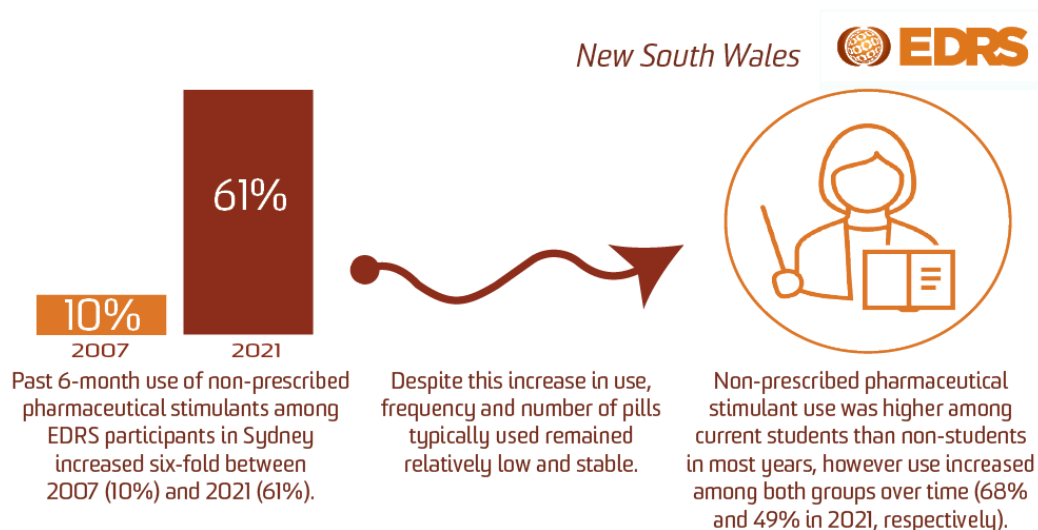


# Trends in pharmaceutical stimulant use among a sample of people who regularly use ecstasy and/or other illicit stimulants in Sydney NSW, 2007-2021

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## Key Findings:



## Introduction

Pharmaceutical stimulants, such as methylphenidate (Concerta, Ritalin), dexamphetamine; lisdexamfetamine (Vyvanse) and modafinil (Modavigil) are commonly prescribed to treat attention deficit hyperactivity disorder (ADHD) (1) and narcolepsy (2). However, there has been commentary globally about the increasing non-medical use of pharmaceutical stimulants, especially amongst student populations to increase alertness, concentration, and memory (3,4,5).

A recent systemic review examined the use of cognitive enhancers (CEs), including pharmaceutical stimulants, among university students (4). Cognitive enhancers, also known as ‘nootropics’ are substances that may be used to improve cognitive function, with 142 substances identified as potential CEs (6).

The aforementioned review included nine CEs (amphetamine salt mixtures, methylphenidate, modafinil and piracetam; and non-prescription CEs including caffeine, cobalamin (vitamin B12), guarana, pyridoxine (vitamin B6) and vinpocetine), and found that lifetime prevalence of non-medical CE use among university students, globally, ranged from 6% to 20% (4). This review consisted of 48 studies; however, most were conducted in the US and UK and only three Australian surveys were included. The three Australian studies all focused on methylphenidate, modafinil and amphetamines, and found that lifetime use ranged from 6% to 13%, which is slightly lower than the range reported above. Indeed, one of the Australian studies found that, in comparison to trends from the US and UK, the use of prescription stimulants to improve academic performance was not as common among Australian university students but was strongly associated with a history of illicit drug use (7).

Thus, the aim of this paper is to analyse pharmaceutical stimulant use amongst a sample of people who regularly use ecstasy and/or other stimulants, from 2007-2021, and to examine non-prescribed use amongst current students and non-students.

## Method

Data was collected as part of the Ecstasy and Related Drugs Reporting System (EDRS). Annual interviews were conducted with people residing in capital city areas of Australia who used ecstasy and/or other illicit stimulants on a monthly or more frequent basis and were aged 18 or older.

