnen bij het voorschrijven van benzodiazepines aan illegale druggebruikers. Brussel: VAD.

McCabe, S., Knight, J., Teter, C. & Wechsler, H. (2005) Non-medical use of prescription stimulants among US college students: Prevalence and correlates from a national survey, *Addiction*, 100(1), 96–106.

McCabe, S., Teter, C. & Boyd, C. (2006) Medical use, illicit use and diversion of prescription stimulant medication, *Journal of Psychoactive Drugs*, 38(1), 43–56.

McCabe, S., Cranford, J., Boyd, C. & Teter, C. (2007) Motives, diversion and routes of administration associated with nonmedical use of prescription opioids, *Addictive Behaviors*, 32(3), 562–75.

McCabe, S. E. (2008) Misperceptions of non-medical prescription drug use: A web survey of college students. *Addictive behaviors*, *33*(5), 713-724.

McCabe, S., Teter, C. & Boyd, C. (2009) Subtypes of nonmedical prescription drug misuse, *Drug and Alcohol Dependence*, 102(1–3), 63–70.

McCabe, S. E., & Cranford, J. A. (2012) Motivational subtypes of nonmedical use of prescription medications: results from a national study. *Journal of Adolescent Health*, *51*(5), 445-452.

McCabe, S., Teter, C., Boyd, C., Wilens, T. & Schepis, T. (2018) Sources of prescription medication misuse among young adults in the United States: The role of educational status, *The Journal of Clinical Psychiatry*, 79(2).

Milhet, M. (2015) *Usages détournés de médicaments psychotropes par les adolescents et jeunes adultes: Revue de literature*, Paris: Observatoire Français des Drogues et des Toxicomanies.

Modus Vivendi asbl (2020) *Trans-European COVID-19 & drugs survey Phase 1: lockdown:* questionnaire. Modus Vivendi asbl, Eurotox absl, Pipapo (4motion asbl), andThe Loop.

Montastruc, J. L., Bagheri, H., Geraud, T., & Lapeyre-Mestre, M. (1997) Pharmacovigilance of self-medication. *Therapie*, *52*(2), 105-110.

Montoy, J. C. C., Coralic, Z., Herring, A. A., Clattenburg, E. J., & Raven, M. C. (2020) Association of Default Electronic Medical Record Settings With Health Care Professional Patterns of Opioid Prescribing in Emergency Departments: A Randomized Quality Improvement Study. *JAMA internal medicine*, *180*(4), 487-493.

Moreau, N., Lebacq, t.,Dujeu, M., de Smet, P., Godin, I., & Castetbon, K. (2017) Comportements, bien-être et santé des élèves. Enquête HBSC 2014 en 5e-6e primaire et dans le secondaire en Fédération

Wallonie-bruxelles. Tableau de bord Tableaux de bord des résultats en Région Bruxelles-Capitale. Service d'Information, Promotion, Education Santé (SIPES), Ecole de Santé Publique, Université libre de Bruxelles.

Mui, H. Z., Sales, P. & Murphy, S. (2014) Everybody's doing it: Initiation to prescription drug misuse, *Journal of Drug Issues*, 44(3), 236–53.

NewPharma (2018) Onderzoek: Deze 100 geneesmiddelen zochten de Belgische internetgebruikers het meest op in 2017. Retrieved from: https://www.newpharma.be/apotheek/cnt/art/23/onderzoek-deze-100-geneesmiddelen-zochten-de-belgische-internetgebruikers-het-meest-op-in-2017.html [20 January 2020].

NHS Wales (2010) Major campaign aims to save millions by reducing wasted medicines. Retrieved from: https://www.wales.nhs.uk/news/17032 [7 April 2020].

NIDA (National Institute on Drug Abuse) (2018a) Misuse of prescription drugs research report, NIDA: Bethesda, Maryland. Retrieved from: https://www.drugabuse.gov/publications/misuse-prescription-drugs/overview [12 March 2020].

NIDA (2018b) Prescription CNS depressants, DrugFacts. Retrieved from: https://www.drugabuse.gov/publications/drugfacts/prescription-cns-depressants [2 June 2020].

NIDA (2018c) Prescription stimulants, DrugFacts. Retrieved from: https://www.drugabuse.gov/publications/drugfacts/prescription-stimulants [2 June 2020].

NIDA (2020) Prescription opioids, DrugFacts. Retrieved from: https://www.drugabuse.gov/publications/drugfacts/prescription-opioids [2 June 2020].

Novak, S.P., Håkansson, A., Martinez-Raga, J. et al. (2016) Nonmedical use of prescription drugs in the European Union, *BMC Psychiatry*, 16, 274.

OECD (Organisation for Economic Co-operation and Development) (2019) *Addressing Problematic Opioid Use in OECD Countries*. Retrieved from: https://www.oecd.org/health/addressing-problematic-opioid-use-in-oecd-countries-a18286f0-en.htm [2 June 2020].

Onafhankelijke Ziekenfondsen (2018) Geneesmiddelengebruik bij adolescenten. Nemen jongeren te veel geneesmiddelen? Brussel: Onafhankelijke ziekenfondsen.

OVAM (2021) Sorteerwijzer oude en vervallen geneesmiddelen. Retrieved from: https://www.ovam.be/medisch-afval [20 May 2021].

Papazisis, G., Tsakiridis, L., Pourzitaki, C., Apostolidou, E., Spachos, D. & Kouvelas, D. (2018) Nonmedical use of prescription medications among medical students in Greece: Prevalence of and motivation for use, *Substance Use & Misuse*, 53(1), 77–85.

Partnership for a Drug Free America (2004) Generation Rx: National study reveals new category of substance abuse emerging: Teens abusing Rx and OTC medications intentionally to get high, *Partnership Attitude Tracking Study (PATS)*, Partnership for a Drug Free America.

Partridge, B. J., Bell, S. K., Lucke, J. C., Yeates, S., & Hall, W. D. (2011) Smart drugs "as common as coffee": media hype about neuroenhancement. *PloS one*, *6*(11), e28416.

Pawson, M. (2019) *Illicit Psychoactive Medication Use: Experiences of Medicalization and Normalization.* (Doctoral dissertation). The City University of New York

Peck, K., Parker, M. & Sigmon, S. (2019) Reasons for non-medical use of prescription opioids among young adults: Role of educational status, *Preventive Medicine*, 128.

Perkins, H. (2002) Social norms and the prevention of alcohol misuse in collegiate contexts, *Journal of Studies on Alcohol*, supplement (14), 164–72.

Ponnet, K., Tholen, R., De Bruyn, S., Wouters, E., Van Ouytsel, J., Walrave, M., & Van Hal, G. (2021) Students' stimulant use for cognitive enhancement: A deliberate choice rather than an emotional response to a given situation. *Drug and alcohol dependence*, *218*, 108410.

Popelier, K. & Peeters, L. (2018) *Psychofarmaca in woonzorgcentra. Samen op weg naar minder*. Brussel: VAD.

Powell, D., Pacula, R. L., & Taylor, E. (2020) How increasing medical access to opioids contributes to the opioid epidemic: evidence from medicare part d. *Journal of health economics*, *71*, 102286.

Project Party (2020) Preventive actions and risk reduction for young people. Retrieved from: https://www.projectparty.eu/?lang=nl [29 April 2021].

Protocol Agreement (2016) Protocol Agreement of 21 MAART 2016. Protocolakkoord tussen de Federale Overheid en de overheden bedoeld in artikel 128, 130 en 135 van de Grondwet inzake preventie Afdeling 4. – Psychopharmaca.

Quintero, G. (2009) Rx for a party: A qualitative analysis of recreational pharmaceutical use in a collegiate setting, *Journal of American College Health*, 58(1), 64–72.

Quintero, G., & Bundy, H. (2011) "Most of the time you already know": Pharmaceutical information assembly by young adults on the internet. *Substance use & misuse*, *46*(7), 898-909.

Quintero, G. (2012) Problematizing 'drugs': A cultural assessment of recreational pharmaceutical use among young adults in the United States, *Contemporary Drug Problems*, 39(3), 493–535.

Ranjbar, M., Aslanpour, Z., Kostrzewski, A., & Cooke, A. D. (2017) Public Health Campaigns and Medicine Use Awareness: A Systematic Literature Review. *Health*, *9*(12), 1689-1710.

RIZIV (2018a) Consensusvergaderingen – Juryrapporten. Retrieved from: https://www.riziv.fgov.be/nl/publicaties/Paginas/consensusvergaderingen-juryrapport.aspx [14 April 2020].

RIZIV (2018b) DGEC: Analyse van het gebruik van 5 opioïden buiten het ziekenhuis. Retrieved from: https://www.riziv.fgov.be/nl/publicaties/jv2017/themas/Paginas/opioiden.aspx [14 April 2020].

RIZIV (2020) Een geneesmiddel voorschrijven voor een niet-gehospitaliseerde patiënt (in ambulante zorg). Retrieved from: https://www.riziv.fgov.be/nl/themas/kost-terugbetaling/door-

ziekenfonds/geneesmiddel-gezondheidsproduct/geneesmiddel-voorschrijven/Paginas/default.aspx [2 April 2020].

Rönkä, S., & Katainen, A. (2017) Non-medical use of prescription drugs among illicit drug users: A case study on an online drug forum. International Journal of Drug Policy, 39, 62-68.

Rosiers, J. (2019) *VAD uitgaansonderzoek 2018*, Brussel: VAD.

Rosiers, J. (2020) *VAD-Leerlingenbevraging in het kader van een drugbeleid op school. Syntheserapport schooljaar 2018–2019*. Brussel: VAD.

Sanders, A., Stogner, J., Seibert, J., & Miller, B. L. (2014) Misperceptions of peer pill-popping: the prevalence, correlates, and effects of inaccurate assumptions about peer pharmaceutical misuse. *Substance Use & Misuse*, *49*(7), 813-823.

Sansone, R. A., & Sansone, L. A. (2012) Doctor shopping: a phenomenon of many themes. *Innovations in clinical neuroscience*, *9*(11-12), 42-46.

Schepis, T., Teter, C. & McCabe, S. (2018) Prescription drug use, misuse and related substance use disorder symptoms vary by educational status and attainment in US adolescents and young adults, *Drug and Alcohol Dependence*, 189, 172–77.

Sciensano (2018) *Belgian Health Interview Survey*, Brussel: Sciensano. Retrieved from: https://his.wiv-isp.be/nl/SitePages/Volledige_rapporten_2018.aspx [3 February 2020].

Sciensano (2019) *Belgium: Country drug report 2019*, Brussel: Sciensano. Retrieved from: http://www.emcdda.europa.eu/countries/drug-reports/2019/belgium_en [3 February 2020].

Sciensano (2021) Drugsgerelateerde sterfte. Retrieved from: https://drugs.wiv-isp.be/drugs-info/Health-problems/deaths/Pages/default.aspx [3 February 2021].

Scholz (2015) Medicinal products in the European Union. The legal framework for medicines for human use. EPRS | European Parliamentary Research Service. European Union, 2015.

Sepúlveda, D., Thomas, L., MCCabe, S., Cranford, J., Boyd, C. & Teter, C. (2011) Misuse of prescribed stimulant medication for ADHD and associated patterns of substance use: Preliminary analysis among college students, *Journal of Pharmacy Practice*, 24(6), 551–60.

Seys, A. (2017) Inventaris van educatieve, preventieve en curatieve materialen over psychoactieve medicatie. Brussel: VAD.

Shah, A., Hayes, C. J., & Martin, B. C. (2017) Characteristics of initial prescription episodes and likelihood of long-term opioid use—United States, 2006–2015. *MMWR. Morbidity and mortality weekly report*, *66*(10), 265.

Socialistisch Ziekenfonds (2018) *Cijfer van de maand. Voorgeschreven dosis ADHD-medicatie stijgt sterk*, Brussel: Socialistisch ziekenfonds.

Stévenot, C. & Hogge, M. (2019a) *Tableau de bord de l'usage de drogues et ses conséquences socio-sanitaires en Wallonie*, Bruxelles: EUROTOX asbl.

Stévenot, C. & Hogge, M. (2019b) *Tableau de bord de l'usage de drogues et ses conséquences socio-sanitaires en Région de Bruxelles-Capitale*, Bruxelles: EUROTOX asbl.

