UNDERSTANDING PERCEPTIONS OF LEVELS AND INDICATORS OF ADDICTIVENESS AND RELATED FACTORS

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ABSTRACT

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Views about what defines addictiveness, what symptoms are attributable to such a state, and what objects may be addictive continue to change and be debated. However, only three prior quantitative studies have focused on the perceptions of what symptoms indicate addictiveness, all of which used diagnostic criteria and focused on a narrow range of objects. Therefore, this dissertation aimed to 1) understand what is meant when individuals refer to something as addictive, 2) understand whether the object being discussed changes the perceived meaning of addictiveness or the amount of distress expected, and 3) understand which factors may be correlates of the above perceptions. Results from a qualitative study (N = 1,123) suggested eight themes, and 18 subthemes, of potential indicators of addictiveness, which slightly resembled diagnostic criteria. These responses were translated into a Perceived Addictiveness measure to allow for better understanding of these perceptions. Using undergraduate (N = 155) and national (N = 500) samples, factor analyses showed a consistent three-factor structure for the 24 presented objects in terms of Levels of Addictiveness: Recognized Addictions, Technological objects, and Sexual objects. Correlation and MANCOVA analyses revealed variability regarding which Indicators of Addictiveness were perceived to suggest the addictiveness of objects and object categories, impacted by multiple demographics. Overall, these results show that the type of object considered affects which indicators suggest addictiveness, and religiousness and personal addiction experience often affect this relationship. As such, researchers, clinicians, and policymakers should be aware of biases related to perceptions of addictiveness in their work, be

thoughtful about their use of this term, and take time to better understand the nuances in these perceptions.

Keywords: addictiveness, perceptions, symptoms, addictive disorders.

To Sam and Arthur, for all the joy you bring.

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INTRODUCTION

Addictive disorders are one of the most common psychiatric illnesses in the U.S.A., with recent estimates suggesting that over 11% of the population in the U.S.A. had a diagnosable substance use disorder in 2019 alone (McCance-Katz, 2020). The estimated annual cost of untreated substance use disorders is over $600 billion (McCance-Katz, 2020) and, in 2016, $73 million was allocated at the state level by the U.S.A. for gambling problem services (Marotta et al., 2017). Additionally, according to the National Institute on Drug Abuse (NIDA), over 70,000 individuals died from drug-involved overdoses in 2019 (NIDA, 2019). Various addictive disorders are comorbid with each other and with other mental health and physical conditions, including depression, anxiety, and pain, many of which appear to contribute towards such addictive disorders (e.g., Karlsson & Håkansson, 2018; NIDA, 2020; Starcevic & Khazaal, 2017). In sum, addictive disorders are among the most common and most devastating mental illnesses. Despite this impact, aspects of addiction remain poorly understood and controversial, and there is an ever-present need for a fuller account of both the experience of addiction and effective ways to manage addiction. In light of this need, the present work seeks to illuminate one domain of research related to addiction and the controversies regarding the experience of addiction: what the public believes makes something addictive.

There is some consensus within scientific and medical communities about the existence of some addictive disorders, each with corresponding indicative symptoms, presented in both the Diagnostic and Statistical Manual: Fifth Edition (DSM-5) and the International Classification of Diseases: Eleventh Edition (ICD-11). Even so, the recognition of specific disorders, their associated symptoms, and their diagnostic classifications have changed continuously with the introduction of each new edition of the aforementioned manuals. For example, the symptom of

experiencing legal problems for a substance abuse disorder in the DSM-IV was removed and replaced by symptoms of cravings for a substance use disorder in the DSM-5. There also appears to be some significant heterogeneity regarding what such addictive disorders look like in terms of symptomatology, with the current diagnostic criteria for Alcohol Use Disorder requiring only two out of eleven symptoms (e.g., Boness et al., 2021; Carroll, 2021). Such breadth of phenotypic expressions of the same official disorders indicates that there may also be various ways in which something may be perceived as addictive.

Given the above evolution of diagnostic criteria for addiction, it is not surprising that colloquial uses of words such as *addiction* and *addictive* and perceptions of what such labels signify in the public sphere have also been fluid. For example, there have been many recent debates about the addictive nature of cannabis and whether its use should be allowed (e.g., Edelstein et al., 2020; Gritsenko et al., 2020; Rooney & Gibbons, 1966). Such debates are apparent not just in research about perceptions regarding cannabis, but also in media, public policy, and public discourse regarding cannabis and other potentially addictive objects (e.g., hhs.gov/opioids; norml.org; Alter, 2017; Reay et al., 2013). Such perceptions of the addictive nature of objects (hereafter: "objects" refers to anything which may be seen as addictive, i.e., substances, gambling, food, relationships, etc.) can be influenced by things like media framing and concerns about public policy (e.g., Klein et al., 2013; e.g., Lundahl, 2021; Nielsen & Bonn, 2008; Park, 2020). However, views about addictiveness and causes of addiction may also be impacted by a myriad of other factors, such as religion, political ideology, or views about certain groups (e.g., Grant & Grubbs, 2019; Grant Weinandy & Grubbs, 2021; Klein et al., 2013; Raven, 1997; White, 1998). This fluidity makes it clear that the perception of what is *addictive* and what symptoms may be present have not always been as they are today, and likely will continue to

evolve.

Given the long-standing variation in both official and public perceptions of addictive disorders and the apparent array of factors that may affect such perceptions, the present work seeks to understand what is meant when something is said to be *addictive* and the factors which may impact such a perception. In other words, this work seeks to develop a greater understanding of the various perceptions and expectations regarding symptoms of addiction for various objects, and factors that affect these views. Such information would likely inform treatment, policy-making, and further research. Therefore, this dissertation aims to evaluate the perceived levels and essential features of addictiveness for a range of objects.

Changing Historical View of Addiction

Addiction and discourse regarding addictiveness have been a part of most of human history. Historical prohibitions against drunkenness exist in many ancient texts and more recent history is replete with examples of societal prohibitions around substance use and gambling (e.g., Ferentzy & Turner, 2013; London, 2005; Petry, 2005). For example, concerns about alcohol date back to at least the time of Aristotle, who noted the potential negative effect of drinking alcohol when pregnant (Crocq, 2007). As such, the human understanding of the addictive nature of some objects can be seen to have been present for millennia; however, the exact nature of this understanding has fluctuated over time.

Views of the weight and meaning of the term *addiction* have changed, particularly over the last two centuries. Previous works note that the term *addiction*, according to the 1933 Oxford English Dictionary, was related to the act of surrender to a master or a sentence given by a court, as well as being devoted to a habit (e.g., Clark, 2011; Crocq, 2007). However, over the course of the 20th Century, it became closely tied to what is now understood as substance and alcohol use

problems (e.g., Clark, 2011; Crocq, 2007). The early 20th Century also saw an increase in the view of addiction as a chronic illness, with increasing support for a view of addiction as a disease (London, 2005). More recent works have noted that natural recovery and the number of recovery attempts needed suggest that addiction is not chronic and that current attitudes and understanding have been misled by this view, causing reduced beliefs in individuals' agency over their behavior (e.g., MacKillop, 2020; Peele, 2016). While concern about stigma led the scientific community away from the term *addictive*, which was replaced by the term *dependence* for a period of time, one of the major changes in the DSM-5 was a return to the term *addictive disorders*, in an attempt to be more encompassing and include behaviors (Clark, 2011).

Overall, the concept that something is *addictive* has changed over time, in terms of what objects may be considered addictive, what it may mean for them to be addictive, and how to treat those who engage in addictive behaviors. For example, for centuries tobacco products (i.e., nicotine) were often considered to have medicinal or recreational value with few ill effects (Charlton, 2004). However, as knowledge accumulated about its dangerous effects on the human body, association with cardiovascular disease, and effects on the brain, views about this substance changed. This evolution was so dramatic that, in 1986, the U.S. Surgeon General's Report labelled smoking as addictive and initiated a decades-long effort to reduce tobacco use (United States Bureau of Maternal and Child Health and Resources Development Office of Maternal and Child Health, 1986). Prior works have noted that such perceptual changes over time have led to reductions in use, particularly in adolescent populations (e.g., Chassin et al., 2003). Similar stories can be told of other substances, such as opioids (e.g., Harding, 1998; London, 2005) and cocaine (e.g., Hartman & Golub, 1999). In the case of cannabis, the pendulum may even be said to be swinging in the other direction as many argue against its

addictiveness and suggest that it has more medicinal uses than policies suggest (e.g., Fares, 2018; Gritsenko et al., 2020). Although the veracity of these arguments falls beyond the scope of the present work, shifting public opinions on cannabis use points to the notion that public perceptions of addictiveness change over time. More recently, scientific and policy attention has been turned to question whether certain behaviors may also be addictive, such as the rise in research and attempted control of gambling, the first behavioral addiction added to the DSM-5 (e.g., Marotta et al., 2017). Other behaviors, including sex, technology use, and gaming are increasingly being discussed as potentially addictive as well (e.g., Burke & MillerMacPhee, 2020; Orford, 2001).