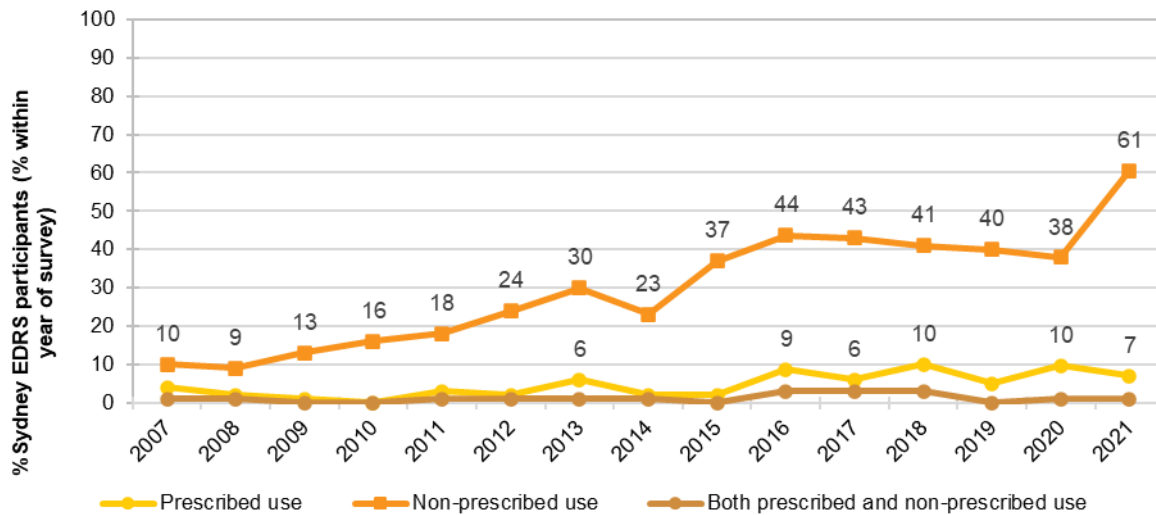
The data obtained from the Sydney EDRS sample consisted of 1505 interviews (n=~100 per year), collected between 2007 and 2021. These interviews were conducted predominately via face-to-face surveys as well as telephone surveys where COVID-19 restrictions applied. Please refer to the [EDRS Background and Methods](#) document for further details. Since 2007, data on prescribed and non-prescribed pharmaceutical stimulant use has been collected. Participants also self-report whether they currently identify as a student (e.g., through university, technical courses).

Descriptive statistics were used to analyse the data over time, focusing on prescribed and non-prescribed pharmaceutical stimulant use as a percentage of Sydney EDRS sample, as well as use amongst participants who were current students.

For information regarding the characteristics of the Sydney EDRS sample, please refer to the [NSW 2021 EDRS report](#).

## Results

**Figure 1: Past six-month pharmaceutical stimulant use, Sydney EDRS sample, 2007-2021**



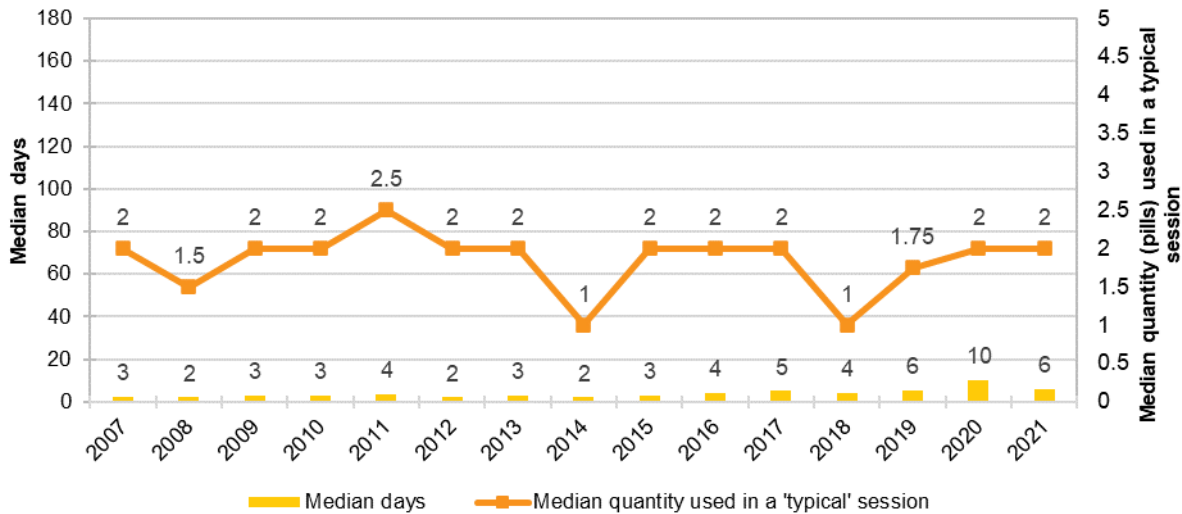
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Figure 1 above shows there was an increase in non-prescribed pharmaceutical stimulant use in the Sydney EDRS samples between 2007 and 2021. Specifically, past six month use gradually increased between 2007 (10%) and 2016 (44%) before remaining relatively stable between 2016 and 2020. In 2021, a sharp increase was observed, with 61% reporting past six-month use, the highest percentage since monitoring began.

However, the use of prescribed pharmaceutical stimulants remained much lower than non-prescribed use. Prescribed use remained very low between 2007 and 2015 with the highest usage recorded in 2013 at 6%. Between 2016 and 2021 prescribed use was slightly higher with the highest at 10% in 2018 and 2020.