Teter, C., McCabe, S., LaGrange, K., Cranford, J. & Boyd, C. (2006) Illicit use of specific prescription stimulants among college students: Prevalence, motives, and routes of administration, *Pharmacotherapy: The journal of human pharmacology and drug therapy*, 26(10), 1501–10.

Treibich, C., Lescher, S., Sagaon-Teyssier, L., & Ventelou, B. (2017) The expected and unexpected benefits of dispensing the exact number of pills. *PloS one*, *12*(9), e0184420.

United Nations (1961) Single Convention on Narcotic Drugs, 1961, as amended by the 1972 Protocol Amending the Single Convention on Narcotic Drugs. Retrieved from: https://www.incb.org/documents/Narcotic-Drugs/1961-Convention/convention_1961_en.pdf [22 April 2020].

United Nations (1971) Convention on Psychotropic Substances. Retrieved from: https://www.unodc.org/unodc/en/treaties/psychotropics.html [26 April 2020].

United Nations (2018) *World Drug Report 2018*, New York: United Nations.

UNODC (United Nations Office on Drugs and Crime) (2011) The non-medical use of prescription drugs: Policy direction issues, Discussion Paper, Vienna: UNODC.

VAD (2020) Factsheet psychoactieve medicatie (december 2020). Brussel: VAD.

Van Damme, J., Thienpondt, A., Rosiers, J., De Bruyn, S., Soyez, V., Sik,M., Van Hal, G. & Derorche, B. (2018) *In hoger sferen? Volume 4. Een onderzoek naar het middelengebruik bij Vlaams studenten*, Brussel: VAD.

Van der Heyden J. (2015) Gebruik van geneesmiddelen. In: Drieskens S, Gisle L (ed.). Gezondheidsenquête 2013. Rapport 3: Gebruik van gezondheids- en welzijnsdiensten (pp. 551-778). Brussel: WIV-ISP.

Van der Heyden, J., Berete, F., & Drieskens., S. (2020a) *Gezondheidsenquête. 2018. Ambulante zorg door artsen en tandartsen*. Brussel, België: Sciensano; Rapportnummer: D/2020/14.440/9.

Van der Heyden, J., Berete, F., & Drieskens, S. (2020b) *Gezondheidsenquête 2018: Gebruik van geneesmiddelen.* Brussel, België: Sciensano; D/2020/14.440/17

Vander Laenen, F., Lievens, D., Pauwels, L., Hardyns, W., Schils, N., Putman, K., Annemans, L. & Verhaeghe, N. (2016) *De Sociale Kost Van Legale En Illegale Drugs in België*, Brussel: Belspo.

Van Hal, G., Rosiers, J., Ponnet, K., & Wouters, E. (2013) Popping smart pills: prescription stimulant misuse by university and college students in FlandersGuido Van Hal. *European journal of public health*, *23*(suppl_1).

Vanmeerbeek, M., Remmen, R., Van Casteren, V. et al. (2015) *'Up To Date' Use of Psychoactive Substances in Adults: Prevention and treatment by general practitioners and occupational physicians*, Brussel: Belspo.

Vardanyan, R. & Hruby, V. (2006) *Synthesis of Essential Drugs*, Amsterdam: Elsevier.

Watkins, W. (2016) Prescription drug misuse among college students a comparison of motivational typologies, *Journal of Drug Issues*, 46, 216–33.

WHO (World Health Organization) (2003) *Introduction to Drug Utilization Research*, Oslo: WHO.

Willems, H. & De Mooter, E. (2018) Verbruik en mogelijk misbruik van opioïden in België, Presentatie symposium, Professionalisme en Expertise, Camus Groenenborger Antwerpen, 24 March 2018.

Wu, L. T., Pilowsky, D. J., & Patkar, A. A. (2008) Non-prescribed use of pain relievers among adolescents in the United States. *Drug and alcohol dependence*, *94*(1-3), 1-11.

Yedinak, J., Klinnard, E., Hadland, S., Green, T., Clark, M. & Marshall, B. (2016) Social context and perspectives of non-medical prescription opioid use among young adults in Rhode Island: A qualitative study, *The American Journal on Addictions, 25*(8), 659–65.

Zimmerman, E. (1991) La drogue dans l'opinion publique suisse: perception du problème et des mesures à prendre. *Déviance et société, 1991, 15*(2), 157-173.

Zinberg, N. E. (1984) *Drug, set, and setting: The basis for controlled intoxicant use*. New Haven: Yale University Press.

Appendix

Appendix

APPENDIX I: OVERVIEW OF THE ACTIVE INGREDIENTS AND BRANDS OF EACH PRESCRIPTION DRUG IN BELGIUM

1. Prescription analgesics

Active ingredient	Brands
Codeine	Bronchodine®, Bronchosedal codeine®, Toularynx codeine®, Tussoaintbois®
Oxycodone	Oxycodone Teva®, Oxycodon Sandoz®, OxyContin®, OxyNorm®
Tramadol	Tramadol EG®, Tramadol Krka®, Tramadol Sandoz®, Contramal®, Dolzam®, Tradonal®, Tramium®
Morphine	MSDirect®, MSContin®, Morphine Teva®, Morphine HCL Sterop®
Fentanyl	Fentanyl EG®, Fentanyl Sandoz®, Durogesic®, Matrifen®, Abstral®, Instanyl®
Methadone	Mephenon®
Buprenorphine	Buprenorfine Teva®, Temgesic®, Transtec®, Subutex®,
Hydromorphone	Palladone®
Pethidine	Pethisom®
Methylnaltrexon	Relistor®
Piritramide	Dipidolor®
Naltrexon	Naltrexone Accord®
Tapentadol	Palexia®
Buprenorphine/naloxon	Suboxone®
Ibuprofen/codeïne	Brufen Codeïne®
Paracetamol/codeïne	Algocod®, Dafalgan Codeïne®, Paracetamol Codeïne Teva®
Tramadol/dexketoprofen	Skudexa®
Tramadol/paracetamol	Algotra®, Pontalsic®, Tramadol/paracetamol EG®, Tramadol/paracetamol Krka®, Tramadol/paracetamol Sandoz®, Tramadol/paracetamol Teva®, Zaldiar®
Other	Nevrine Codeine®, Targinact®, Valtran®

2. Sedatives, tranquilisers, hypnotics and anxiolytics

Active ingredient	Brands
1. Benzodiazepines	
Alprazolam	Alprazolam EG®, Alprazolam Sandoz®, Alprazolam Teva®, Xanax®, Alpraz®, Alpratop
Bromazepam	Bromazepam EG®, Bromazepam Sandoz®, Lexotan ®
Botrizolam	Lendormin®
Clobazam	Frisium®
Clonazepam	Rivotril®
Clorazepaat	Tranxene®, Uni-Tranxene®
Clotiazepam	Clozan®
Diazepam	Diazepam EG®, Diazepam Teva®, Diazetop®, Valium®
Ethylloflazepaat	Victan®
Flunitrazepam	Flunitrazepam EG®
Flurazepam	Staurodorm®
Loprazolam	Dormonoct®
Lorazepam	Lorazepam EG®, Lorazetop®, Serenase®, Temesta®
Lormetazepam	Lormetazepam EG®, Lormetazepam Sandoz®, Loramet®, Metatop®, Noctamid®, Stilaze®
Midazolam	Buccolam®
Nitrazepam	Mogadon®
Nordazepam	Calmday®
Oxazepam	Oxazepam EG®
Prazepam	Prazepam EG®, Lysanxia®
Triazolam	Halcion®
2. Z-products	
Zolpidem	Stilnoct®, Zolpeduar®, Zolpidem EG®, Zolpidem Mylan®, Zolpidem Sandoz®, Zolpidem Teva®, Zolpitop®
Zopiclon	Imovane®, Zopiclone EG®, Zopiclone Mylan®, Zopicoline Teva®
3. Melatonine	
Melatonine	Melatonine Pharma Nord®, Circadin®

3. Central Nervous System (CNS) Stimulants

Active ingredient	Brands
1. Antidepressants	
Citalopram	Cipramil®, Citalopram EG®, Citalopram Mylan®, Citalopram Sandoz®, Citalopram Teva®, Citalopram Ratiopharm®
Escitalopam	Escidivule®, Sipralexa®, Escitalopam EG®, Escitalopam Mylan®, Escitalopam Sandoz®, Escitalopam Teva®
Fluoxetine	Fluoxone®, Fontex®, Prozac®, Fluoxetine EG®, Fluoxetine Mylan®, Fluoxetine Apotex®
Fluvoxamine	Floxyfral®, Fluvoxamine EG®
Paroxetine	Paroxetine EG®, Paroxetine Teva®, Paroxetine Mylan®, Paroxetine Sandoz®, Paroxetine Apotex®, Seroxat®
Sertraline	Serlain®, Sertraline EG®, Sertraline Teva®, Sertraline Mylan®, Sertraline Sandoz®, Sertraline Apotex®,
Reboxetine	Edronax®
Amitriptyline	Redomex®
Clomipramine	Anafranil®
Dosulepine	Prothiaden®
Imipramine	Tofranil®
Maprotiline	Ludiomil®
Nortriptyline	Nortrilen®
Duloxetine	Cymbalta®, Duloxetine EG®, Duloxetine Krka®, Duloxetine Mylan®, Duloxetine Sandoz®, Duloxetine Teva®, Duloxetine Apotex®
Venlafaxine	Efexor, Venlafaxine EG®, Venlafaxine Krka®, Venlafaxine Mylan®, Venlafaxine Sandoz®, Venlafaxine Teva®, Venlafaxine Apotex®
Bupropion	Wellbutrin®
Moclobemide	Brintellix®
Agomelatine	Valdoxan®
Mianserine	Lerivon®
Mirtazapine	Remergon®, Mirtazapine EG®, Mirtazapine Mylan®, Mirtazapine Sandoz®, Mirtazapine Apotex®
Trazodon	Nestrolan®, Trazodone EG®, Trazodone Teva®, Trazodon Sandoz®
2. Psychostimulants	
Atomoxetine	Strattera®
Guanfacine	Intuniv®
Methylfenidaat	Ritalin®, Concerta®, Equasym®, Methylfenidaat Sandoz®, Methylfenidaat Mylan®, Medikinet®
Modafinil	Provigil®
Oxybaat	Xyrem®
Pitolisant	Wakix®

APPENDIX II: ONLINE SURVEY QUESTIONNAIRE

First page

Welcome to the study of the non-medical use of prescription drugs by young adults.

With this survey, we assess the non-medical use and opinions about prescription stimulants, painkillers, tranquilizers and sleeping pills among Belgian youth. We want to get a better understanding of the situation in Belgium in order to make policy recommendations.

This research is a collaboration between Ghent University, VIVES Hogeschool and Université Saint Louis-Bruxelles. The research is funded by the PPS Science Policy (Belspo).

Completing the questionnaire takes about 15-20 minutes.
Every participant has a chance to win a smartphone or cinema tickets!

We are looking for the following participants:

- You are between 18-29 years old
- Your main residence is in in Belgium
- You are taking or you have taken any of the following medicines non-medically: prescription stimulants, painkillers, tranquilizers or sleep medicines

You can find more information about this study on our website: www.youthpumed.be

Consent

Purpose of the study and use of the results

The information you fill in in the questionnaire will only be used for research purposes. This information helps us to better understand prescription drug use among young people. The research results will be used to inform drug policy. To this end, the results will be published in a research report and possibly in scientific publications.

Risks and privacy

The data you provide in this survey will be processed anonymously and will only be used for the purposes mentioned above. The data controller is the coordinator of the research project, Prof. dr. Dr. Tom Decorte. The research team will have access to this data. This information will not be shared with third parties. IP addresses are not saved. The anonymized data is kept for the necessary duration of the research project. In accordance with the General Data Protection Regulation (GDPR), you have the right to consult, change or delete your data during this period.

This study has been submitted to and approved by the ethics committee of the Faculty of Law and Criminology of Ghent University and of Université Saint-Louis Bruxelles. If desired, the Data Protection Officer of Ghent University can provide you with more information about the protection of your personal data. Please contact Hanne Elsen, privacy@ugent.be. If you have any complaint about the way your data is processed, you can contact the Belgian data protection authority: Drukpersstraat 35- 1000 Brussels- Tel: 02/274 48 00- e-mail: contact@apd-gba.be- website : www.dataprotectionauthority.be.

Rights of the participants:
Participation in this study is entirely voluntary. You can end the questionnaire at any time without giving a reason.