Historical Social Influences on Views of Addiction

As suggested by the changing historical views above, perceptions about addictive objects, experiences, and treatments have been influenced by various social factors within each era (for a review, see Netherland, 2012). One more well-known example of this is the American temperance and prohibition movement, which stemmed from Protestant religious beliefs that the use of alcohol was sinful and would lead individuals away from God, by putting alcohol first (Schmidt, 1995). Previous research has shown that religious beliefs continue to impact perceptions of the addictive nature of objects (e.g., Szott, 2020). For example, those who more strongly perceive pornography and sexual behaviors as addictive appear to be more highly religious (e.g., Bradley et al., 2016). Several texts have also noted the impact of racism or the negative views of other social groups, such as immigrants, as factors which impact the perception of the addictive nature of objects and treatment (e.g., Provine, 2011). For example, in *The American Disease*, Musto (1999) notes how the negative views towards minority individuals, particularly Asian and African American people, increased the negative perception

of opium and cocaine. Further, in her book *The New Jim Crow*, Alexander (2020) describes how substances, particularly cocaine, were perceived as more addictive and problematic when in the hands of Black individuals rather than White individuals, leading to a new racial caste system of mass incarceration through the War on Drugs. Prior works have also pointed to ways in which policy impact beliefs about the safety of objects, such as cannabis, and public messaging can affect perceptions of the harmfulness of an object (East et al., 2021; Erku et al., 2021; Fataar et al., 2021). Numerous other examples also point to the important role social factors have on the perception of addictiveness, such as media's role in views about crack cocaine (e.g., Hartman & Golub, 1999). Such works have noted the impact that social contexts, policy, and media can have on views about addictiveness through the creation of so-called "moral panics" (e.g., Goode & Ben-Yehuda, 2009; Hammersley, 2018; Lundahl, 2021). In this way, some have called addiction a "myth" and point to social constructionism as the only legitimate way of understanding such behavior (e.g., Davies, 1998).

As Leshner (1997) noted, perceptions about what it means to say something is addictive, and changes in these perceptions, matter in terms of influencing policy making and resources available for treatment. In fact, prior works suggest that policies are often both influenced by and influencers of society and perceptions of specific groups (e.g., Ingram et al., 2007; Klein et al., 2013; Raven, 1997). Therefore, policy makers and treatment providers have been cautioned to be aware of how their worldview may impact their beliefs and decisions regarding addictiveness (e.g., Peyser, 2002). Further, prior work has suggested that these influences may differ by country (e.g., Park, 2020). As such, while the debate about these concepts continues, it appears clear that the perception about the addictive nature of objects, the experiences expected from these, and beliefs about treatment are at least partly socially influenced and likely to continue to

change.

Current Perspectives on Addiction and Addictiveness

Building on the above historical review, there are a number of key themes in current conceptions of addiction that merit consideration. Specifically, I seek to review the current definitions of addiction as laid out by recognized diagnostic manuals, the colloquial perceptions of addiction, and current controversies around addiction.

Definitions of Addiction

According to the DSM-5 and ICD-11, there are several objects which are considered addictive in nature and users exhibit a certain set of symptoms which reflect this. These diagnostic manuals have different goals, namely that the DSM-5 aims to create a common language for problems whereas the ICD-11 focuses on issues of scientific validity, clinical utility, and global application, which lead them to divergent ways of categorizing various addictive disorders (Grant & Chamberlain, 2016). This is important given that prior works have noted the impact of definitions and terms used on public perceptions and areas such as policy (e.g., Kelly, 2008; Klein et al., 2013).

The DSM-5 reports that addictive disorders include 10 classes of substance-related disorders alongside Gambling Disorder, which was deemed the only behavioral addiction meriting inclusion. The DSM-5 explains that such substances and behaviors act on the brain's reward system to produce pleasurable feelings which encourage the individual to continue engaging in the behavior/substance, resulting in a "pathological pattern of behaviors" (p. 483). These pathological behaviors, or symptoms, are grouped into the categories of "impaired control," "social impairment," "risky use," and "pharmacological criteria." In the case of Gambling Disorder, the symptoms expected do not include pharmacological criteria or risky use,

but instead includes gambling when distressed, “chasing one’s losses,” lying to conceal the extent of involvement, and relying on others to provide financial assistance. Similarly, the ICD-11 includes 14 classes of substance-related disorders, alongside the addictive behaviors of Gambling Disorder and Gaming Disorder. The ICD-11 also explains that such substances and behaviors produce pleasant sensations which reinforce repeated use and have the potential to cause harm or interference in an individual’s life. In the case of substance-related disorders, the ICD-11 also points out that the use of such substances produces psychoactive effects and has the capacity to produce dependence, while behavioral addictions do not have these features. The increase in the number of substance-related classes in the ICD-11 is primarily due to a different way of splitting up substances rather than more substances being included. However, the inclusion of Gaming Disorder is a marked difference between the ICD-11 and the DSM-5 (for a discussion on the differences between the ICD-11 and DSM-5 in terms of addictive behaviors, see Grant & Chamberlain, 2016). In summary, there is some variation in terms of official diagnostic views on the definition of addictive disorders and what objects should be included in these; however, a view that such objects produce pleasurable effects which reinforce continued use resulting in problems in an individual’s life appears to be the most consistent indicator of addictiveness of an addictive disorder.

Nevertheless, in both diagnostic manuals clinical cases are said to have variable severity with a differing number of presented symptoms (i.e., phenotypic expressions). For example, according to the DSM-5, one individual with a mild Alcohol Use Disorder may present as experiencing significantly distressing levels of cravings and tolerance regarding their alcohol use, while another individual with the same diagnosis may report experiencing unsuccessful efforts to control their use, significant problems at work related to their use, and recurrent use in

physically hazardous situations. In other words, individuals can receive the same diagnosis despite phenotypically presenting with different symptomatology. Such variation in the presentation of these disorders has been noted as confusing, particularly in terms of understanding the presentation and diagnosis of these disorders (e.g., Boness et al., 2021; e.g., Clark, 2011). Some works have attempted to look at the diverse neurological mechanisms at play to attempt to explain such phenotypic differences (e.g., Redish et al., 2008).

In response to these phenotypic variations and the increasing discourse surrounding various potential behavioral addictions, several works have also argued for more explicit definitions and attempted to redefine addiction (Kelly, 2008). Such works focus on several potential aspects of addictiveness in their definitions, such as impulsivity, compulsivity, obsessiveness, and motivation, in an attempt to create a more accurate definition of addiction without a focus on substances (Caretti & Craparo, 2009; Chamberlain et al., 2015; Craparo & Gori, 2015; Goodman, 2008; Griffiths, 2005; Kardefelt-Winther et al., 2017). These works are not constrained to medical and social science discourse, as philosophers have also weighed in, particularly surrounding the arguments about how compulsivity and free will work within addictions (e.g., Foddy, 2011; Henden, 2013). Therefore, it is perhaps unsurprising that debates continue about the definition of addictive disorders, their causes, and their treatment.

Colloquial Uses

The term *addictive* does not simply appear in the above clinical and diagnostic setting but is also often used in a more colloquial sense. While little research has looked at this use empirically, one recent study interviewed children (n = 24) aged 9 to 14 years old about their digital play practices, particularly surrounding their use of a video game called Fortnite (Carter et al., 2020). Results suggested that the children often used the term *addictive* to discuss their play

and *addiction* to describe others use of the video game; however, the authors noted that such reported behaviors would typically not meet classification for disordered use according to the American Society of Addiction Medicine (2011)[1]. Rather, the use of the term *addiction* was categorized in one of three ways: (i) in reference to a preferred or favorite game, (ii) referring to spending lots of time playing a certain game without compulsion or problems, and (iii) as a compulsion to keep playing a game. In the third case, the children appeared to focus more on the ways in which the game kept people interested and excited to continue playing, such as releasing new content at certain times. Results suggest that the children's use of the term *addictive* often came from an experience in which they wished to play a game more often than they were allowed to do so by their parental figures. Media and public discourse surrounding Gaming Disorder and the belief that gaming is addictive also appeared to impact the children's beliefs. For example, some children noted that they had heard Fortnite was "bad" or caused problems for children and therefore believed that it was addictive, whereas other children noted that they felt that concerns about the addictive nature of the game were exaggerated and focused too much on a small number of serious cases. Throughout, the amount of time played appeared to be a key signifier for the children about whether the use of a game was problematic or not, with most children perceiving themselves as not having a problem because they and their friends reported

[1] The American Society of Addiction Medicine's short definition of *addiction* is: "a primary, chronic disease of brain reward, motivation, memory and related circuitry. Dysfunction in these circuits leads to characteristic biological, psychological, social and spiritual manifestations. This is reflected in an individual pathologically pursuing reward and/or relief by substance use and other behaviors. Addiction is characterized by inability to consistently abstain, impairment in behavioral control, craving, diminished recognition of significant problems with one's behaviors and interpersonal relationships, and a dysfunctional emotional response. Like other chronic diseases, addiction often involves cycles of relapse and remission. Without treatment or engagement in recovery activities, addiction is progressive and can result in disability or premature death." (American Society of Addiction Medicine, 2011 p. 1)

spending no more than 20 hours per week on the game. Other works have also looked at how users view and use the term *addiction*, particularly surrounding pornography use, noting that such definitions often change and are somewhat elastic, with use as a metaphor and in terms of neurological symptoms (Taylor, 2020).