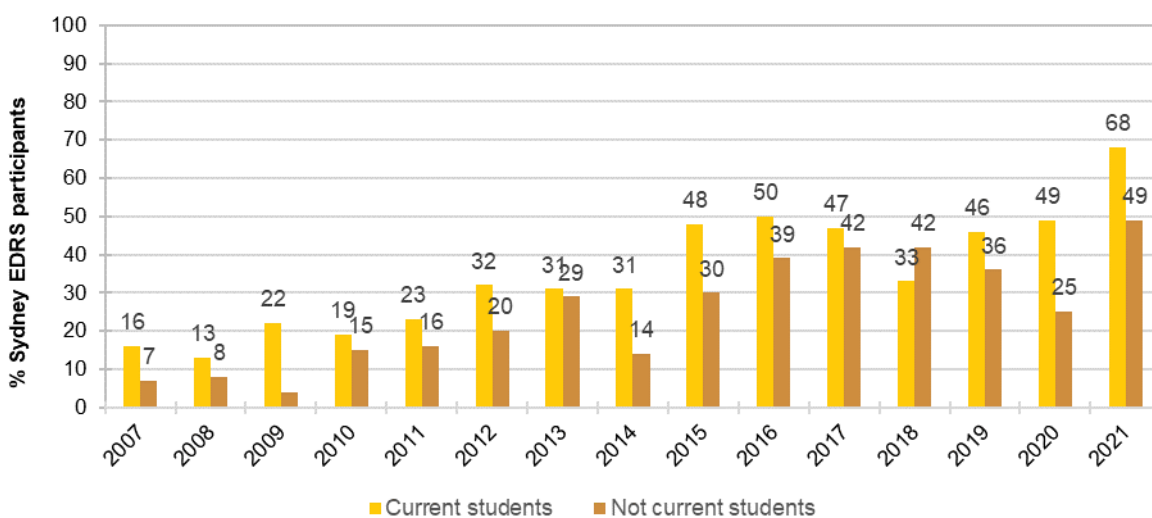
The percentage of participants reporting use of both prescribed and non-prescribed pharmaceutical stimulants has remained low over time ( $n \leq 5$  in each year).

**Figure 2: Frequency and dose of non-prescribed pharmaceutical stimulant use, Sydney EDRS sample, 2007-2021**



During the period between 2007 and 2021, median days of non-prescribed pharmaceutical stimulant use increased slightly, peaking at a median of 10 days in the past six months in 2020, before declining again to a median of 6 days in 2021 (Figure 2). The median quantity used in a 'typical' session remained constant throughout the research period, fluctuating between a median of 1-2 pills/tablets (mgs per pill not quantified).

**Figure 3: Past six-month non-prescribed pharmaceutical stimulant use among students and non-students, Sydney EDRS, 2007-2021**



No data labels provided with small cell size (i.e., n≤5 but not 0).

Between 2007 and 2021, non-prescribed pharmaceutical stimulant use was higher in most years among participants who were current students than those who were not current students (Figure 3). Only in 2018 was non-prescribed pharmaceutical stimulant use higher amongst non-students than current students. However, as seen in Figure 3, there was a general trend of increasing non-pharmaceutical stimulant use amongst both groups.

## Discussion

Non-prescribed pharmaceutical stimulant use amongst the Sydney EDRS sample increased gradually between 2007 and 2016 before stabilising until 2020 and then sharply increasing again in 2021. In comparison, frequency and median quantity of use used remained relatively low and stable, with participants generally reporting monthly or less frequent use and using between 1-2 pills in a typical session.

Non-prescribed pharmaceutical stimulant use was higher among current students than non-students in most years. However, the sharp increase in non-prescribed pharmaceutical stimulant use in 2021 appears to have occurred among both students and non-students, with 68% and 49% reporting past six-month use, respectively. These findings are important as much of the existing literature examining non-prescribed pharmaceutical stimulant use has focused on student populations. However, our findings indicate that pharmaceutical stimulant use is also elevated among people who use illicit drugs, regardless of whether they are current students or not. This aligns with a survey of 1136 Australian university students which found that non-medical use of prescription stimulants was strongly associated with a history of illicit drug use (7).

Although the EDRS does not examine motivations for use, our findings suggest that participants are likely to be using non-prescribed pharmaceutical stimulants for a variety of reasons beyond improving study habits or academic performance, including for recreational and social benefits. Previous research has suggested that some people may use non-prescribed pharmaceutical stimulants to self-medicate or self-manage undiagnosed ADHD symptoms or any other reasons, however very few of our participants self-reported ADHD (diagnosed or undiagnosed), and thus this was not examined in the current study.

This study did not examine harms associated with pharmaceutical stimulant use, however as noted, frequencies and quantities of use remained relatively low and stable over time. Of concern is the possibility of pharmaceutical stimulants being used in conjunction with other illicit stimulants (e.g., ecstasy and cocaine), which has the potential to increase toxicity and the risk of cardiovascular complications (8). Given these potential risks, and the increasing upward trend in use, it is critical that trends in non-prescribed pharmaceutical stimulant use continue to be monitored and that harms associated with use be investigated.

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## Participating Researchers and Research Centres

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