By participating in this study, I indicate that I accept the undermentioned conditions and understand the following:

1. My participation is voluntary and I may quit at any time without any further consequences.

2. All the information I provide will only be used for the purposes of this study and my individual data will remain strictly confidential.

o I participate
o I do not want to participate

Sociodemographic characteristics

First, we would like to learn a little about you

What is your age?
- o 16 or younger
- o [drop-down list 17-110]

With which gender do you identify?
- o Man
- o Woman
- o Other

Sociodemographic characteristics I

Where do you currently live in Belgium?
- o Antwerp
- o Brussels-Capital Region
- o Hainaut
- o Limburg
- o Liège
- o Luxembourg
- o Namur
- o East Flanders
- o Flemish Brabant
- o Walloon Brabant
- o West Flanders
- o I don't live in Belgium

What is your country of birth?
- o Belgium
- o The Netherlands
- o Turkey
- o Morocco
- o France
- o Italy
- o Germany
- o United Kingdom
- o Spain
- o Romania
- o Other [textbox]

What is the country of birth of your…
Mother
- o Belgium
- o The Netherlands
- o Turkey
- o Morocco
- o France
- o Italy
- o Germany
- o United Kingdom
- o Spain
- o Romania
- o Other country inside Europe
- o Other country outside Europe
- o I don't know

- Prefer not to say

Father

- Belgium
- The Netherlands
- Turkey
- Morocco
- France
- Italy
- Germany
- United Kingdom
- Spain
- Romania
- Other country inside Europe
- Other country outside Europe
- I don't know
- Prefer not to say

Sociodemographic characteristics II

What is your current main employment status?

- Fulltime work
- Part-time work
- Student
- Unemployed
- Disabled, not able to work (disease or disability)
- Taking care of home and family, without benefits
- Other [textbox]

What is the highest degree of education you have obtained?

- Primary education / BUSO
- Secondary education: ASO/ KSO
- Secondary education: TSO
- Secondary education: BSO
- College: graduate
- College: professional bachelor
- University: academic bachelor/master (candidate / licentiate)
- Post-university: doctor
- Other [textbox]

What is the highest degree you have obtained and what are you studying now?

Highest degree obtained

- Primary education / BUSO
- Secondary education: ASO/ KSO
- Secondary education: TSO
- Secondary education: BSO
- College: graduate
- College: professional bachelor
- University: academic bachelor/master (candidate / licentiate)
- Post-university: doctor
- Other

Current studies

- Lager onderwijs/BUSO
- Secundair onderwijs: ASO/KSO
- Secundair onderwijs: TSO
- Secundair onderwijs: BSO
- Hogeschool: graduaat
- Hogeschool: professionele bachelor
- Universiteit: academische bachelor/master (kandidaat/licentiaat)
- Post-universitair: doctor

- Other

Sociodemographic characteristics III

We would like to know more about your living situation.

Please note: your living situation under normal circumstances, so do not take changes due to Covid-19 (Corona) into account.

With whom do you live at the place where you stay most or all the time? (select all that apply)

- No one, I live alone
- (Step)parent(s) or guardian
- (Step)brother(s) or sister(s)
- Partner
- Your (step)children
- Roommate(s)
- Co-housing with friend(s) or other(s)
- Other [textbox]

Thinking of your household's total available monthly income, is your household able to make ends meet?

Please note: your income under normal circumstances, so do not take changes due to Covid-19 (Corona) into account.

- with great difficulty
- with difficulty
- with some difficulty
- fairly easily
- easily
- very easily
- rather not say

Prescription drug use

The following questions are about your medical and nonmedical prescription drug use. The questions divide stimulants, painkillers and sleeping pills and tranquilizers.

Medical use means:
Use the medicine with a prescription and as instructed by a physician

Nonmedical use means:
use the medicine for other purposes than prescribed (e.g.: to study, to stay awake, to get 'high', to lose weight, to relax, etc.)
and/or use the medicine in larger amounts, more often or for longer than prescribed
and/or use the medicine by methods of administration other than those prescribed
and/or use the medicine without a prescription

Have you ever used prescription stimulants? (check all that apply)

- ☐ Yes, medically
- ☐ Yes, non-medically
- ☐ No, I have never used prescription stimulants

Prescription stimulants (e.g. Ritalin, methylphenidate, Modafinil, Provigil, Concerta, etc.) are usually prescribed for the treatment of ADHD

Examples: [Images of prescription stimulants]

Painkiller use

Have you ever used pain killers? (check all that apply)

Painkillers (e.g. tramadol, contramal, codeine, fentanyl, oxycodone, Ms Contin, etc.) are usually prescribed for pain relief. We mean painkillers that are only available WITH a prescription in a pharmacy (and thus not freely available such as Dafalgan, paracetamol, aspirin, etc.)

- ☐ Yes, medically
- ☐ Yes, nonmedically
- ☐ No, I have never used painkillers

Examples: [Images of prescription analgesics]

Use of tranquilizers and sleeping pills

Have you ever used tranquilizers or sleeping pills ? (check all that apply)

- ☐ Yes, medically
- ☐ Yes, nonmedically
- ☐ No, I have never used tranquilizers or sleeping pills

Tranquilizers or sleeping pills (e.g. benzodiazepines, xanax, zolpidem, diazepam, temesta, etc.) are usually prescribed to help people sleep, relax, calm down, relieve anxiety and panic attacks, or to relax muscle spasms.

Examples: [Images of prescription analgescis]

Prescription drug use II

You just indicated that you have not used any of the medicines that were questioned. Unfortunately, in that case you are not eligible to complete this online survey.

Only people who have used the questioned medicines can participate in this study.

o End questionnaire

Nonmedical use I

In the previous questions you indicated that you have used the prescription drugs below.
Have you ever used these prescription drugs nonmedically?
(select all that apply)

- ☐ I have used prescription stimulants nonmedically
- ☐ I have used painkillers nonmedically
- ☐ I have used tranquilizers or sleeping pills nonmedically
- ☐ I have never used the prescription drugs above non-medically

Initiation non-medical use

The next questions ask about the nonmedical use of prescription drugs.

Please think about the first time you ever used prescription drugs without a prescription or in a way a doctor did not instruct you to use it.

How old were you when you **first** used the following prescription drugs nonmedically?

Prescription stimulants	Painkillers	Tranquilizers or sleeping pills

○ [drop-down list 1-29] ○ I don't know	○ [drop-down list 1-29] ○ I don't know	○ [drop-down list 1-29] ○ I don't know

Reminder: nonmedical use means:
use the medicine for other purposes than prescribed (for example: to study, to stay awake, to get "high", to lose weight, to relax, etc.);
and/or use the medicine in larger amounts, more often or for longer than prescribed;
and/or use the medicine by methods of administration other than those prescribed
and/or use the medicine without a prescription

Please think about the **first** time you ever used the following prescription drugs nonmedically. How did you obtain them?

	Prescription stimulants	Painkillers	Tranquilizers or sleeping pills
I got them from a family member	○	○	○
I got them from a friend	○	○	○
I secretly took some of a family member's or friend's prescription	○	○	○
I stole them from some place or someone other than a friend or family member	○	○	○
I bought them from friends, family, or other people I know	○	○	○
I bought them from a drug dealer	○	○	○
I had a prescription for a medical problem	○	○	○
I got a prescription from a physician who didn't ask too many questions	○	○	○
Someone else went and got a prescription for me	○	○	○
I got them on the internet (e.g. internet pharmacy, darknet)	○	○	○
I got them through another way	○	○	○

Please think about the **first** time you ever used the following prescription drugs nonmedically. What was the main purpose of your use then?

	Prescription stimulants	Painkillers	Tranquilizers or sleeping pills
To relax or relieve tension or stress	○	○	○
To experiment, out of curiosity or to see what it's like	○	○	○
To get high	○	○	○
To party	○	○	○
To socialize or to have a good time with my friends	○	○	○
To relieve physical pain	○	○	○
To help with my sleep	○	○	○
To decrease anxiety	○	○	○
Because of anger or frustration	○	○	○
To cope with depression/to reduce sadness	○	○	○
To get more energy or to be more productive	○	○	○
To help me lose weight	○	○	○
To help me concentrate or to increase my alertness	○	○	○
It helps me to study	○	○	○
I don't know	○	○	○
Other reason	○	○	○

Nonmedical use II

On how many occasions in your lifetime have you used the following prescription drugs nonmedically? If you are not sure, please give your best estimate

	Prescription stimulants	Painkillers	Tranquilizers or sleeping pills
1-2 occassions	o	o	o
3-5 occassions	o	o	o
6-9 occassions	o	o	o
10-19 occassions	o	o	o
20-39 occasions	o	o	o
40 or more occasions	o	o	o

In the past 12 months, how often have you used the following medicines nonmedically?

	Prescription stimulants	Painkillers	Tranquilizers or sleeping pills
o Never	o	o	o
o Less than once a month	o	o	o
o 1-3 days per month	o	o	o
o 1-4 days per week	o	o	o
o Almost daily or daily	o	o	o

Which of these statements describe your nonmedical use of **prescription stimulants** at any time in the past 12 months?
(select all that apply)

- ☐ I used it without a prescription of my own
- ☐ I used it in greater amounts, more often, or longer than it was prescribed
- ☐ I used it for other purposes than it was prescribed
- ☐ I used it with other administration methods than it was prescribed
- ☐ Other [textbox]

Which of these statements describe your nonmedical use of **painkillers** at any time in the past 12 months?
(select all that apply)

- ☐ I used it without a prescription of my own
- ☐ I used it in greater amounts, more often, or longer than it was prescribed
- ☐ I used it for other purposes than it was prescribed
- ☐ I used it with other administration methods than it was prescribed
- ☐ Other [textbox]

Which of these statements describe your nonmedical use **of tranquilizers or sleeping pills** at any time in the past 12 months?
(select all that apply)

- ☐ I used it without a prescription of my own
- ☐ I used it in greater amounts, more often, or longer than it was prescribed
- ☐ I used it for other purposes than it was prescribed
- ☐ I used it with other administration methods than it was prescribed
- ☐ Other [textbox]

Use patterns

Which of the following routes of administration have you used for the nonmedical use of **prescription stimulants**?
(select all that apply)

- ☐ orally (swallow/by mouth)
- ☐ inhaling (smoking)
- ☐ injecting
- ☐ snorting or sniffing (through nose)
- ☐ other [textbox]

Reminder: nonmedical use means:
use the medicine for other purposes than prescribed (for example: to study, to stay awake, to get "high", to lose weight, to relax, etc.)
and/or use the medicine in larger amounts, more often or for longer than prescribed
and/or use the medicine by methods of administration other than those prescribed
and/or use the medicine without a prescription

Which of the following routes of administration have you used for the nonmedical use of **painkillers**?
(select all that apply)

- ☐ orally (swallow/by mouth)
- ☐ inhaling (smoking)
- ☐ injecting
- ☐ snorting or sniffing (through nose)
- ☐ other [textbox]

Reminder: nonmedical use means:
use the medicine for other purposes than prescribed (for example: to study, to stay awake, to get "high", to lose weight, to relax, etc.);
and/or use the medicine in larger amounts, more often or for longer than prescribed;
and/or use the medicine by methods of administration other than those prescribed
and/or use the medicine without a prescription

Which of the following routes of administration have you used for the nonmedical use of **tranquilizers or sleeping pills**?
(select all that apply)

- ☐ orally (swallow/by mouth)
- ☐ inhaling (smoking)
- ☐ injecting
- ☐ snorting or sniffing (through nose)
- ☐ other [textbox]

Reminder: nonmedical use means:
use the medicine for other purposes than prescribed (for example: to study, to stay awake, to get "high", to lose weight, to relax, etc.);
and/or use the medicine in larger amounts, more often or for longer than prescribed;
and/or use the medicine by methods of administration other than those prescribed
and/or use the medicine without a prescription

Use motives

Prescription drugs are used for diverse reasons.