In the above article, Carter et al. (2020) argue that such colloquial use of these terms suggest that there may be differences in the way children, and adults, view potentially addictive objects, with the media and public discourse sometimes erroneously pathologizing typical behavior. Other works have noted that links between the perceived addictiveness of games and drug use may come from a stereotyping of video games as a middle- and lower-class activity, similar to the stereotypes of drug use (Cover, 2006). They argue that media panics, politics, worries about violence, and cultural shifts have led to an erroneous belief that gaming and substance use disorders are similar in terms of addictiveness. Such arguments note that social factors, such as class or views of other groups, may be important when understanding perceptions about the addictiveness of other objects as well, such as pornography (Taylor, 2019). In a similar way, some works note the impact of views of identity variables, such as sex, on perceptions of addiction, such as how men may be viewed as "hard-wired" and expected to engage in pornography (Burke & Haltom, 2020). Other research has also found that perceptions of addiction, addictiveness, and the use of addictive objects can be influenced by various factors, such as media framing, age, parental beliefs, religiosity, and personal experience of harm (e.g., Burke & MillerMacPhee, 2020; Costa et al., 2014; Lundahl, 2021).

Debates Surrounding Addictiveness

Clearly, there are diverging viewpoints surrounding the addictive nature of objects and the nature of addictiveness, influenced at least in part by various social factors. As such, there

continues to be much scientific discourse and debate surrounding these topics, particularly in terms of objects which have been suggested as new potentially addictive disorders, such as Gaming Disorder and Compulsive Sexual Behavior Disorder (CSBD), and the influence of various models of addiction in terms of how well they explain addictiveness. These disagreements lead, naturally, to further conflict surrounding the best course of treatment for those who seek help or appear to experience addictive symptoms.

Behavioral Addictions. One of the biggest current debates centers around the concept of behavioral addictions, particularly which objects may be addictive, how to avoid over pathologizing and therefore delineate diagnostic criteria, and whether such struggles fit best with addictive disorders or another category of diagnoses (e.g., Billieux et al., 2015; Kardefelt-Winther et al., 2017; Satchell et al., 2020; Van der Linden, 2015). Much of this research focuses on looking at prevalence rates, reported symptoms, and correlates in terms of other diagnoses, personality traits, and other addictive disorders (e.g., Abilash et al., 2019; Baggio et al., 2018; Chamberlain et al., 2015; Goodman, 2008; Griffiths, 2005; Kraus, Voon, & Potenza, 2016; Przybylski et al., 2017; Pyle & Bridges, 2012; Reynaud et al., 2010; Walther et al., 2012). A content analysis of scientific literature's descriptions of expectations and perceptions of substance use disorders and potential behavioral addictions, such as internet addiction, showed that much of the prior work has noted several similarities between these constructs in terms of the struggles experienced, with a major difference between the two being the "physical signs" of substance use disorders, such as tolerance and withdrawal (Alavi et al., 2012). However, other works argue that technology based addictions, such as smartphone addiction, do not have evidence for several indicators of addictiveness, such as severe psychological and physical outcomes, and therefore should be viewed as problematic use rather than *addictive* (e.g., Panova

& Carbonell, 2018). Moreover, significant debate continues regarding whether CSBD, currently an impulse control disorder in the ICD-11, should be categorized as an addictive, impulsive, or obsessive-compulsive disorder (e.g., Fuss et al., 2019; Gold & Heffner, 1998; Reid & Kafka, 2014).

One of the issues with understanding behavioral addictions which several researchers have noted has been the over-predicting of the number of people with potential addictive disorders, sometimes due to poor measurement and screening tools (e.g., Satchell et al., 2020). For example, one recent review found rates of Gaming Disorder between 0.21–57.5% in general populations and 3.2–91% in clinical populations (Darvesh et al., 2020). Such results suggest problems with research in this area and a need for clarification in diagnosis and measurement, including what essential aspects of addictiveness must be seen in these struggles. In fact, previous works suggest that the concept of addictiveness has lost its meaning due to the high number of objects which are being included (Coleman, 1990). Nevertheless, significant research suggests that some individuals do find behaviors, such as gaming and compulsive sexual behavior, impairing and distressing in some way (e.g., Darvesh et al., 2020; Dickenson et al., 2018; Kuss, 2013; Przybylski et al., 2017). In general, researchers of behavioral addictions continue to call for more research, citing difficulties in defining such concepts and noting gaps in knowledge about the mechanisms at play (e.g., Kraus, Voon, Kor, et al., 2016; Sassover & Weinstein, 2020; Wei & Zhang, 2017).

As discussed above, social factors appear to influence concerns, research, and perceptions of addictive disorders, and behavioral addictions are no different. Research suggests, and the diagnostic criteria of CSBD presented in the ICD-11 reflects, that for some individuals experienced distress actually stems from other factors, such as moral incongruence (Grubbs,

Perry, et al., 2018), which would preclude the individual from such a diagnosis. Such an exclusion again points to the potential power of social factors associated with concern about the addictive nature of some objects (e.g., O'Brien, 2017). Further, a recent content analysis of media, policy, and scientific works regarding the addictiveness of pornography suggested that, while scientific studies report inconclusive findings (e.g., Duffy et al., 2016), media and policy documents continue to report physical and psychological harms of pornography addiction (Burke & MillerMacPhee, 2020). Such work points to the potential of policy and media in increasing panic about behavioral addictions, which may lead to increased stigma against people who engage in these behaviors "normally" (e.g., Aarseth et al., 2017; e.g., Hammersley, 2018).

Models and Treatment of Addiction. Outside of debates about a specific object's addictive properties, there continues to be some debate about the cause and nature of addictiveness. This is seen most clearly in arguments regarding models of addiction, of which the Medical/Disease, Psychological, Sociological, and Moral/Ethical models are the most common, with each focusing on different mechanisms of addictive disorders (for an overview, see Clark, 2011). Although, several other smaller models, some of which exist inside one of these models, also exist (e.g., Brand et al., 2019). In relation to conversations about the nature of addictiveness, there are also diverging viewpoints regarding ways in which those who are diagnosed with an addictive disorder or report addictive behaviors are treated. These differences may also be guided by differing expectations in terms of what symptoms of addictiveness providers believe are the most difficult.

The Medical/Disease model is primarily biological in nature, suggesting that the object affects the brain's structure or functioning, and this change causes addictive patterns. As such, this model is heavily based on neurological research, which has allowed for a better

understanding of the biological mechanisms of addictive responses (e.g., Berridge & Robinson, 2016; Leshner, 1997; Noël et al., 2013; Redish et al., 2008). For example, dopamine has been noted as playing a major role in the development of an addiction, particularly within the nucleus accumbens and striatal areas (Volkow & Morales, 2015). The Medical/Disease model's emphasis on biological aspects and more physical symptoms of addictiveness has directed practitioners towards pharmacology as a form of treatment for addictions. As the official model supported by the government and funding agency NIDA, prior works have noted that research funding has primarily focused on this model (e.g., Vrecko, 2010). However, several works have argued against this model, suggesting that it is reductionist and does not fully account for all aspects of addictive disorders (e.g., Levy, 2013; Satel & Lilienfeld, 2014; Shaffer & Robbins, 1991; Van der Linden, 2015).

The Psychological model focuses on the psychological processes through which addiction may occur, such as individual personality traits and learned behaviors. For example, it may suggest that personality factors, such as levels of neuroticism or impulsivity, may make an individual more vulnerable to being affected by the addictive object (e.g., Zilberman et al., 2018). Further, research suggests that some addictive responses may be learned through behavioral conditioning processes (Gifford & Humphreys, 2007). Practitioners using the Psychological model may emphasize psychotherapy, alongside pharmacological treatments, due to the expected psychological symptoms of addictiveness (e.g. Carroll et al., 2003).

The Sociological model, meanwhile, focuses more on sociocultural factors which may influence the start or maintenance of an addictive disorder, such as an individual's family dynamics or socioeconomic status (e.g., Graham et al., 2008; Hammersley, 2018). This model may more strongly support the use of harm reduction techniques, such as those focused on

improving housing for those with addictive disorders (S. E. Collins et al., 2012) or allowing a non-abstinence treatment goal (Davis et al., 2017). It can also be seen to call for key stakeholders, including providers, policy makers, and scientists, to be more aware of the impact of socio-cultural factors, such as racism, on addictive treatments (e.g., Truan, 1993). Many researchers combine the above three models into an overall Biopsychosocial model as well, rather than focusing on just the Sociological aspect. This mixed model has been used to explain certain addictive disorders, such as the Pathways model for Gambling Disorder (Blaszczynski & Nower, 2002).