Earlier, we asked why you were using prescription stimulants nonmedically for the first time. Now we would like you to select all the reasons for which you have used **prescription stimulants** nonmedically so far.
(check all that apply)

- ☐ To relax or relieve tension or stress
- ☐ To experiment, out of curiosity or to see what it's like
- ☐ To get high
- ☐ To party
- ☐ To socialize or to have a good time with my friends
- ☐ To relieve physical pain
- ☐ To help with my sleep
- ☐ To decrease anxiety
- ☐ Because of anger or frustration
- ☐ To cope with depression/to reduce sadness
- ☐ To get more energy or to be more productive
- ☐ To help me lose weight
- ☐ To help me concentrate or to increase my alertness
- ☐ It helps me to study
- ☐ Other [textbox]

Earlier, we asked why you were using painkillers nonmedically for the first time. Now we would like you to select all the reasons for which you have used **painkillers** nonmedically so far.
(check all that apply)

- ☐ To relax or relieve tension or stress
- ☐ To experiment, out of curiosity or to see what it's like
- ☐ To get high
- ☐ To party
- ☐ To socialize or to have a good time with my friends
- ☐ To relieve physical pain
- ☐ To help with my sleep
- ☐ To decrease anxiety
- ☐ Because of anger or frustration
- ☐ To cope with depression/to reduce sadness
- ☐ To get more energy or to be more productive
- ☐ To help me lose weight
- ☐ To help me concentrate or to increase my alertness
- ☐ It helps me to study
- ☐ Other [textbox]

Earlier, we asked why you were using sleeping pills or tranquilizers nonmedically for the first time. Now we would like you to select all the reasons for which you have used **sleeping pills or tranquilizers** nonmedically so far.

(check all that apply)

- ☐ To relax or relieve tension or stress
- ☐ To experiment, out of curiosity or to see what it's like
- ☐ To get high
- ☐ To party
- ☐ To socialize or to have a good time with my friends
- ☐ To relieve physical pain
- ☐ To help with my sleep
- ☐ To decrease anxiety
- ☐ Because of anger or frustration
- ☐ To cope with depression/to reduce sadness
- ☐ To get more energy or to be more productive
- ☐ To help me lose weight
- ☐ To help me concentrate or to increase my alertness
- ☐ It helps me to study
- ☐ Other [textbox]

Setting of use

In which settings have you used prescription drugs nonmedically?
(select all that apply)

- ☐ Alone at home
- ☐ At a friend's or family member's home
- ☐ At a social gathering (e.g. party, festival, café, club, etc.)
- ☐ At school or work
- ☐ Other [textbox]

Accessibility

We want to ask you now some questions about how you obtain the prescription drugs that you use non-medically.
How have you obtained the prescription drugs that you have used nonmedically?
(select all that apply)

- ☐ I got them from a family member
- ☐ I got them from a friend
- ☐ I secretly took some of a family member's or friend's prescription

- ☐ I stole them from someplace or someone other than a friend or family member
- ☐ I bought them from friends, family, or other people I know
- ☐ I bought them from a drug dealer
- ☐ I had a prescription for a medical problem
- ☐ I got a prescription from a physician who didn't ask too many questions
- ☐ Someone else went and got a prescription for me
- ☐ I got them on the internet (e.g. internet pharmacy, darknet)
- ☐ I got them from a pharmacy using a forged or fake prescription
- ☐ Other [textbox]

Accessibility II

If you wanted to get the following prescription drugs and you didn't have a prescription…

How difficult or easy would it be for you to get them?

	Prescription stimulants	Painkillers	Tranquilizers or sleeping pills
Probably impossible	○	○	○
Very difficult	○	○	○
Fairly difficult	○	○	○
Fairly easy	○	○	○
Very easy	○	○	○
I don't know	○	○	○

Prescription stimulants (e.g. Ritalin, methylphenidate, Modafinil, Provigil, Concerta, etc.) are usually prescribed for the treatment of ADHD

Painkillers (e.g. tramadol, contramal, codeine, fentanyl, oxycodone, Ms Contin, etc.) are usually prescribed for pain relief. We mean painkillers that are only available <u>WITH</u> a prescription in a pharmacy (and thus not freely available such as Dafalgan, paracetamol, aspirin, etc.)

Tranquilizers or sleeping pills (e.g. benzodiazepines, xanax, zolpidem, diazepam, temesta, etc.) are usually prescribed to help people sleep, relax, calm down, relieve anxiety and panic attacks, or to relax muscle spasms.

Sometimes people are offered a chance to try particular prescription drugs.

How many times in your lifetime were the following prescription drugs offered to you (freely or against payment in a nonmedical context)?

	Prescription stimulants	Painkillers	Tranquilizers or sleeping pills
Never	○	○	○
Once or twice	○	○	○
Occasionally	○	○	○
Regularly	○	○	○

How often in your lifetime have you given away, loaned, or sold prescription drugs to someone?

- ○ never
- ○ once or twice
- ○ occasionally
- ○ regularly

Information

Have you ever looked for information about prescription drugs you have used <u>nonmedically</u>?

- ○ Yes
- ○ No

Which sources have you consulted when looking for information about prescription drugs you have used nonmedically? (select all that apply)

- ☐ Medical doctor or specialist (e.g.: general practitioner, psychiatrist, neurologist, etc.)
- ☐ Other medical professional (e.g.: nurse, psychologist, etc.)
- ☐ Friends
- ☐ Family
- ☐ Online search engines (e.g. Google)
- ☐ Online discussion fora (e.g. Erowid, 9lives, drugsforum, etc.)
- ☐ Social media (e.g. Facebook, Twitter, Instagram, etc.)
- ☐ Online specialized websites (e.g. www.apotheek.nl, etc.)
- ☐ Other [textbox]

Can you specify which forums you consult?

[textbox]

On which topics have you searched for information about the prescription drugs you have used nonmedically? (select all that apply)

- ☐ Adverse effects
- ☐ Health risks
- ☐ Recreational uses
- ☐ Therapeutic/clinical effects
- ☐ Dosing
- ☐ Medical indications
- ☐ Concurrent substance use (e.g. alcohol)
- ☐ Contraindications
- ☐ Addiction
- ☐ Other [textbox]

Attitudes and perceptions

In this section we want to get to know your opinion about substance use.

Which of the following statements best describes your attitude to the nonmedical use of the following prescription drugs?

	Prescription stimulants	Painkillers	Tranquilizers or sleeping pills
Never ok to use	○	○	○
Ok to use occasionally if it doesn't interfere with study or work	○	○	○
Ok to use frequently if it doesn't interfere with study or work	○	○	○
Ok to use occasionally even if it does interfere with study or work	○	○	○
Ok to use frequently if that is what the person wants to do	○	○	○

We would like to know your opinion on the effects of using certain drugs.
How much do you think people RISK HARMING THEMSELVES physically or mentally if they…

	No risk	Slight risk	Moderate risk	Great risk	Don't know
… smoke cigarettes occasionally?	○	○	○	○	○
… smoke one or more packs of cigarettes per day?	○	○	○	○	○
… try ecstasy once or twice?	○	○	○	○	○
… take ecstasy regularly?	○	○	○	○	○
… have one or two drinks nearly every day?	○	○	○	○	○

… have four or five drinks nearly every day?	○	○	○	○	○
… have five or more drinks in one occasion nearly each weekend?	○	○	○	○	○
… try an amphetamine (uppers, pep pills, bennie, speed) once or twice?	○	○	○	○	○
… take amphetamines regularly?	○	○	○	○	○
… try cannabis or hashish (marijuana) once or twice?	○	○	○	○	○
… smoke cannabis or hashish (marijuana) occasionally?	○	○	○	○	○
… smoke cannabis or hashish (marijuana) regularly?	○	○	○	○	○
… take a prescription stimulant (such as Ritalin, methylphenidate, etc.) once or twice without a prescription or other than as instructed by a doctor?	○	○	○	○	○
… take a prescription stimulant (such as Ritalin, methylphenidate, etc.) regularly without a prescription or other than as instructed by a doctor?	○	○	○	○	○
… take a prescription pain killer (such as tramadol, codeine, contramal, etc.) once or twice without a prescription or other than as instructed by a doctor?	○	○	○	○	○
… take a prescription pain killer (such as tramadol, codeine, contramal, etc.) regularly without a prescription or other than as instructed by a doctor?	○	○	○	○	○
… take a prescription sedative or tranquilizer (such as benzodiazepines, xanax, zolpidem, diazepam, temesta, etc.) once or twice without a prescription or other than as instructed by a doctor?	○	○	○	○	○
… take a prescription sedative or tranquilizer (such as benzodiazepines, xanax, zolpidem, diazepam, temesta, etc.) regularly without a prescription or other than as instructed by a doctor?	○	○	○	○	○

Substance use

The following questions are about the use of alcohol and other drugs.

Have you used the following substances?
(select all that apply)

- ☐ Alcohol
- ☐ Tobacco (cigarettes)
- ☐ Cannabis (e.g. weed, marihuana, hash)
- ☐ Synthetic cannabinoids or other NPS (e.g. Spice, K2, designer drugs, Mephedrone, meow, 2C-B)
- ☐ MDMA (e.g. XTC)
- ☐ LSD and other hallucinogens (e.g. paddo's, mescalyne, peyote)
- ☐ Cocaine (e.g., powder, crack)
- ☐ Amphetamines (e.g. speed)
- ☐ Methamphetamines (e.g. meth, crystal meth)
- ☐ Ketamine
- ☐ GHB
- ☐ Heroine
- ☐ None of these
- ☐ Other [textbox]

How often in the past twelve months have you used the following substances?

	Never	Less than once a month	Once a month	2 to 3 days per month	1 to 2 days per week	3 to 4 days per week	Almost daily	Daily
Alcohol	○	○	○	○	○	○	○	○

Tobacco (cigarettes)	○	○	○	○	○	○	○	○
Cannabis (e.g. weed, marihuana, hash)	○	○	○	○	○	○	○	○
Synthetic cannabinoids or other NPS (e.g. Spice, K2, designer drugs, Mephedrone, meow, 2C-B)	○	○	○	○	○	○	○	○
MDMA (e.g. XTC)	○	○	○	○	○	○	○	○
LSD and other hallucinogens (e.g. paddo's, mescalyne, peyote)	○	○	○	○	○	○	○	○
Cocaine (e.g., powder, crack)	○	○	○	○	○	○	○	○
Amphetamines (e.g. speed)	○	○	○	○	○	○	○	○
Methamphetamines (e.g. meth, crystal meth)	○	○	○	○	○	○	○	○
Ketamine	○	○	○	○	○	○	○	○
GHB	○	○	○	○	○	○	○	○
Heroine	○	○	○	○	○	○	○	○

How many of the times when you used **prescription stimulants** during the last year did you use it along with the following substances) -that is, so that their effects overlapped?

	Never	Sometimes	Often	Always
Together with: Alcohol	○	○	○	○
Together with: Tobacco (cigarettes)	○	○	○	○
Together with: Cannabis (e.g. weed, marihuana, hash)	○	○	○	○
Together with: Synthetic cannabinoids or other NPS (e.g. Spice, K2, designer drugs, Mephedrone, meow, 2C-B)	○	○	○	○
Together with: MDMA (e.g. XTC)	○	○	○	○
Together with: LSD and other hallucinogens (e.g. paddo's, mescalyne, peyote)	○	○	○	○
Together with: Cocaine (e.g., powder, crack)	○	○	○	○
Together with: Amphetamines (e.g. speed)	○	○	○	○
Together with: Methamphetamines (e.g. meth, crystal meth)	○	○	○	○
Together with: Ketamine	○	○	○	○
Together with: GHB	○	○	○	○
Together with: Heroine	○	○	○	○
Together with: Painkillers	○	○	○	○
Together with: Tranquilizers or sleeping pills	○	○	○	○

How many of the times when you used **painkillers** during the last year did you use it along with the following substances -that is, so that their effects overlapped? Together with:

	Never	Sometimes	Often	Always
Together with: Alcohol	○	○	○	○
Together with: Tobacco (cigarettes)	○	○	○	○
Together with: Cannabis (e.g. weed, marihuana, hash)	○	○	○	○
Together with: Synthetic cannabinoids or other NPS (e.g. Spice, K2, designer drugs, Mephedrone, meow, 2C-B)	○	○	○	○
Together with: MDMA (e.g. XTC)	○	○	○	○
Together with: LSD and other hallucinogens (e.g. paddo's, mescalyne, peyote)	○	○	○	○
Together with: Cocaine (e.g., powder, crack)	○	○	○	○
Together with: Amphetamines (e.g. speed)	○	○	○	○
Together with: Methamphetamines (e.g. meth, crystal meth)	○	○	○	○
Together with: Ketamine	○	○	○	○
Together with: GHB	○	○	○	○
Together with: Heroine	○	○	○	○
Together with: Prescription stimulants	○	○	○	○
Together with: Tranquilizers or sleeping pills	○	○	○	○

How many of the times when you used **tranquilizers or sleeping pills** during the last year did you use it along with the following substances -that is, so that their effects overlapped? Together with:

	Never	Sometimes	Often	Always
Together with: Alcohol	○	○	○	○
Together with: Tobacco (cigarettes)	○	○	○	○
Together with: Cannabis (e.g. weed, marihuana, hash)	○	○	○	○
Together with: Synthetic cannabinoids or other NPS (e.g. Spice, K2, designer drugs, Mephedrone, meow, 2C-B)	○	○	○	○
Together with: MDMA (e.g. XTC)	○	○	○	○
Together with: LSD and other hallucinogens (e.g. paddo's, mescalyne, peyote)	○	○	○	○
Together with: Cocaine (e.g., powder, crack)	○	○	○	○
Together with: Amphetamines (e.g. speed)	○	○	○	○
Together with: Methamphetamines (e.g. meth, crystal meth)	○	○	○	○
Together with: Ketamine	○	○	○	○
Together with: GHB	○	○	○	○
Together with: Heroine	○	○	○	○
Together with: Prescription stimulants	○	○	○	○
Together with: Painkillers	○	○	○	○

Substance use II

Here are a few other questions about your nonmedical prescription drug use in the past 12 months.
(answer with yes or no)

	Yes	No
Do you use more than one prescription drug at a time?	○	○
Are you always able to stop using prescription drugs when you want to?	○	○
Have you had "blackouts" or "flashbacks" as a result of prescription drug use?	○	○
Do you ever feel bad or guilty about your prescription drug use?	○	○
Does your spouse (or parents) ever complain about your involvement with prescription drugs?	○	○
Have you neglected your family because of your use of prescription drugs?	○	○
Have you engaged in illegal activities in order to obtain prescription drugs?	○	○
Have you ever experienced withdrawal symptoms (felt sick) when you stopped taking prescription drugs?	○	○
Have you had medical problems as a result of your prescription drug use (e.g., memory loss, hepatitis, convulsions, bleeding, etc.)?	○	○

Substance use III

The next question asks about receiving any type of treatment for a substance) abuse problem.

Have you ever, even once, sought help for problems you were having with prescription drugs, drugs or alcohol?

- ○ Yes
- ○ No
- ○ Rather not say

COVID-19

Finally, we would like to ask you some questions about the COVID-19 outbreak and how the lock-down measures may have affected your prescription drug use.

As a result of COVID-19, have there been any changes in how often you are taking the following prescription drugs nonmedically?

	Prescription stimulants	Painkillers	Tranquilizers or sleeping pills
I am using more often	o	o	o
No influence on use	o	o	o
I am using less often	o	o	o
Not sure	o	o	o

As a result of COVID-19, have there been any changes to the amount or quantity of prescription drugs that you consume in a session?

	Prescription stimulants	Painkillers	Tranquilizers or sleeping pills
I am consuming larger amounts during a session	o	o	o
No influence on amount	o	o	o
I am consuming smaller amounts during a session	o	o	o
Not sure	o	o	o

As a result of COVID-19, has access or availability to your usual prescription drugs changed?

	Prescription stimulants	Painkillers	Tranquilizers or sleeping pills
Yes they are easier to access	o	o	o
Yes they are more difficult to access	o	o	o
No, it hasn't changed	o	o	o
Not sure	o	o	o

Further questions

THANK YOU!
Thank you very much for filling in this questionnaire!

In this study, personal interviews are conducted in addition to the questionnaire. If the researchers are allowed to contact you for an interview, you can enter your email address below. You can also indicate if you wish to be informed of the results of the survey.

If you want to win a smartphone or cinema tickets , do not forget to fill in your e-mail address.

You can always contact the researchers yourself at the following email address: youthpumed@ugent.be.

We would appreciate it if you would tell your friends about this study.

- ☐ I want to participate in a personal interview
- ☐ I want to be informed of the results of the survey
- ☐ I want to win a smartphone or cinema tickets

E-mail address or telephone number: [textbox]

Your email address will only be used to contact you. It will not be saved and will not be used to identify you.

APPENDIX III: TOPIC GUIDE INTERVIEWS

Interview identification [to be completed by the interviewer at the end of the interview]

Interview code	
Date of the interview	
Duration of the interview	
Location of the interview	
Interview mode	Online – face-to-face
Name interviewer	

A. About yourself

Could you please tell me a little bit about your life at the moment?

- How old are you?
- Where do you live? With whom? How would you describe your living situation?
- How are you employed at the moment? (if applicable)
- What do you do on a typical (work/school) day/ weekend?

B. Current medical use of sedatives, stimulants or analgesics

Could you just tell me a bit about your use of …. ?

  - Sedatives, tranquilizers or hypnotics (e.g. benzodiazepines, xanax, diazepam, temesta, zolpidem)
  - Stimulants (e.g. rilatine, concerta, methylfenidaat)
  - Analgesics / pain killers (e.g. tramadol, contramal, oxycodon, Dafalgan codeine, Ms Contin, fentanyl)

- Do you have a prescription?
- What are the main reasons for using these medicines?
- How old were you when you used these medicines for the first time?
- Do you have an official medical diagnosis? Which one? (ADHD, chronic pain, depression, etc.)
  - If not: do you think you have a disease/disorder? Which one?

C. Current non-medical use of sedatives, stimulants or analgesics

Could you just tell me a bit about your current non-medical use of prescription medicines?

- Which types of medicines do you currently use non-medically?
  Probe if necessary.
  - Sedatives, tranquilizers or hypnotics (e.g. benzodiazepines, xanax, diazepam, temesta, zolpidem)
  - Stimulants (e.g. rilatine, concerta, methylfenidaat)
  - Analgesics / pain killers (e.g. tramadol, contramal, oxycodon, Dafalgan codeine, Ms Contin, fentanyl)

- In which way do you use them non-medically? (e.g. are you using them without a prescription or in a different way than instructed?)

- What are the main reasons for using these medicines non-medically? (e.g. athletic enhancement; cognitive improvement; to be more confident; no time or money to go to the doctor; because prescription drugs are not enough; to use them with other drugs, etc.)

- Thinking about the last time you have used, could you please describe as specific as you can:
  - What was the main reason to use these medicines?
  - How did you use these medicines? (e.g. dosage, administration method)
  - In which context did you use these medicines? (e.g. alone, friends they used with, situation?, place?, time of the day/night?)
  - Did you use it together with other substances such as illicit drugs, alcohol?
  - Did you use it together with other prescription medicines?

- Was this a typical situation? Why (not)?
  - For what reason do you usually use?
  - In which context do you usually use?
  - How frequently do you usually use these medicines?
  - What dosage do you typically take? Does this vary?
  - How do you typically use these medicines? Have you ever used an alternative administration method?

D. Initiation and progress of non-medical use of prescription medicines

Can you please describe the situation and the context that led up to you using a prescription medicine non-medically for the first time? Please be as specific as you can.

- Which type of medicine did you start with?
- How old were you?
- How did you start? Who did you start with? (context)
- Why did you start? What were the main reasons? (motivations)
- Have you been using other substances (e.g. alcohol, illicit drugs, etc.) before you first started using prescription drugs nonmedically?

How would you describe the progress of your non-medical use of prescription medicines? Please be as specific as you can.

- Did you continue to use [medicine X] non-medically after that first experience?
  - If yes: do you currently use it non-medically?
  - If not: which medication do you currently use non-medically?

- Can you tell more about:
  - Changes in types of prescription medicine?
  - Change in the frequency, the dosage or the administration method?
  - Change in context of use?
  - Change in the reason of use?

E. Supply channels

Could you just tell me a bit about how you typically get these prescription medicines that you are using non-medically? Please be as specific as you can.

- Who or where do you usually get your prescription medicines from? (e.g. doctor, friends, family, parents, internet,…). Please explain.
- Is it easy to get those prescription medicines? Why (not)?
- Do you get them for free?
    - If not: how much do you typically pay for the medicines?

- Have you acquired these medicines differently on other occasions? How? Did this changed over time?
- Have you ever supplied these medicines yourself? Why (not)? Please describe.

F. Information

Do you feel that you have enough knowledge about the prescription medicines you use non-medically? Please describe.

Could you just tell me a bit more about how you inform yourselves about the prescription medicines you are using?

- Which type of information do you look for? (e.g. recommended dosages, costs, effects, routes of ingestion regarding)
- Which sources do you use for information about these medicines?
    - Have you consulted friends, family or professional organisations?
    - If you would go online, where would you go? What types of search terms would you use?
    - Do you know any online fora where the non-medical use of prescription drugs is discussed? If so, which fora?

- Why do you choose these sources of information?
- Did you adapt your use (dosage, administration method, etc) to the information you consulted? How? Why (not)?

G. Perceptions of risk

Could you just tell me a bit about how safe you think it is to use prescription medicines non-medically for you personally?

- Do you consider these medicines to be 'drugs'? Can you please explain?
- Do you consider the non-medical use of these medicines to be a risk? Why (not)? Please explain.

What are the main risks you see about the non-medical use of prescription medicines?

- Which risks, if any, are involved in using these medicines non-medically?
  Probe if necessary:

- How are these risks related to the type of medicine, the dosage or the administration method?

Have you ever experienced any problems when using these medicines non-medically?

We do ask about the risks, but the potential problems in the various domains of life as a result of use. These problems are e.g. physical problems, social problems (work, living, social network), psychological problems.

- How would you describe your health?
- Have you ever experienced any (unwanted) side effects when using these medicines non-medically?
- Has your non-medical use of prescription medicines caused any relationship/social problems (ie. with a partner, friends, family)?
- Has your non-medical use of prescription medicines caused any financial problems?

Have you ever considered your non-medical use of prescription drugs to be problematic?

- Did you ever think your use was out of control?
- How much do you worry about your use? Please explain.
- Have you ever tried to quit? How, for which reasons?
- Do you feel that there is any kind of help that you need at present?
  - If yes, what? how might that help?

H. Attitudes/ social acceptability

To what extent do people in your environment know about your non-medical use of these medicines?

- Are your friends and family aware of your NMUPD?
  - If yes: how do they feel about your use of these medicines?
  - If not: how would they feel about your use of these medicines?
- Does your general practitioner know about your non-medical use of these medicines?

Are you satisfied with your life as it is? What are your aspirations for the future?

- How do you consider the influence of your use on your life? Do you consider the non-medical use to have a positive or a negative influence? Can you please explain.
- Do you think you will keep using these medicines non-medically in the future? Why (not)?

I. Impacts of COVID-19

Thinking about the recent COVID-19 outbreak, has this had any impact on your use of these medicines? How? Please be as specific as you can.

- How has this period impacted your non-medical use of these medicines?
- How has this period impacted the supply of these medicines?

J. Thank you

- Is there anything we have not discussed that you would like to share before we end?

APPENDIX IV: ETHICAL APPROVAL

UNIVERSITÉ SAINT-LOUIS BRUXELLES

Bruxelles, le 3 mai 2020

Chère Professeur.e.s Ghislain et Cartuyvels, cher.e.s collègues,

Concerne : Projet Youth perceptions on recreational or non-medical use of psychoactive medications (YOUTHPUMED)

J'ai consulté les trois autres membres de la Commission d'éthique de l'USL-B, et à l'unanimité, les membres donnent leur accord, à la suite de la Commission d'éthique de l'institution partenaire (UGent), pour la conduite et la poursuite de cette recherche, les exigences éthiques étant respectées.

1. Cette approbation se fonde sur la présentation des mesures envisagées dans le dossier déposé à l'UGent pour assurer la confidentialité et l'anonymisation, ainsi que le consentement éclairé, et pour minimiser le volume des données collectées.
2. Il est notamment prévu dans ces documents que :

« Eventually, each participant will be asked to sign an informed consent document (by means of ticking a box) to enroll in the study. The participant will receive a copy of the consent form.
Survey: The survey questionnaire will begin with participant information outlining the study's aims, what to expect from the questionnaire, and their rights as research participants. Informed consent will be provided by the respondent ticking a box that they have read and understood this information and voluntarily agree to take part. The combined participant information and informed consent form will also be submitted to the research ethics committees of all involved partner institutions, as part of the ethics plan. "

3. Afin de comprendre les bonnes pratiques des autres institutions, l'un des membres de la Commission s'interroge sur le point suivant relevé dans l'annexe éthique de l'UGent:

« All data collected (both interviews and questionnaires) are encrypted or password protected and saved on the internal servers of each of the participating institutions, which are inaccessible to unauthorised persons ».
La question est de savoir s'il existe des serveurs dédiés à l'USL-B ou d'autres mesures de sécurité permettant de limiter les risques d'accès non autorisés?
Ce dernier point suggère que là aussi, des normes ou pratiques communes devraient être adoptées par les diverses institutions de recherche.