The Moral/Ethical model focuses on whether an action is morally "good" or "bad." As such, this model is highly focused on individual choice and the values and morality of the society that the individual is in. Some works have looked at perceptions of choice and the perceived responsibility for addictive behavior and treatment completion as a way of understanding belief in this model (e.g., Committee on Addictions of the Group for the Advancement of Psychiatry, 2002; Husak, 2004). The Moral/Ethical model's expectation that addictive behaviors are something an individual chooses to do may lead some to support more punitive treatments of those seen to be engaging in addictive behavior (e.g., Iran Penal Code); although, this is not a unanimous response to this model (e.g., Husak, 2004). Further, some works argue for a more moral model of addictiveness because it suggests that individuals have more control over their behavior, thereby allowing for more motivation and feelings of agency for change (e.g., Peele, 1987).

It is evident from this review that how people view addictive disorders and expect addictiveness to be experienced and expressed effects their views on treatment. It is also clear that there remains significant debate about how something may be seen to be *addictive* and the

factors which contribute to this.

Measurement of Perceptions of Addiction

Thus far, researchers have attempted to capture opinions about addiction, addictiveness, and addictive disorders in a variety of ways, including looking at agreement with various models, stigma, perceived harm, and expectations about what addictiveness may look like. Such research appears to show continued differences in perceptions of addiction for both the public and providers.

Perceptions of Models and Addicted Individuals

Most studies focus on agreement with various models (e.g., Furnham & Thomson, 1996; Moyers & Miller, 1993; Russell et al., 2011; Schaler, 1997) and feelings towards the individual said to have an addiction, including stigma and their willingness to affiliate with such individuals (e.g., Adlaf et al., 2009; Angermeyer & Dietrich, 2006; Barry et al., 2014; Luoma et al., 2007; Soverow et al., 1972). The Public Attitudes about Addiction Scale (PAAS) is one example of a way of measuring such perceptions, including items about how those with an addiction should be treated along with the causes of the addictive disorder (Broadus & Evans, 2015). These beliefs are then conceptualized through the lens of various models, thus giving a rating of agreement with each included model of addiction. Alternatively, some works have presented various potential causes of addiction, rather than models, and found differences in perceived causes between addictive objects, such as alcohol and pornography (Lang & Rosenberg, 2018).

In general, research has focused particularly on agreement with the disease model of addiction in various populations, including treatment providers (e.g., Barnett et al., 2018). Alongside this, other works have also noted a general negative view of those who appear to be addicted, particularly to drugs, including a more lower-class and unhealthy image of such an

individual (e.g., Dean & Rud, 1984). Researchers have argued that lack of knowledge about addiction and the impact of sociocultural beliefs, such as politics, may influence perceptions of those who are seen to be addicted and models of addiction (e.g., El Khoury et al., 2019; Furnham & Thomson, 1996; Gerstel-Friedman, 2018).

Perceptions of Treatments

Other measures focus solely on perceptions of particular treatments and whether participants believe these treatments are beneficial for certain addictive disorders (e.g., the Alcohol and Drug Treatment Practices Questionnaire; Rosenberg & Melville, 2005). Oftentimes these types of studies assess treatment providers beliefs about and acceptance of certain treatments for addictive disorders, usually substance use disorders, finding differences in perceptions across providers (e.g., Bonar & Rosenberg, 2010). Other studies have also looked at patient attitudes to certain treatments or the inclusion of certain elements into treatment, such as spirituality (e.g., Arnold et al., 2002). Finally, some studies have used explicit and implicit bias measures (i.e., Implicit Association Test) to understand if biases against certain groups or objects effect perceptions of treatments (Kulesza et al., 2016).

Research looking at providers acceptance of treatments indicate that differences in perceptions may be related to education, geographic area/country, treatment provider roles, religion/spirituality, age, and frequency of contact with substance use disorder clients (e.g., Akinola, 2016; Cornfield, 2018; Day et al., 2005; Edger, 2012; Forman et al., 2001). Such research has also noted differences in acceptance of various treatment modalities based on client characteristics, such as co-occurring disorders or the addictive object being used (e.g., Davis et al., 2017; Rosenberg et al., 2020). Notably, several works have suggested that increased education can change attitudes in treatment providers regarding various modalities (e.g.,

Goddard, 2003; Karam-Hage et al., 2001).

Perceptions of Control

As well as looking at levels of agreement with various models or causes of addiction, some measures have also looked at the perception of how much control and responsibility for their actions individuals may have. One example of this type of measure is the Addiction Belief Inventory (ABI; Luke et al., 2002), which asks participants to rate their agreement with statements about addicted individuals' ability to control their use, whether they are responsible for their actions, whether they are responsible for their recovery, whether addiction is a chronic disease, has genetic causes, is a moral weakness, or a coping mechanism, and whether expert treatment is needed for recovery. Research using this and similar measures suggests that there are differences in views about how much control those with an addictive disorder have over their use, which may impact beliefs about a client's ability to follow through with treatment, particularly harm reduction techniques (e.g., Broadus et al., 2010; Samuelsson et al., 2013). This research also points to various factors, such as sex, substance, and social setting as related to such perceptions (e.g., Heim et al., 2001). Moreover, prior works have noted that factors, such as the context of use and social expectations about use, may impact perceptions of what controlled, compared to uncontrolled, use looks like in those who use substances (e.g., Decorte, 2001).

Perceptions of Harmfulness

Rather than focusing on the individual with an addictive disorder, some measures and studies instead look at how much harm certain objects are perceived to cause using rating scales (e.g., Assessment of Harm Scale: Nutt et al., 2007). Much of this research has noted significant differences in perceived harm and addictiveness between objects, with various factors, such as gender and geographic location, being associated with differing viewpoints (e.g., Blomqvist,

2012; Lewis-Thames et al., 2020; Pedersen & Von Soest, 2015; Samuelsson & Wallander, 2014). Notably, these works tend to focus on substances only and typically look at more socially controversial objects, such as cannabis (Gritsenko et al., 2020). Such works also focus on perceived harm to the community and differences between various objects in terms of perceived harm (e.g., Al-Haqwi, 2010; Heim et al., 2001; Samuelsson et al., 2013). Other research has found that perceptions of social acceptance of the use of addictive objects can also impact personal use, by looking at perceptions of peer use and harm (e.g., McAlaney et al., 2015).

Perceived Distress and Addiction

Alternatively, other measures have looked at the amount of distress individuals, typically those reporting addictive behaviors themselves, experience from potentially addictive objects and their perception that they are addicted (Grubbs, Stauner, et al., 2015). Research with these types of measures have shown that perceived addiction in the self does not necessarily match higher amounts of reported use (e.g., Grubbs, Exline, et al., 2015; Grubbs, Wilt, et al., 2018), suggesting that aspects other than the amount of use or over-use of an object likely influence the perception that something is *addictive* (Grubbs, Perry, et al., 2018). Similarly, research has found that various factors, such as religiosity, may be related to the perception that the self is addicted (e.g., Bradley et al., 2016).

Expectations About the Use of Addictive Objects

Researchers have also attempted to look at perceptions about which symptoms or experiences people expect to have in response to the use of a perceived addictive object, primarily focused on substances. One of the more well-known versions of this type of measure looks at expectations of positive outcomes from alcohol use, the Alcohol Expectancy Scale (Brown et al., 1980), such as reduced tension and increased social assertiveness. Negative

expectancies of use have also been studied (for a review, see Leventhal & Schmitz, 2006). However, such works simply focus on the expectations of the use of an object and not the expected symptoms of addiction to that object.

Perceptions of Symptoms of Addictiveness

Some research has focused on perceptions about the levels of addictiveness of various objects, using rating scales from *not addictive* to *very addictive* (e.g., Grant & Grubbs, 2019; Konkolÿ Thege et al., 2015), but these studies do not look at what indicators of addictiveness would suggest these different levels of addictiveness. Much of the research on perceptions of symptoms or indicators of addictiveness have been qualitative (R. L. Collins et al., 2021; O'Loughlin et al., 2002; Wang et al., 2004). These works focused on nicotine and eating and showed that potential indicators of addictiveness include feelings related to compulsion, control, dependence, distress, appetite, and liking. Other works have used qualitative methods to understand whether sugar and internet-connected technology are considered addictive and what indicates this, such as the fear of missing out and the amount of time spent doing it (Adorjan & Ricciardelli, 2021; Prada et al., 2021; Turner et al., 2021). As such, they give a range of potential indicators of addictiveness, some of which are similar to diagnostic criteria.

Three studies used diagnostic criteria as indicators of addictiveness when assessing perceptions. One prior study looked specifically at different symptoms of nicotine dependence, according to the DSM-IV, and found that adults rated compulsive symptoms as the most indicative of addictiveness, whereas adolescents believed that the appetitive and compulsive indicators of addictiveness were equally important (Chassin et al., 2007). Results also suggested that higher ratings of the importance of the appetitive components predicted higher perceived addictiveness in adolescents, whereas the compulsive symptoms predicted perceived

addictiveness in adults. These results suggest that there may be differences in perceptions of addictiveness and which indicators of addictiveness suggest addictiveness, particularly in terms of age. The authors noted a need for further study looking at other addictive objects and factors which may impact perceptions of the indicators of addictiveness. Further, the authors noted that their generation of indicators of addictiveness focused on DSM-IV criteria which may or may not fully encompass perceived symptoms, and this should be further studied as well. More recently, another study found differences between two behaviors and three substances in terms of perceptions of addictiveness and which symptoms may be indicative of this addictiveness, using the same measure as above (Lang & Rosenberg, 2017). A third study asked participants to identify addicted individuals based on their exhibition of differing levels of symptoms per ICD-10 criteria in vignettes focused on alcohol, cocaine, gambling, and gaming (Jamieson & Dowrick, 2021). The results showed that gambling was seen as the most addictive and alcohol use disorder was poorly identified, suggesting that these criteria may not be considered when the public look for indicators of addictiveness.

Present Work

It is apparent from the review undertaken that there continues to be conflict both within the scientific community and within the public arena as to what is meant when something is called *addictive*. This includes the understanding of symptoms and mechanisms, concerns about clearly defining addictiveness, and which objects might cause such experiences (e.g., Clark, 2011; Kardefelt-Winther et al., 2017; Kelly, 2008; Satchell et al., 2020). Throughout history perceptions about addictiveness have changed, in part due to social factors which have impacted both research and public opinion (e.g., Ferentzy & Turner, 2013; London, 2005; White, 1998). As such, we must gain a better understanding of both current perceptions of addictiveness,

including perceived indicators of addictiveness, and the factors which effect those perceptions.

Improving understanding about perceived addictiveness, and factors which may impact this, would assist in better focusing research with regards to the conception of addictiveness. By doing so, research will hopefully be more valid and reliable, in part because it would be more aware of potential factors which may introduce bias. More focused, valid, and reliable research with clearer definitions can better inform treatment, both in terms of allowing better precision treatment of symptoms and helping those who experience distress related to perceived addictive experiences regardless of official diagnosis. Finally, such research and awareness could also better inform policy, in part by clarifying concepts and improving awareness of factors which may lead to less just or helpful policies. It could also inform policy by clarifying public perceptions of important factors regarding addictiveness, of which policy makers may want to take note.

To date, there has been some research which has attempted to capture the perception of addictiveness using measures focused on agreement with various models of addiction (e.g., Broadus & Evans, 2015), agreement with various treatments (e.g., Rosenberg et al., 2020), perceived harm of addictive objects (e.g., Gritsenko et al., 2020), perceived distress and the perception of the self as addicted (e.g., Grubbs et al., 2019), expected experiences related to the use of some substances (e.g., Brown et al., 1980), and perceptions of those who are perceived to be addicted to an object (e.g., Dean & Rud, 1984). Several studies have also looked at ratings of how addictive various objects are perceived to be, along with various factors related to such perceptions (e.g., Grant & Grubbs, 2019; Lang & Rosenberg, 2017). However, only three quantitative studies were found looking at perceptions of addictiveness and what symptoms or indicators of addictiveness suggest different levels of addictiveness (Chassin et al., 2007;

Jamieson & Dowrick, 2021; Lang & Rosenberg, 2017). All three studies are limited in terms of the potentially addictive objects (five substances and three behaviors in total) which they assessed and the diagnostic criteria-based indicators of addictiveness that they used (i.e., DSM-IV and ICD-10 criteria). Further, while some potential factors related to these perceptions were assessed, such as age and gender, some other factors which research notes may influence such perceptions were not, including political ideology and religiousness.

Based on the above, this dissertation aimed to evaluate public perceptions of addictiveness, including potential factors related to these perceptions. In service of this aim, the present work validated a new measure assessing perceived Indicators of Addictiveness and Levels of Addictiveness for various objects. Although the primary aim of the present work was to understand what people mean when they say that something is addictive, given that no measure of this type of construct currently exists, the validation of a new measure was inherently necessary. This validation effort expanded upon a large, initial, qualitative study looking at how participants defined the term *addictive* and the extent to which they found various objects to be addictive, providing a foundation for the following studies. Using the results of this qualitative analysis, a novel way of evaluating perceptions of addictiveness, including levels and indicators of addictiveness and their perceived attribution to various objects, was created. The following two studies tested some of the psychometric properties of this novel measure to see if it could reliably and validly report perceptions of both levels of addictiveness and perceived indicators of addictiveness to a variety of objects. They also looked at how the perceived Indicators of Addictiveness differed based on the object being considered. Finally, they examined whether several demographic factors (e.g., age, gender, personal experience, etc.) and other key variables (i.e., political ideology and religiosity) were related to the aforementioned perceptions.

Aims of Dissertation

Given the above, this dissertation aimed to:

1. Understand what individuals mean when they say that something is (or is not) addictive.
2. Understand whether the meaning of addictiveness changes in terms of the object which is being considered.
    a. Gain a better understanding about which objects may be expected to produce significant distress related to the perceived addictiveness, particularly those which are not typically considered an *addiction* (i.e., not a disorder in the DSM-5 or ICD-11).
3. Understand whether demographic factors (e.g., age, gender, personal experience, etc.) and other key variables (i.e., political ideology and religiosity) are related to either of the first two aims.

Hypotheses

Given the exploratory nature of these aims, I did not endeavor to hypothesize too many specific conclusions, but rather acknowledged that such research requires a more open exploration which has some limitations and aim, in the future, to test hypotheses based on these results more specifically. Having said this, I expected the following:

Regarding Aim 1:

1) I expected that symptoms presented in the DSM-5 and ICD-11 related to addictive disorders would be present in the perceptions of addictive disorders within the qualitative analysis.

Regarding Aim 2:

2) I expected that there would be significant differences between objects in terms of which Indicators of Addictiveness are selected, suggesting different manifestations of distress.
3) I expected that substances and gambling would be perceived as more addictive, with more Indicators of Addictiveness, than other objects, such as shopping and food, which are not included as diagnosable disorders in the ICD-11 or DSM-5.

Regarding Aim 3:

4) Based on prior works, I expected that older, more conservative, more religious, higher educated individuals with less personal experience of addiction and higher income would perceive objects to be more addictive than other individuals.
5) I expected that there would be significant differences in terms of the Indicators of Addictiveness selected with regard to individual demographic factors (e.g., age, gender, personal experience, etc.) and other key variables (i.e., political ideology and religiosity).

STUDY 1

To better clarify what it means to say that something is addictive, I conducted an initial study by asking participants (n = 1,161) for their definition of *addictive* and their perception of the level of addictiveness of 16 substances and behaviors.

Participants

Participants were initially recruited in August 2019 as part of a larger, ongoing, U.S. nationally representative, longitudinal study using YouGov (n = 2,519). It was at baseline measurement that participants provided key demographic data, including age, gender, race, income, education, marital status, political ideology, and religion. Participants completed a qualitative question and addictiveness ratings, which were the primary variables used in Study 1, during Wave 7 of data collection in June 2021. After examining the data, 38 participants were removed from the analyses because they did not respond to the prompts or their responses were unusable or incomprehensible (e.g., responding "None" or "Job o"), leaving 1,123 participants. Participants (Mage = 55 years, SD = 16 years; Male = 45%, Female = 55%) were primarily White (72.6%), college educated (56%), protestant (37%), and married (52.4%) with a modal income of between $50,000-$59,000. Participants appeared to have approximately equal affiliation for major political parties (Democrat = 35.1%; Republican = 30%; Independent = 28.1%). Full reporting of key demographic variables can be found in Appendix A: Table 1.

Method

Participants were asked what it means to say that something is addictive, without using the words *addiction* or *addictive*, in a free response format. Following this, participants were asked whether the following substances/behaviors can be addictive (1: *Not at all addictive*; 3: *Extremely addictive*): alcohol, nicotine, masturbation, cocaine, cannabis, sexual activity with a

partner, opioids, pornography, gambling, video games, exercise, eating, shopping, smartphones, technology, and social media. Please see Appendix C for the exact questions regarding addictiveness used in this study.

Analyses

First, the responses to the qualitative question were coded following a hermeneutic phenomenological approach, similar to inductive thematic analysis set out by Braun and Clarke (2006). As such, themes and subthemes were identified by: 1) reading each response thoroughly and multiple times; 2) developing codes which encompassed the content of the responses; 3) organizing the codes into meaningful themes and subthemes; 4) ensuring all themes were sufficiently supported by the data, combining or eliminating those which are not; 5) clarifying theme definitions in a way which differentiates them, alongside a representative name; and 6) writing a cohesive summary of these themes that reflects the content of the responses. As a clinical psychologist, I recognized that I may introduce bias into this coding process due to my knowledge of the DSM-5 and ICD-11 criteria for substance-related and addictive disorders and my own beliefs about addictiveness. To combat this, I engaged in reflection and attempted to bracket these beliefs so that I could consider each participants' response as a complete description and my own beliefs as limited. Example quotes were selected for each of these subthemes, and themes where appropriate, to exemplify the types of responses included. Finally, descriptive statistics were examined for the quantitative question looking at the perceived level of addictiveness of objects.

Results

Aim One: Understanding What is Meant by Addictiveness

Hypothesis One: DSM and ICD Criteria Will be Present in the Qualitative Responses.

To better clarify what it means to say that something is addictive, I conducted a hermeneutic phenomenological qualitative analysis to understand perceptions of indicators of addictiveness and what objects may be considered addictive. In doing so, I created a total of eight themes, with an additional 18 subthemes which are described below (see Appendix A: Table 2 for list of themes and subthemes with brief descriptions).