4. Par ailleurs, l'approbation par la Commission ne peut être interprétée comme un avis juridique. Le respect des obligations en matière de données personnelles sensibles (RGPD) est complexe, et pour ce volet juridique, les contacts avec le DPO (Data Protection Officer) de l'UCL aussi en charge des questions de vie privée à l'USL-B, doivent être poursuivis pour définir les bonnes pratiques qui permettent aux recherches impliquant la collecte de données personnelles sensibles de pouvoir se poursuivre sans contraintes disproportionnées.

Bien cordialement,

Alain Strowel
Président de la Commission d'éthique de l'USL-B

Université Saint-Louis - Bruxelles
Boulevard du Jardin botanique, 43 | B-1000 Bruxelles | Tel. : 02 211 78 11 | Fax : 02 211 79 97

FACULTY OF
LAW AND CRIMINOLOGY

ETHICAL COMMITTEE

Advice of the committee **April, 12th 2020**

Concerning the application of Prof. Dr. Tom Decorte (supervisor) and Frédérique Bawin (researcher), with the title '*Youth perceptions on recreational or non-medical use of psychoactive medications*', submitted on 4 February 2020, with responses to additional questions received on 30 March 2020.

After deliberation the committee unanimously approves the submitted application.

The committee wishes the researchers and supervisors every success.

Prof. Dr. Jan Verplaetse
Chair of the Ethical Committee,

GHENT
UNIVERSITY

APPENDIX V: STUDY INFORMATION SHEET

YOUTH-PUMED

Youth perceptions of non-medical use of psychoactive medications.

STUDY INFORMATION SHEET

There are some indications that the nonmedical use of psychoactive medicines (such as sedatives or tranquilizers, opioid-based pain medicine, and stimulants) is becoming a growing societal problem in Belgium, carrying increased health-related harms. From a public health perspective, there is a clear need to better understand the context of non-medical or recreational use and supply of psychoactive medications, as well as users' perceptions of that usage and associated harms – particularly focusing on at risk groups, such as young users.

The current project aims to

(1) develop a better understanding of young people's (self-)perceptions of the nonmedical use and supply of prescription drugs for nonmedical purposes, and

(2) provide recommendations for measures that may counter or reduce the harms associated with this issue.

The project aims to do so through a mixed methods approach: an online survey and qualitative, semi-structured interviews will be conducted among young users (18-29 years old) living in Belgium. Finally, we will carry an exploratory analysis of the contents of online discussion forums identified in previous phases of this research project.

The research project is funded by BELSPO and carried out in partnership between Ghent University, VIVES University College and the University of Saint-Louis Brussels.

Coordinator: Prof. Dr. Tom Decorte, Dr. Mafalda Pardal and Dr. Frédérique Bawin (UGhent)
Research partners: Dr. Julie Tieberghien and Dr. Ellen Vandenbogaerde (VIVES),
Prof. Dr. Christine Guillain, Prof. Dr. Yves Cartuyvles and Kevin Emplit (USL-B)

For further information, please visit https://youthpumed.be/

Contact details research team: youthpumed@ugent.be

Why am I being invited for an interview?

With this study we want to get a better picture of nonmedical use of prescription drugs (NMUPD) overall, and speaking to a lot of people in depth will help us understand these issues in more detail. You previously completed the survey and agreed we could contact you. As a young adult, we are particularly eager to get your views and experiences with NMUPD through an in-depth interview. We would like to discuss the following topics: current medical and non-medical use; initiation and trajectory of use; attitudes and perceptions; information seeking behavior; and the impact of the Corona virus. This will take around 1 hour.

Does this study entail risks?

Participation in this study does not put you at any risk, and please remember that if you feel uncomfortable with any question at any time, you are free to decline to answer or even stop this interview. Your participation is voluntary. We will, however, ask you a couple of questions about sensitive topics, such as your substance use and your well-being and health. If you would like to talk to someone about this or would like more information, you can seek this information on the following websites: www.druglijn.be and https://www.vad.be/ .

How is my data protected, and what will be done with my data?

This project is approved by the Faculty Ethics Committee the Faculty of Law and Criminology at Ghent University and the University of Saint-Louis Bruxelles. Your identity and participation in this study will be treated strictly confidential either by the researcher or by any other party. We will not be able to identify you in any of the files, results, or publications that result from this study. The anonymized data may be shared for research purposes with the research partners who collaborate in this research project, but only after these partners also obtained ethical clearance for this study from their own institution.

When will the results of this study be made available, and where can I find these results?

The results of this study will be published in a report and will be presented at conferences. We will also publish summaries of these results at the websites of the research partners and the website of the project: https://youthpumed.be/.

APPENDIX VI: INFORMED CONSENT FORM

CONSENT FORM FOR PROJECT PARTICIPANTS

BELSPO - YOUTH-PUMED

Youth perceptions of non-medical use of psychoactive medications.

Project approved by the Faculty Ethics Committee the Faculty of Law and Criminology at Ghent University and Univeristy Saint-Louis Brussels

I agree to take part in the above BELSPO research project. I have had the project explained to me and I have read and understood the Information Sheet, which I may keep for records. I understand that agreeing to take part means that I am willing to be interviewed by the researcher and allow for the interview to be audio taped. ☐

I understand that any information I provide is confidential, and that no information that I disclose will lead to the identification of any individual in the reports on the project, either by the researcher or by any other party. ☐

I understand that my participation is voluntary, that I can choose not to participate in part or all of the project, and that I can withdraw at any stage of the project without being penalised or disadvantaged in any way. ☐

I consent to the processing of my personal information for the purposes of this research study. I understand that such information will be treated as strictly confidential and handled in accordance with the GDPR. ☐

Name: _____

Signature: _____

Date: _____

APPENDIX VII: BIVARIATE AND REGRESSION ANALYSIS RESULTS

1. Bivariate associations between demographic variables

		Age			Gender		Survey Language		Student status		Subjective income	
		18-21	22-25	26-29	Male	Female	Dutch	French	Non-student	Student	Difficulties	No difficulties
		%	%	%	%	%	%	%	%	%	%	%
N		*252*	*214*	*108*	*214*	*350*	*380*	*194*	*185*	*389*	*167*	*392*
Age	18-21	100	0.0	0.0	37.9	47.7	44.7	42.3	11.9	59.1	35.9	46.4
	22-25	0.0	100	0.0	42.1	35.1	36.1	39.7	40.5	35.7	37.7	37.2
	26-29	0.0	0.0	100	20.1	17.1	19.2	18.0	47.6	5.1	26.3	16.3
Gender	Male	32.7	42.3	41.7	100	0.0	40.7	32.4	41.4	36.3	34.8	39.7
	Female	67.3	57.7	58.3	0.0	100	59.3	67.6	58.6	63.7	65.2	60.3
Survey language	Dutch	67.5	64.0	67.6	71.5	63.7	100	0.0	59.5	69.4	52.7	72.4
	French	32.5	36.0	32.4	28.5	36.3	0.0	100	40.5	30.6	47.3	27.6
Student	Non-student	8.7	35.0	81.5	35.0	30.3	28.9	38.7	100	0.0	40.7	29.3
	Student	91.3	65.0	18.5	65.0	69.7	71.1	61.3	0.0	100	59.3	70.7
Subjective income	Difficulties to meet ends	24.8	30.1	40.7	27.1	31.6	23.7	42.2	37.2	26.3	100	0.0
	No difficulties to meet ends	75.2	69.9	59.3	72.9	68.4	76.3	57.8	62.8	73.7	0.0	100

Pearson Chi-Square Tests

		Age	Gender	Survey Language	Student	Subjective income
Age	Chi^2	.	5.252	.728	184.431	9.077
	df	.	2	2	2	2
	Sig.	.[a]	.072	.695	.000*	.011*
Gender	Chi^2	5.252	.	3.618	1.381	1.210
	df	2	.	1	1	1
	Sig.	.072	.[a]	.057	.240	.271
Survey Language	Chi^2	.728	3.618	.	5.547	20.528
	df	2	1	.	1	1
	Sig.	.695	.057	.[a]	.019*	.000*
Student	Chi^2	184.431	1.381	5.547	.	6.890
	df	2	1	1	.	1
	Sig.	.000*	.240	.019*	.[a]	.009*
Subjective income	Chi^2	9.077	1.210	20.528	6.890	.
	Df	2	1	1	1	.
	Sig.	.011*	.271	.000*	.009*	.[a]

Results are based on nonempty rows and columns in each innermost subtable.
*. The Chi-square statistic is significant at the .05 level.
a. The Chi-square test is not performed for this subtable because row and column variables are identical.

Comparisons of Column Proportions[b]

		Age			Gender		Survey Language		Student		Subjective income	
		18-21 (A)	22-25 (B)	26-29 (C)	Man (A)	Vrouw (B)	Dutch (A)	French (B)	Non-student (A)	student (B)	Difficulties (A)	No difficulties (B)
Age	18-21	.[a]	.[a]	.[a]		A				A		A
	22-25	.[a]	.[a]	.[a]								
	26-29	.[a]	.[a]	.[a]					B		B	
Gender	Man				.[a]	.[a]						
	Vrouw				.[a]	.[a]						
Survey Language	Dutch						.[a]	.[a]		A		A
	French						.[a]	.[a]	B		B	
Student	Non-student		A	A B				A	.[a]	.[a]	B	
	student	B C	C				B		.[a]	.[a]		A
Subjective income	Difficulties			A				A	B		.[a]	.[a]
	No difficulties	C					B			A	.[a]	.[a]

Results are based on two-sided tests. For each significant pair, the key of the category with the smaller column proportion appears in the category with the larger column proportion.
Significance level for upper case letters (A, B, C): .05
a. This category is not used in comparisons because its column proportion is equal to zero or one.
b. Tests are adjusted for all pairwise comparisons within a row of each innermost subtable using the Bonferroni correction.

2. Nonmedical prescription drug use

We used logistic regression analyses to evaluate differences in nonmedical use of each type of medicine according to age, gender, language, student status, subjective income, medical and nonmedical use of other medicines as well as illicit drug use.

2.1 Ever nonmedical use- prescription stimulants

Variables	Sig.	Exp(B)	95% C.I.for EXP(B) Lower	Upper
Age	.011	1.115	1.025	1.211
Female (vs male)	.000	.433	.281	.667
Survey language French (vs Dutch)	.000	.351	.226	.544
Student (vs no student)	.083	1.610	.940	2.756
Subjective income no difficulties (vs difficulties)	.141	1.414	.891	2.242
Ever medical use stimulants (vs no use)	.000	2.971	1.790	4.930
Ever nonmedical use analgesics (vs no use)	.000	.286	.187	.436
Ever nonmedical use sedatives (vs no use)	.000	.339	.221	.521
Ever Illicit drug use (vs no use)	.000	4.095	2.424	6.919

Df= 1, Cox & Snell R square: 0.307, Nagelkerke R Square: 0.409
Exp (B)= odds ratio, CI= confidence interval

2.2 Ever nonmedical use- prescription analgesics

Variables	Sig.	Exp(B)	95% C.I.for EXP(B)	
			Lower	Upper
Age	.018	.916	.852	.985
Female (vs male)	.414	.850	.576	1.255
Survey language French (vs Dutch)	.030	1.566	1.044	2.349
Student (vs no student)	.058	.630	.390	1.016
Subjective income no difficulties (vs difficulties)	.604	.897	.596	1.351
Ever medical use analgesics (vs no use)	.025	1.640	1.065	2.527
Ever nonmedical use stimulants (vs no use)	.000	.317	.210	.478
Ever nonmedical use sedatives (vs no use)	.575	.898	.616	1.309
Ever Illicit drug use (vs no use)	.388	1.222	.775	1.927

Df= 1, Cox & Snell R square: 0.117 , Nagelkerke R Square: 0.157
Exp (B)= odds ratio, CI= confidence interval

2.3 Ever nonmedical use- prescription sedatives

Variables	Sig.	Exp(B)	95% C.I.for EXP(B)	
			Lower	Upper
Age	.696	1.015	.943	1.092
Female (vs male)	.973	1.007	.685	1.480
Survey language French (vs Dutch)	.967	1.009	.670	1.518
Student (vs no student)	.129	.690	.428	1.114
Subjective income no difficulties (vs difficulties)	.083	.694	.459	1.048
Ever medical use sedatives (vs no use)	.000	2.080	1.417	3.053
Ever nonmedical use stimulants (vs no use)	.000	.376	.247	.572
Ever nonmedical use analgesics (vs no use)	.357	.835	.569	1.226
Ever Illicit drug use (vs no use)	.091	1.478	.939	2.327

Df= 1, Cox & Snell R square: 0.105, Nagelkerke R Square: 0.141
Exp (B)= odds ratio, CI= confidence interval

3. Initiation to NMUPD

3.1 Initiation age

We used a standard linear regression to estimate the relative effects of age, gender, language, student status, subjective income and illicit drug use on initiation age of prescription drugs. To obtain adjusted effects for each prescription medicine as the dependent variable, we additionally included reported medical use, initiation motive (0=non-recreational, 1=recreational) and dummy variables for initial supply source being family, friends or prescription of the medicine in question.

Initiation age- prescription stimulants

	Unstandardized Coefficients		Standardized Coefficients			95,0% Confidence Interval for B	
Variables	B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound
(Constant)	8.772	2.904		3.020	.003	3.795	13.717
Age	.406	.089	.352	4.564	.000	.231	.581
Female (vs male)	-.306	.433	-.044	-.707	.480	-1.158	.546
Survey language French (vs Dutch)	-.943	.531	-.107	-1.775	.077	-1.989	.103
Student (vs no student)	.904	.585	.118	1.545	.123	-.248	2.056
Subjective income no difficulties (vs difficulties)	.324	.486	.040	.666	.506	-.633	1.282
Ever medical use stimulants (vs no use)	-1.149	.463	-.154	-2.481	.014	-2.060	-.237
Initiation motive stimulants recreational (vs no recreational initiation motive)	.246	.494	.032	.498	.619	-.727	1.220
Initial source stimulants: family (vs family no initial source)	-.855	.710	-.080	-1.205	.229	-2.253	.542
Initial source stimulants: friends (vs friends no initial source)	-.015	.475	-.002	-.032	.975	-.950	.920
Initial source stimulants: prescription (vs prescription no initial source)	1.044	.827	.082	1.263	.208	-.584	2.672
Ever Illicit drug use (vs no use)	-.340	.663	-.031	-.513	.608	-1.645	.965

Model summary: R: .361, R^2: .130, adjusted R^2: .094, Std. Error of the Estimate: 3.345

Initiation age- prescription analgesics

	Unstandardized Coefficients		Standardized Coefficients			95,0% Confidence Interval for B	
Variables	B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound
(Constant)	4.473	2.760		1.621	.106	1.334	10.871
Age	.403	.089	.319	4.514	.000	.227	.579
Female (vs male)	-.297	.500	-.036	-.594	.553	-1.280	.687
Survey language French (vs Dutch)	-.694	.460	-.087	-1.509	.132	-1.599	.211
Student (vs no student)	.404	.568	.050	.712	.477	-.714	1.523
Subjective income no difficulties (vs difficulties)	.847	.480	.100	1.764	.079	-.098	1.793
Ever medical use analgesics (vs no use)	-.218	.575	-.021	-.379	.705	-1.351	.915
Initiation motive analgesics recreational (vs no recreational initiation motive)	1.301	.599	.135	2.174	.031	.122	2.480
Initial source analgesics: family (vs family no initial source)	-1.078	.561	-.136	-1.921	.056	-2.183	.027
Initial source analgesics: friends (vs friends no initial source)	1.301	.806	.102	1.614	.108	-.286	2.888
Initial source analgesics: prescription (vs prescription no initial source)	1.060	.674	.107	1.571	.117	-.268	2.388
Ever Illicit drug use (vs no use)	.782	.563	.082	1.389	.166	-.327	1.892

Model summary: R: .495, R^2: .245, adjusted R^2: .212, Std. Error of the Estimate: 3.494

Initiation age- prescription sedatives

	Unstandardized Coefficients		Standardized Coefficients			95,0% Confidence Interval for B	
Variables	B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound
(Constant)	5.287	1.882		2.809	.005	1.582	8.993
Age	.554	.068	.525	8.100	.000	.420	.689
Female (vs male)	-.484	.409	-.069	-1.183	.238	-1.290	.321
Survey language French (vs Dutch)	-.022	.383	-.003	-.058	.954	-.776	.732
Student (vs no student)	.882	.457	.126	1.932	.054	-.017	1.781
Subjective income no difficulties (vs difficulties)	.955	.381	.136	2.505	.013	.205	1.706
Ever medical use sedatives (vs no use)	-1.260	.396	-.186	-3.181	.002	-2.040	-.480
Initiation motive sedatives recreational (vs no recreational initiation motive)	-.620	.520	-.068	-1.192	.234	-1.644	.404
Initial source sedatives: family (vs family no initial source)	-.001	.453	.000	-.003	.998	-.893	.891
Initial source sedatives: friends (vs friends no initial source)	.921	.572	.094	1.610	.108	-.205	2.048
Initial source sedatives: prescription (vs prescription no initial source)	1.185	.578	.129	2.052	.041	.048	2.322
Ever Illicit drug use (vs no use)	.038	.458	.005	.084	.933	-.863	.940

Model summary: R: .514, R^2: .264, adjusted R^2: .235, Std. Error of the Estimate: 2.966

3.2 Initiation motive

We ran logistic regressions on initiation motive (0=non-recreational, 1=recreational) for each type of prescription drug. We included age, gender, language, student status, subjective income and illicit drug use as independent variables. To obtain adjusted effects for each prescription medicine as the dependent variable, we additionally included reported medical use of this medicine, as well as initiation age and dummies for initiation supply sources being family, friends or own prescriptions.

Initiation motive recreational- prescription stimulants

			95% C.I.for EXP(B)	
Variables	**Sig.**	**Exp(B)**	**Lower**	**Upper**
Age	.819	1.016	.887	1.164
Female (vs male)	.000	.264	.138	.506
Survey language French (vs Dutch)	.002	3.359	1.558	7.243
Student (vs no student)	.904	1.052	.463	2.391
Subjective income no difficulties (vs difficulties)	.050	.509	.259	.999
Ever medical use stimulants (vs no use)	.010	2.427	1.239	4.754
Initiation age stimulants	.834	1.010	.917	1.113
Initial source stimulants: family (vs family no initial source)	.183	.324	.062	1.700
Initial source stimulants: friends (vs friends no initial source)	.029	2.120	1.081	4.160
Initial source stimulants: prescription (vs prescription no initial source)	.242	.463	.127	1.685
Ever Illicit drug use (vs no use)	.013	15.420	1.796	132.397

Df= 1, Cox & Snell R square: 0.208, Nagelkerke R Square: 0.298

Exp (B)= odds ratio, CI= confidence interval

Initiation motive recreational- prescription analgesics

			95% C.I.for EXP(B)	
Variables	**Sig.**	**Exp(B)**	**Lower**	**Upper**
Age	.079	.861	.728	1.018
Female (vs male)	.001	.307	.148	.635
Survey language French (vs Dutch)	.863	1.069	.503	2.268
Student (vs no student)	.841	.909	.358	2.308
Subjective income no difficulties (vs difficulties)	.871	.938	.431	2.041
Ever medical use analgesics (vs no use)	.556	.771	.325	1.829
Initiation age analgesics	.027	1.148	1.016	1.299
Initial source analgesics: family (vs family no initial source)	.275	.601	.241	1.500
Initial source analgesics: friends (vs friends no initial source)	.034	3.001	1.085	8.300
Initial source analgesics: prescription (vs prescription no initial source)	.466	.672	.230	1.960
Ever Illicit drug use (vs no use)	.029	9.821	1.265	76.275

Df= 1, Cox & Snell R square: .221, Nagelkerke R Square: .345

Exp (B)= odds ratio, CI= confidence interval

Initiation motive recreational- prescription sedatives

Variables	Sig.	Exp(B)	95% C.I.for EXP(B) Lower	Upper
Age	.059	1.173	.994	1.385
Female (vs male)	.000	.212	.098	.458
Survey language French (vs Dutch)	.314	1.513	.675	3.390
Student (vs no student)	.122	2.245	.805	6.257
Subjective income no difficulties (vs difficulties)	.147	1.903	.798	4.538
Ever medical use sedatives (vs no use)	.522	1.314	.569	3.034
Initiation age sedatives	0.09	.881	.761	1.020
Initial source sedatives: family (vs family no initial source)	.067	.409	.157	1.065
Initial source sedatives: friends (vs friends no initial source)	.201	1.834	.723	4.650
Initial source sedatives: prescription (vs prescription no initial source)	.014	.067	.008	.578
Ever Illicit drug use (vs no use)	.997	302090669.132	.000	.

Df= 1, Cox & Snell R square: .217, Nagelkerke R Square: .365
Exp (B)= odds ratio, CI= confidence interval

4. Current use motives

We calculated dichotomous variables that reflect recreational vs non-recreational use motives for each type of prescription medicine. We used logistic regressions including age, gender, language, student status, subjective income, illicit drug use, reported medical use of each medicine, as well as initiation age, and dummies for initiation supply sources being family, friends or own prescriptions.

4.1 Recreational motives – prescription stimulants

Variables	Sig.	Exp(B)	95% C.I.for EXP(B) Lower	Upper
Age	.513	.960	.849	1.085
Female (vs male)	.004	.451	.263	.774
Survey language French (vs Dutch)	.457	1.293	.657	2.543
Student (vs no student)	.603	.818	.384	1.744
Subjective income no difficulties (vs difficulties)	.375	.752	.401	1.411
Ever medical use stimulants (vs no use)	.019	2.103	1.130	3.912
Initiation age stimulants	.551	1.025	.945	1.112
Initial source stimulants: family (vs family no initial source)	.013	.261	.091	.752
Initial source stimulants: friends (vs friends no initial source)	.387	1.304	.715	2.377
Initial source stimulants: prescription (vs prescription no initial source)	.978	.985	.340	2.857
Ever Illicit drug use (vs no use)	.000	8.980	2.861	28.184

Df= 1, Cox & Snell R square: .201, Nagelkerke R Square: .268
Exp (B)= odds ratio, CI= confidence interval

4.2 Recreational motives- prescription analgesics

Variables	Sig.	Exp(B)	95% C.I.for EXP(B) Lower	Upper
Age	.400	.946	.832	1.076
Female (vs male)	.028	.505	.274	.928
Survey language French (vs Dutch)	.416	1.295	.694	2.417
Student (vs no student)	.271	.652	.305	1.395
Subjective income no difficulties (vs difficulties)	.802	.923	.491	1.733
Ever medical use analgesics (vs no use)	.600	1.233	.563	2.699
Initiation age analgesics	.107	1.077	.984	1.179
Initial source analgesics: family (vs family no initial source)	.002	.312	.150	.650
Initial source analgesics: friends (vs friends no initial source)	.024	3.392	1.174	9.800
Initial source analgesics: prescription (vs prescription no initial source)	.160	.545	.233	1.272
Ever Illicit drug use (vs no use)	.001	5.165	1.886	14.142

Df= 1, Cox & Snell R square: 2.44, Nagelkerke R Square: .338
Exp (B)= odds ratio, CI= confidence interval

4.3 Recreational motives- prescription sedatives

Variables	Sig.	Exp(B)	95% C.I.for EXP(B) Lower	Upper
Age	.555	1.036	.922	1.164
Female (vs male)	.022	.518	.295	.909
Survey language French (vs Dutch)	.850	.945	.524	1.704
Student (vs no student)	.174	.617	.308	1.238
Subjective income no difficulties (vs difficulties)	.486	1.237	.680	2.252
Ever medical use sedatives (vs no use)	.855	1.060	.567	1.981
Initiation age sedatives	.068	.918	.838	1.006
Initial source sedatives: family (vs family no initial source)	.005	.359	.176	.729
Initial source sedatives: friends (vs friends no initial source)	.129	1.860	.835	4.142
Initial source sedatives: prescription (vs prescription no initial source)	.181	.561	.240	1.309
Ever Illicit drug use (vs no use)	.001	5.007	1.930	12.991

Df= 1, Cox & Snell R square: .187, Nagelkerke R Square: .259.
Exp (B)= odds ratio, CI= confidence interval

5. Use frequency

We calculated dichotomous variables for lifetime use frequency (0= used less than 10 times, 1= used 10 times or more). We used logistic regressions including age, gender, language, student status, subjective income, illicit drug use, recreational use motives, reported medical use of each medicine, as well as initiation age. We included dummies for use context being alone at home, at home with friends or family, at a social gathering, and at school or work, and dummies for source of supply including: family member, friend and internet.