Required. Respondents (48.4%) stated that an object which is addictive feels required or needed in some way, oftentimes noting that it feels as though it is needed "to live" or function, including mentioning one of the five subthemes: Physical Dependence, Psychological Dependence, Induces a Withdrawal, Creates Tolerance, and Incites Cravings. However, 19.7% of respondents specifically noted that addictive objects feel as though an individual "has to have it," without expanding on this and noting any of the included subthemes, and a further 15.2% noted this feeling and later suggested an aspect of one of the subthemes.

Subtheme: Physical Dependence. Some respondents (9.6%) further reported that it is the physical body which requires, or feels as though it requires, the addictive object. In some cases, the respondents specifically stated that "physical dependence" is an important factor which makes objects addictive, other times respondents alluded to this by saying "when the body needs the substance in order to function" or a "response to a physical need."

Subtheme: Psychological Dependence. A smaller number of respondents (7.6%) suggested that addictive objects make individuals feel that they need the object to function psychologically or to cope with psychological struggles, such as stress. Notably, some

respondents used the phrase "psychological [or emotional] dependence" whereas others simply suggested that an addictive object continues to be needed to function and cope at the same level "mentally." For example, "a definite need for the mind" or "when I can't be happy without it."

Subtheme: Induces Withdrawal. Withdrawal symptoms were suggested as signs that an object is addictive by 4.6% of respondents. Such withdrawal symptoms included physical (e.g., nausea, fatigue, etc.) and psychological (e.g., increased stress or anger) symptoms whenever an individual attempts to stop or has not been able to obtain the object. For example, "[it] causes physical or mental suffering if you are forced to go without" or "If I went for more than two hours I would start to shake, become nauseated[, and] have a horrible headache."

Subtheme: Creates Tolerance. Only eight individuals (.7%) suggested that experiencing tolerance was a sign that an object was addictive. Most of the respondents explained tolerance rather than using the term itself: "Then you need more to feel just as happy."

Subtheme: Incites Cravings. Incites Cravings were suggested as an important response to an addictive object by 17.4% of respondents. These feelings were sometimes referred to as cravings, but also described as a "strong urge" or a "strong desire." For example: "being overwhelmed with desire for certain things" or "it is all you can think about."

Feels Irresistible. Over two thirds (66.9%) of respondents suggested that addictive objects cause an individual to compulsively, habitually, and/or irresistibly engage with it, including mentioning one of the two subthemes: Encourages Over-use and Loss of Control. In some cases, respondents noted that individuals will "do anything" to engage with the object. Specifically, 25.2% of respondents mentioned this theme alone in their response, while 13.2% suggested this theme and at least one of the subthemes as important aspects which make objects addictive. For example: "something you feel compelled to do," "something that is habit

forming," or "that you want to do it again and again."

Subtheme: Encourages Over-Use. Engaging with the addictive object more than an individual wants, intends, or feels that they should was suggested as a sign that something is addictive by 3.7% of respondents. For example: "using something continuously, to the degree that is not natural" or "when you overly use something."

Subtheme: Loss of Control. Over a third (39.3%) of respondents suggested that a sign that something is addictive is that the individual feels unable to control or stop their engagement with the object. For example: "something that's hard to get rid of" or "it controls you and you can't give it up." While in some ways this subtheme is similar to the Required theme above, these statements focus on the inability to stop and feelings of loss of control, regardless of whether the object feels needed to survive or not.

Quality of Object. Almost one quarter of respondents (24.2%) noted that addictive objects, experiences, or the consequences of such have a certain "good" or "bad" quality to them, with all respondents suggesting a particular direction for this quality as noted by the two subthemes: Negative Aspects or Negative and Good Aspects or Positive.

Subtheme: Negative Aspects or Negative. A negative or bad quality for the object, experience, or consequence was noted by 18% of respondents. Such suggestions included notes that the object was "unhealthy," "bad," or "problematic." This subtheme was further broken down into those who suggested that the consequences produced by the engagement with an addictive object were also bad in some way: Negative Consequences.

Subtheme: Negative Consequences. Negative consequences, including interference with other areas of life, such as occupation or family, were specifically noted as signs that an object is addictive (10.1%). For example: "they keep doing it regardless of the consequences" or "it

doesn't matter if it's detrimental to your health, family or wellbeing."

Subtheme: Good Aspects or Positive. Some respondents noted that addictive objects, experiences, or consequences are pleasurable or good in some way (8.7%). In particular, respondents noted that they may be enjoyable at first (e.g., "experience great physical, cognitive and/or psychological pleasure") or benefit the individual (e.g., "It stimulates the pleasure centers in the brain" or "[it] will offer relief for something uncomfortable resulting in a feeling of wellbeing or comfort").

Causation. The mechanisms by which addictive objects cause, or do not cause, addictive responses or signs was noted by 3.6% of respondents, which were made up of two subthemes: Biological Changes, and Choice or Not Real.

Subtheme: Biological Changes. Changes in brain chemistry or reference to biological or disease bases as a mechanism by which addictive objects cause addictive responses was noted by 3.1% of respondents. For example: "it's chemically addictive" or "Your body produces chemicals that make you need the 'thing.'"

Subtheme: Choice or Not Real. Alternatively, some respondents (.4%) suggested that nothing is addictive (e.g., "I don't believe in addiction. It's just an excuse people use to explain away poor choices and bad lifestyles.") or that an individual chooses to respond to an object in a perceived addictive manner (e.g., "something that you allow to control your behavior.").

Variable. Respondents (9%) noted that the level of addictiveness may vary or change in some way, including those who noted variability by the subtheme: Time Dependent. Some respondents (.5%) noted that addictiveness may vary in another way other than by time, such as by the object itself (e.g., "The degree to which one is addicted varies with the source"), and one respondent (.1%) noted that addictiveness may vary by time and another aspect.

Subtheme: Time Dependent. Respondents (8.5%) suggested that an object must be used for a certain length of time or number of times before it produces addictive responses. For example: “if someone has surgery and is prescribed a pain medicine if they take it long enough it can become addictive” or “[addictive] means you try it once then your body feels like it needs it.”

Class of Object. Over one quarter (26.5%) of participants gave an indication about the class of object that may be considered addictive based on one of the four subthemes: Substances Only, Non-Substances Included, Socially Unacceptable, and Specific Example.

Subtheme: Substances Only. Some respondents (4.2%) noted that only substances or drugs are addictive. For example: “I feel that this means that someone has a problem with a bad substance” or “using drugs or alcohol all the time.”

Subtheme: Non-Substances Included. A larger proportion of respondents (20.6%) reported that objects other than substances, such as activities, people, or behaviors, can be addictive or that anything can be considered potentially addictive. For example: “Drugs, overeating, gambling, drinking there lots of addictions” or “anything can be addictive.”

Subtheme: Socially Unacceptable. Some respondents (.5%) noted that only objects which are socially unacceptable are addictive, in this way respondents suggested that addictiveness is a social construct and likely variable: “it is used to describe a lack of will power to quit a behavior that someone deems socially unacceptable.”

Subtheme: Specific Example. Respondents (12.7%) sometimes gave a specific example of something which may be considered addictive. In some cases, these examples were more personal in nature, such as “I used to be addicted to cocaine” or “I am addicted to chocolate. I won't stop even if it kills me.” Overall, the following specific objects were identified as

potentially addictive in nature: food (*k* = 49; including: gum [*k* = 1], snacks [*k* = 1], chocolate [*k* = 7], fatty food [*k* = 2], sweets/candy [*k* = 3], sugar [*k* = 6], coke [*k* = 1], and a flavor [*k* = 1]), drugs (*k* = 100; including medicine [*k* = 6], narcotics [*k* = 1], opioids [*k* = 5], marijuana [*k* = 1], cocaine [*k* = 1], and nicotine products [*k* = 19]), alcohol (*k* = 43), eating (*k* = 20), gambling (*k* = 13), television shows or watching things (*k* = 11), playing a game (*k* = 10; including video games [*k* = 3]), sex or sexual objects (i.e., underwear; *k* = 9), another person or a relationship (*k* = 8), shopping, sales, or buying items (*k* = 7), physical activity or exercise (*k* = 6; including running [*k* = 2] and gardening [*k* = 1]), coffee (*k* = 4), hoarding or collecting objects (*k* = 4), adrenalin (*k* = 3), pornography (*k* = 3), smartphones (*k* = 2), washing self (*k* = 2), "mainstream media [and other groups] hate for Trump [and the USA]" (*k* = 2), the internet (*k* = 1), restricting eating (*k* = 1), working (*k* = 1), a location (*k* = 1), the stock market (*k* = 1), an "emotional stimulant" (*k* = 1), a band (*k* = 1), social media (*k* = 1), the NBA (*k* = 1), trichotillomania (*k* = 1), shoplifting (*k* = 1), sleeping late (*k* = 1), a style (*k* = 1), and a color (*k* = 1). Further, some individuals noted certain objects which they considered as not addictive: video games (*k* = 1), food (*k* = 2; including sugar [*k* = 1] and fat [*k* = 1]), adrenalin (*k* = 1), medicine (*k* = 1), air (*k* = 1), and water (*k* = 1).

Treatment. Treatment was seen to be required to help an individual stop or recover from addictive symptoms by 2.1% of respondents, including a minority who suggested the subtheme: Spirituality is Important. Specifically, 1.6% of respondents suggested that treatment of some form may be beneficial but did not note a spiritual component. For example, "not being able to let go without help" or "Professional help is often needed to stop the use of the substance/behavior/etc."

Subtheme: Spirituality is Important. Spirituality was seen as an important protective factor in terms of avoiding addictive objects or symptoms or a treatment method by 0.5% of

respondents. For example, “for me GOD is the only one that helps me control myself” or “[the addictive object] is a Demon.”

Unsure. Finally, 1.2% of respondents stated that they were “unsure” or “do not know” what addictive means, and therefore did not give any further suggestions.

Aim Two, Part A: Understanding Which Objects are Considered Addictive

Hypothesis Three: Substances and Gambling Were Perceived as More Addictive, With More Indicators of Addictiveness, Than Other Objects. I then examined the descriptive results regarding their perceptions of the level of addictiveness for 16 objects to understand which objects may be considered addictive. Overall, opioids were most often considered extremely addictive, and exercise was most often considered not at all addictive. With the except of cannabis, substances and gambling appeared to be considered more addictive than all other objects presented. The mean and standard deviation of these ratings can be found in Appendix A: Table 3.

Study 1 Discussion

The results of this qualitative, phenomenological, hermeneutic analysis suggest several themes and subthemes which respondents believed were indicators of the addictive nature of an object, alongside certain classes and examples of objects which they believed may be addictive. In line with hypothesis one, these indicators of addictiveness did appear to have some similarities with diagnostic criteria. Notable additions include whether treatment may be required and the quality of the object. Responses to the level of addictiveness question suggested some variability in terms of the perceived addictiveness of a variety of objects; although, many of the objects had similar mean levels of addictiveness. These results also somewhat supported hypothesis three, suggesting that substances and gambling are considered more addictive than other objects, with

the exception of cannabis. Given these results, it suggests that objects themselves may be perceived as having variable levels of addictiveness, as has also been suggested by previous literature (e.g., Grant & Grubbs, 2019; Lang & Rosenberg, 2017). Along with prior work, it also suggests that the perception of addictiveness may vary based on the indicators of addictiveness which individuals expect or perceive to occur with each object (e.g., Turner et al., 2021). Finally, it is notable that multiple participants spontaneously suggested that for each object an individual may have differing perceptions regarding the object's addictive nature.

STUDY 2

Building on the qualitative results described above, there remains a need for a quantitative analysis of ascribed indicators of addictiveness for various objects. In service of this, Study 2 aimed to evaluate a new method of understanding perceptions of levels and indicators of addictiveness to various objects using the qualitative data gathered in Study 1. In particular, this study aimed to refine this method of measurement and test initial psychometric properties. Additionally, Study 2 sought to answer aims two and three by initially looking at ways in which there may be variability in perceptions of addictiveness by the object in question or key demographic variables.

Method

Institutional Review Board (IRB) approval was sought prior to this study being conducted (See Appendix D).

Participants

The sample for this study consisted of 155 college students at Bowling Green State University recruited from the Psychology Department's SONA research participant pool who received partial course credit for participation. Participants' average age was 19.7 years old (SD = 2.2 years) and predominantly identified as female (76.1%), heterosexual (67.1%), White (87.1%), single and not in a relationship (47.7%), and Freshman (41.3%). Participants median family income when they were growing up was $70,000 to $90,000 and their current average household income was $78,632.16, with their parents being the primary income earner for them. Most of the participants were employed part-time (57.4%). They were also predominantly Christian (55.5%) and Republican (39.4%). In terms of personal experience of addiction, 59.4% reported that they or someone in their family or friend group either had or may have had an

addiction, with alcohol and substances cited as the most common addiction. See Tables 4 to 8 in Appendix A for full demographic data.

Procedure

All participants were first presented with an informed consent page on Qualtrics. Following this, participants were asked demographic, religiousness, and political ideology questions. Next participants were asked to complete the Perceived Addictiveness measure in sequence (see below for a full description and Appendix B for this measure). Following this, participants were asked to complete several questions related to the accessibility of this measure. Finally, participants completed measures used to assess validity. See Appendix C for full outline of this study.

Measures

For means, standard deviations, and internal consistency coefficients for each of the measures, see Tables 9 to 14 in Appendix A.

Demographic Variables. The following demographic variables were collected for each participant: age, sex, gender identity, race/ethnicity, sexual orientation, relationship status, education, employment, and childhood and annual income. Moreover, participants were asked if they believed they or someone they knew had ever been addicted to anything, what this object was, and if they ever received treatment for this.

For the purposes of the correlation and multivariate analyses of covariance (MANCOVA) analyses, some of these demographics were dichotomized to improve interpretability. Sex was recoded as male assigned at birth or not male assigned at birth. Gender identity was recoded as identifying as cis-gender or not identifying as cis-gender. Race/ethnicity was recoded as identifying as White or identifying as a minoritized race/ethnicity. Sexual orientation was recoded as identifying as heterosexual or not identifying as heterosexual. Relationship status was

recoded as in a relationship or not in a relationship. Finally, personal experience of addiction was recoded as reported any personal experience of addiction or no personal experience of addiction.

Religiousness. Participants were asked their religious/spiritual identification (i.e., Protestant, Jewish, None, Spiritual but not religious, etc.) in a free response format. Religiousness was measured by asking participants about their religious participation and religious belief salience.

Religiousness was measured by asking participants to rate their agreement to three statements: "I attend religious services regularly", "I consider myself religious", and "Being religious is important to me." They rated their agreement on a 0 (*Strongly disagree*) to 6 (*Strongly Agree*) scale, and these scores were averaged to obtain an overall religiousness score. The average religiousness score was 2.5 (Standard Deviation = 2.08).

Political Ideology. Political ideology was assessed via a sliding scale rating of affiliation with political ideologies (i.e., left/liberal vs right/conservative) on a gradient of -10 to +10. The average political ideology rating was -2.38 (SD = 5.30). Self-identification with parties was measured by asking participants to report with which party they most strongly identify (*Republican, Democrat, Independent, other (please specify),* and *none*).

Appetitive and Compulsive Definitions of Addiction Scale. The Definitions of Addiction Scale (Chassin et al., 2007) includes two subscales (appetitive and compulsive) looking at how much 13 items indicate that someone is addicted to a particular behavior, on a 5 point Likert scale of "not at all" to "very much." As suggested by Lang and Rosenberg (2017), the appetitive item "Getting high" was not included because this item refers primarily to a response to substances, rather than behaviors. Participants average appetitive subscale score was 2.31 (SD = 0.98) in Study 2. The average compulsive subscale score in Study 2 was 3.55 (SD =

0.54) in Study 2. Previous research demonstrated a reliability coefficient for the compulsive subscale of 0.81 to 0.89 and for the appetitive subscale of 0.71 to 0.88 (Lang & Rosenberg, 2017). Our study found internal consistency coefficients of 0.85 for the appetitive subscale and 0.88 for the compulsive subscale using McDonald's Omega.

Harmfulness of Objects Scale. The Harmfulness of Drugs Scale (Pedersen & Von Soest, 2015) is based on Nutt et al.'s (2007) nine parameters of perceived risk, which is a measure of harmfulness used to assess expert perceptions. This measure was developed to allow the measurement of perceptions in non-addiction experts as well and asks participants to score presented substances in terms of perceived risk of harm on a scale of 1 (*not harmful*) to 6 (*very harmful*). Perceived risk of harm is assessed in terms of: (i) physical harm (e.g. cancer, cardiovascular disease, lung disease, liver disease); (ii) mental health conditions (e.g. learning disabilities, apathy, anxiety, depression, psychosis); (iii) dependence (e.g. problems with quitting use despite serious consequences); (iv) injuries (e.g. drowning, falls or traffic accidents, quarrels, violence); and (v) social consequences (e.g. break-up of family relations, educational problems, problems with the police). Average harmfulness scores ranged from 1.31 for television and collecting objects to 4.59 for opioids in Study 2. Previous work has demonstrated a reliability coefficient of 0.69, 0.72, and 0.82 for tobacco, alcohol, and cannabis respectively. This work found internal consistency coefficients ranging from 0.70 for gambling and social media to 0.88 for medications.

Addiction Belief Inventory. The Addiction Belief Inventory (Luke et al., 2002) includes 30 items which cover eight categories regarding beliefs about addiction to substances and alcohol: moral weakness, coping, genetic basis, responsibility for recovery, responsibility for actions, reliance on experts, chronic disease, and inability to control. Participants are asked to

rate their agreement to these items on a scale of 1 (*strongly disagree*) to 5 (*strongly agree*). This scale was developed to assess public perceptions of addiction in terms of expected beliefs about addiction, rather than diagnostic criteria. To allow this measure to be utilized as a measure of convergent validity in this study, the items were modified to refer to individuals who are addicted to any object, rather than just substances or alcohol. The subscales of this measure have previously demonstrated reliability coefficients of between 0.61 and 0.83. This study found that the subscales had internal consistency coefficients of between 0.49 and 0.90 for Study 2.