5.1 Used 10 times or more in lifetime- prescription stimulants

Variables	Sig.	Exp(B)	95% C.I.for EXP(B) Lower	Upper
Age	.037	1.146	1.008	1.304
Female (vs male)	.306	.738	.412	1.321
Survey language French (vs Dutch)	.001	.297	.145	.610
Student (vs no student)	.073	2.119	.932	4.814
Subjective income no difficulties (vs difficulties)	.926	.970	.503	1.868
Ever medical use stimulants (vs no use)	.103	1.657	.902	3.044
Initiation age stimulants	.006	.892	.822	.968
Recreational use motives stimulants (vs no recreational use motives)	.972	.988	.503	1.940
Ever Illicit drug use (vs no use)	.632	.807	.335	1.942
Use context – alone at home (vs no use alone at home)	.021	2.235	1.130	4.422
Use context – at home with friends or family (vs no use at home with friends)	.160	1.566	.838	2.926
Use context - at a social gathering (vs no use at a social gathering)	.044	2.078	1.021	4.230
Use context - at school or work (vs no use at school or work)	.003	2.454	1.358	4.434
Source of supply - family member (vs family member no source)	.919	1.033	.547	1.951
Source of supply - friend (vs friend no source)	.566	.834	.449	1.549
Source of supply - internet (vs internet no source)	.045	2.615	1.021	6.700

Df= 1, Cox & Snell R square: .220, Nagelkerke R Square: .294
Exp (B)= odds ratio, CI= confidence interval

5.2 Used 10 times or more in lifetime- prescription analgesics

Variables	Sig.	Exp(B)	95% C.I.for EXP(B) Lower	Upper
Age	.638	1.028	.916	1.155
Female (vs male)	.407	1.305	.695	2.450
Survey language French (vs Dutch)	.123	.626	.346	1.135
Student (vs no student)	.551	1.240	.612	2.512
Subjective income no difficulties (vs difficulties)	.142	.635	.346	1.164
Ever medical use analgesics (vs no use)	.040	2.123	1.034	4.363
Initiation age analgesics	.000	.838	.769	.914
Recreational use motives analgesics (vs no recreational use motives)	.100	1.790	.895	3.580
Ever Illicit drug use (vs no use)	.947	1.024	.514	2.041
Use context – alone at home (vs no use alone at home)	.002	3.655	1.617	8.262
Use context – at home with friends or family (vs no use at home with friends)	.184	1.533	.816	2.880
Use context - at a social gathering (vs no use at a social gathering)	.156	1.759	.806	3.842
Use context - at school or work (vs no use at school or work)	.009	2.242	1.228	4.091
Source of supply - family member (vs family member no source)	.008	2.286	1.237	4.226
Source of supply - friend (vs friend no source)	.333	1.391	.713	2.712
Source of supply - internet (vs internet no source)	.907	1.062	.386	2.921

Df= 1, Cox & Snell R square: .237, Nagelkerke R Square: .317
Exp (B)= odds ratio, CI= confidence interval

5.3 Used 10 times or more in lifetime- prescription sedatives

Variables	Sig.	Exp(B)	95% C.I.for EXP(B) Lower	Upper
Age	.373	1.053	.940	1.179
Female (vs male)	.239	.696	.381	1.272
Survey language French (vs Dutch)	.729	1.106	.625	1.959
Student (vs no student)	.189	.639	.327	1.246
Subjective income no difficulties (vs difficulties)	.317	.748	.424	1.321
Ever medical use sedatives (vs no use)	.028	1.904	1.073	3.378
Initiation age sedatives	.002	.866	.790	.950
Recreational use motives sedatives (vs no recreational use motives)	.231	.663	.338	1.299
Ever Illicit drug use (vs no use)	.247	.662	.329	1.332
Use context – alone at home (vs no use alone at home)	.000	4.626	2.001	10.691
Use context – at home with friends or family (vs no use at home with friends)	.379	1.324	.708	2.473
Use context - at a social gathering (vs no use at a social gathering)	.002	3.152	1.507	6.590
Use context - at school or work (vs no use at school or work)	.431	1.262	.707	2.255
Source of supply - family member (vs family member no source)	.340	.760	.432	1.336
Source of supply - friend (vs friend no source)	.649	1.161	.610	2.207
Source of supply - internet (vs internet no source)	.185	1.897	.735	4.894

Df= 1, Cox & Snell R square: .218, Nagelkerke R Square: .291
Exp (B)= odds ratio, CI= confidence interval

6. Prescription drug abuse (DAST-10)

We calculated dichotomous variables for prescription drug abuse (0= scores 0-2 (no or low level problems), 1= scores 3-10 (moderate-severe problems)) using the results of the Drug Abuse Screening Test (DAST-10). We used logistic regressions including age, gender, language, student status, subjective income, illicit drug use past 12 months, recreational use motives and reported nonmedical use of each medicine. We included dummies for source of supply including: family member, friend, prescription and internet. We included frequency of use, including having used at least one prescription drug 10 times or more in lifetime (vs less than 10 times) and weekly use (vs less than weekly).

Logistic regression on DAST-10 (0= scores 0-2, no or low level problems; 1= scores 3-10, moderate-severe problems)

			95% C.I.for EXP(B)	
	Sig.	**Exp(B)**	**Lower**	**Upper**
Age	.040	.915	.840	.996
Female (vs male)	.879	1.037	.650	1.656
Survey language French (vs Dutch)	.323	1.279	.785	2.086
Student (vs no student)	.323	.758	.437	1.314
Subjective income no difficulties (vs difficulties)	.028	.597	.377	.946
Ever nonmedical use stimulants (vs no use)	.288	1.349	.776	2.344
Ever nonmedical use analgesics (vs no use)	.712	1.093	.682	1.751
Ever nonmedical use sedatives (vs no use)	.000	2.604	1.647	4.119
Recreational use motives (vs no recreational use motives)	.038	1.739	1.031	2.933
Illicit drugs used past 12 months (vs no use)	.746	.918	.549	1.537
Source of supply - family member (vs family member no source)	.220	.743	.463	1.195
Source of supply - friend (vs friend no source)	.716	.910	.548	1.510
Source of supply- prescription (vs prescription no source)	.140	1.417	.892	2.252
Source of supply - internet (vs internet no source)	.044	2.067	1.021	4.185
Have used at least one prescription drug 10 times or more in lifetime (vs have used prescription drugs less than 10 times)	.000	3.475	2.071	5.831
Uses at least one prescription drug weekly (vs uses prescription drugs less than weekly)	.000	2.919	1.672	5.094

Df= 1, Cox & Snell R square: .236, Nagelkerke R Square: .329
Exp (B)= odds ratio, CI= confidence interval

7. Attitudes and perceptions

For each prescription drug, we used logistic regressions to compare respondents that thought it was never ok to use the prescription drug nonmedically vs. those that thought it was ok to use occasionally or frequently. '*Never ok to use'* was coded as 0 and the four other answer categories were coded as 1: '*Ok to use occasionally if it doesn't interfere with study or work', 'Ok to use frequently if it doesn't interfere with study or work', 'Ok to use occasionally even if it does interfere with study or work' and 'Ok to use frequently if that is what the person wants to do'.*

We used logistic regressions including age, gender, language, student status, subjective income, ever illicit drug use, recreational use motives and reported nonmedical use of each medicine. We included dummies for source of supply including: family member, friend, prescription and internet. We included frequency of use, being having used at least one prescription drug 10 times or more in lifetime (vs less than 10 times).

7.1 'Ok to use occasionally or frequently'- prescription stimulants

			95% C.I.for EXP(B)	
	Sig.	**Exp(B)**	**Lower**	**Upper**
Age	.016	.897	.820	.980
Female (vs male)	.119	.651	.380	1.117
Survey language French (vs Dutch)	.247	.747	.456	1.224
Student (vs no student)	.615	1.156	.657	2.032
Subjective income no difficulties (vs difficulties)	.726	1.094	.663	1.804
Ever nonmedical use stimulants (vs no use)	.000	3.877	2.069	7.266
Ever nonmedical use analgesics (vs no use)	.083	.614	.353	1.067
Ever nonmedical use sedatives (vs no use)	.178	.696	.411	1.179
Recreational use motives (vs no recreational use motives)	.001	2.760	1.502	5.069
Ever Illicit drug use (vs no use)	.002	2.245	1.335	3.776
Source of supply - family member (vs family member no source)	.660	1.123	.670	1.882
Source of supply - friend (vs friend no source)	.029	1.993	1.074	3.699
Source of supply- prescription (vs prescription no source)	.517	1.193	.699	2.036
Source of supply - internet (vs internet no source)	.063	2.983	.941	9.448
Have used at least one prescription drug 10 times or more in lifetime (vs have used prescription drugs less than 10 times)	.955	1.014	.615	1.672

Df= 1, Cox & Snell R square: .263, Nagelkerke R Square: .386
Exp (B)= odds ratio, CI= confidence interval

7.2 'Ok to use occasionally or frequently'- prescription analgesics

			95% C.I.for EXP(B)	
	Sig.	Exp(B)	Lower	Upper
Age	.097	.925	.843	1.014
Female (vs male)	.648	1.122	.685	1.838
Survey language French (vs Dutch)	.764	1.085	.635	1.854
Student (vs no student)	.591	.846	.460	1.556
Subjective income no difficulties (vs difficulties)	.991	.997	.592	1.680
Ever nonmedical use stimulants (vs no use)	.013	.443	.233	.843
Ever nonmedical use analgesics (vs no use)	.002	2.286	1.349	3.872
Ever nonmedical use sedatives (vs no use)	.120	.658	.388	1.115
Recreational use motives (vs no recreational use motives)	.957	.985	.558	1.737
Ever Illicit drug use (vs no use)	.077	1.707	.943	3.089
Source of supply - family member (vs family member no source)	.104	1.564	.912	2.682
Source of supply - friend (vs friend no source)	.070	1.695	.958	2.999
Source of supply- prescription (vs prescription no source)	.381	1.282	.736	2.233
Source of supply - internet (vs internet no source)	.219	1.722	.725	4.092
Have used at least one prescription drug 10 times or more in lifetime (vs have used prescription drugs less than 10 times)	.074	1.575	.958	2.591

Df= 1, Cox & Snell R square:.078, Nagelkerke R Square: .127
Exp (B)= odds ratio, CI= confidence interval

7.3 'Ok to use occasionally or frequently'- prescription sedatives

			95% C.I.for EXP(B)	
	Sig.	Exp(B)	Lower	Upper
Age	.011	.886	.807	.973
Female (vs male)	.752	1.086	.651	1.810
Survey language French (vs Dutch)	.672	.890	.520	1.525
Student (vs no student)	.853	.945	.517	1.726
Subjective income no difficulties (vs difficulties)	.048	1.679	1.004	2.807
Ever nonmedical use stimulants (vs no use)	.127	.604	.317	1.153
Ever nonmedical use analgesics (vs no use)	.361	.769	.437	1.352
Ever nonmedical use sedatives (vs no use)	.009	2.021	1.195	3.416
Recreational use motives (vs no recreational use motives)	.912	1.034	.571	1.872
Ever Illicit drug use (vs no use)	.398	1.297	.710	2.370
Source of supply - family member (vs family member no source)	.299	1.344	.770	2.345
Source of supply - friend (vs friend no source)	.019	2.063	1.128	3.774
Source of supply- prescription (vs prescription no source)	.191	1.467	.826	2.607
Source of supply - internet (vs internet no source)	.389	1.498	.598	3.752
Have used at least one prescription drug 10 times or more in lifetime (vs have used prescription drugs less than 10 times)	.012	1.954	1.160	3.291

Df= 1, Cox & Snell R square: .073, Nagelkerke R Square: .123
Exp (B)= odds ratio, CI= confidence interval