Perceived Addictiveness. The Perceived Addictiveness measure was created using the responses from the above Study 1 which depict ways in which certain objects may be seen to be addictive and prior ways of measuring levels of perceived addictiveness of an object (see Appendix B). This measure contains three complementary parts presented in sequence. Participants were first shown several Indicators of Addictiveness that an object is addictive (e.g., it feels irresistible) and asked their level of agreement that each statement would indicate that something is addictive (Indicators of Addictiveness subscale; 1: *Not at all indicative that something is addictive*; 5: *Extremely indicative that something is addictive*). In other words, this signals which Indicators of Addictiveness are most suggestive of general addictiveness. The most highly endorsed Indicator of Addictiveness was “Feels Required” (Mean = 3.45, SD = 0.78) and the least endorsed was “Good Aspects” (Mean = 1.72, SD = 1.19).

Participants were then asked to rate their agreement that each of the presented substances and behaviors are addictive on a scale of 1 (*not at all*) to 5 (*extremely addictive*; Levels of Addictiveness subscale). Based on the examples given by participants during Study 1 which were mentioned three or more times and previously identified objects in research (as used in Study 1), the following objects were rated: alcohol, nicotine, masturbation, cocaine, cannabis,

sexual activity with a partner, opioids, pornography, gambling, playing games (e.g., video games), exercise, eating, shopping, smartphones, technology, social media, sugary food, food in general, television shows or movies, caffeinated drinks, another person or a relationship, medications, adrenalin heightening activities (e.g., rollercoasters, skydiving, etc.), and collecting objects. Opioids were rated as the most highly addictive object (Mean = 3.51, SD = 0.99) and collecting objects (Mean = 1.73, SD = 1.17) was rated as the least addictive object.

Finally, participants were presented with a matrix containing the Indicators of Addictiveness which they selected as at least somewhat indicative of addictiveness on the Indicators of Addictiveness subscale alongside a list of potentially addictive objects which they rated as at least somewhat addictive on the Levels of Addictiveness subscale (i.e., given a rating of 2 or more). Participants were asked to select all the Indicators of Addictiveness which they believe suggest that each object is addictive. In this way, this section measures the indicators of addictiveness which suggest addictiveness for specific objects (Indicators of Objects' Addictiveness subscale). For the purposes of the MANCOVA looking at the relationship between Indicators of Addictiveness and the objects in their factored categories, an individual was coded as endorsing an Indicator of Addictiveness for a factor if they had endorsed any of the included objects of that factor for the indicator.

Content Validity and Feedback. Participants were asked four questions following the administration of the Perceived Addictiveness measure to elicit feedback, with yes or no response options: "Are there any specific things which you think are addictive that we ought to include?"; "Are there any ways in which you believe things are addictive which were not suggested by this measure?"; "Did you find any of the items redundant or repetitive?"; and "Did you have any problems with the language used or understanding this measure?" Participants

were asked to explain their response if they selected yes to any of these questions. Finally, participants were asked an open-ended response question: “Are there any other suggestions you have for ways to improve this measure?”

Analyses

Means and standard deviations were calculated for all measures and presented in Appendix A: Tables 9 to 14. Internal consistency, using Cronbach’s alpha and McDonald’s omega total (Revelle & Condon, 2019), was also calculated and presented in the same table for each of the sections on the Perceived Addictiveness, Addiction Belief Inventory (Luke et al., 2002), Definitions of Addiction (Chassin et al., 2007), and Harmfulness of Objects (Pedersen & Von Soest, 2015) Scales.

An exploratory factor analysis, using principal axis factoring and oblimin rotation, was conducted on the Levels of Addictiveness subscale of the Perceived Addictiveness measure to understand the underlying structure of the objects presented to participants. Coefficients were expected to be in the moderate range since agreement with one item does not preclude agreement with another. When conducting the factor analyses, I considered items loaded onto factors if their loading was 0.3 or greater on only one factor, except when otherwise noted for theoretical reasons. If items did not exceed this threshold or appeared to have similar loading on two or more factors, I did not consider them part of that factor. To allow for easier interpretation of the following analyses, the object categories derived from this factor analysis (henceforth known as “object categories”) were also included as an average of the addictiveness rating for all included objects in the correlations and as a binary endorsement of at least one of the included objects in the MANCOVA analyses.

I then conducted correlations between the Indicators of Addictiveness and Levels of

Addictiveness for the presented objects, individually and as categories, on the Perceptions of Addictiveness measure and the Addiction Belief Inventory (Luke et al., 2002), the Harmfulness of Objects Scale (Pedersen & Von Soest, 2015), and the Definitions of Addiction Scale (Chassin et al., 2007) to understand the convergent validity of the Perceptions of Addictiveness measure. It was expected that scores on the Definitions of Addiction Scale (Chassin et al., 2007), Harmfulness of Objects Scale (Pedersen & Von Soest, 2015), and the Addiction Belief Inventory (Luke et al., 2002) would be positively correlated with scores on the Perceived Addictiveness measure. These correlations and previously described content validity and feedback questions were used to re-word or re-assign items in the measure as needed to improve readability, accurate responding, and ensure that the measure was not missing objects. For example, it was noted by several participants that "work" was not included as a potential object and this was therefore included in the next iteration as a result of this study. Collectively with the above data, items were adjusted or re-assigned to a different object category to ensure better measurement. For example, "eating" and "food in general" were combined following the results of this study.

Pearson correlations were used to understand the relationships between religiousness, political ideology, and each of the demographic variables and the scores on the Levels of Addictiveness and Indicators of Addictiveness subscales on the Perceived Addictiveness measure. Pearson correlations were also conducted to understand the relationships between each of the objects, individually and as categories, Level of Addictiveness and Indicators of Addictiveness on the Perceived Addictiveness measure.

Finally, I conducted a series of MANCOVA analyses looking at differences between objects in their endorsement of each of the Indicators of Addictiveness (Indicators of Objects' Addictiveness subscale), with each of the demographics as covariates. The first set of

MANCOVAs included the object categories derived from the factor analysis and the second set of MANCOVAs used the individual objects. As such, thirty MANCOVA analyses were conducted in total.

Results

In Service of All Aims: Validating and Refining the Perceived Addictiveness

Factor Structure of the Perceived Addictiveness Measure. To understand the underlying factor structure of the objects on the Perceived Addictiveness measure, an exploratory factor analysis, using principal axis factoring and oblimin rotation, was conducted (See Table 15, Appendix A). The first factor, Recognized Addictions (Eigenvalue = 2.90, 12.09% variance explained), included opioids, cocaine, nicotine, medications, gambling, and alcohol. Technological objects, the second factor (Eigenvalue = 1.83, 7.63% variance explained), included smartphones, technology, social media, and playing games. The third factor, termed Compulsive/Sexual objects (Eigenvalue = 1.33, 5.54% variance explained), included masturbation, pornography, sexual activity with a partner, adrenaline, and collecting objects. The Controversial objects factor (Eigenvalue = 1.20, 4.98% variance explained) included only cannabis. Finally, the Other objects factor (Eigenvalue = 8.85, 36.85% variance explained) included food, eating, shopping, and exercise. Notably, even though alcohol appeared to be similarly loaded on the Recognized Addictions and Controversial objects factors, it was included in the Recognized Addictions object category given that it is widely recognized as an addictive object. Overall, this suggests that a five-factor structure best fit the data for the second section of the Perceived Addictiveness measure.

Internal Consistency of the Perceived Addictiveness Measure. To understand the internal consistency of the Perceived Addictiveness measure, Cronbach's alpha and McDonald's

total omega scores were calculated for the first two sections of this measure (See Tables 9 and 10, Appendix A). The first section of the Perceived Addictiveness measure, focused on Indicators of Addictiveness, demonstrated good internal consistency ($\alpha = 0.85$; McDonald's $\omega = 0.88$). The second section of this measure, focused on Levels of Addictiveness of objects, can be broken down into five object categories which demonstrated adequate to good internal consistency: Recognized Addictions ($\alpha = 0.87$; McDonald's $\omega = 0.85$), Technological objects ($\alpha = 0.85$; McDonald's $\omega = 0.87$), Compulsive/Sexual objects ($\alpha = 0.810$; McDonald's $\omega = 0.79$), and Other ($\alpha = 0.85$; McDonald's $\omega = 0.78$). Internal consistency could not be calculated for the Controversial objects category given that it only included one object.

Convergent Validity for the Perceived Addictiveness Measure. To test convergent validity for the first section of the Perceived Addictiveness measure, I conducted Pearson Product-Moment Correlations between the Indicators of Addictiveness subscale and the subscales of the Harmfulness of Objects Scale (Pedersen & Von Soest, 2015; See Table 27, Appendix A). The Creates Tolerance, Incites Cravings, Negative Aspects, Good Aspects, and Timeline Dependent Indicators of Addictiveness demonstrated some small correlations with the subscales of the Harmfulness of Objects Scale (Pedersen & Von Soest, 2015). Overall, this suggests that Indicators of Addictiveness subscale on the Perceived Addictiveness measure may not be measuring the ways in which an object may be considered harmful.

To further test convergent validity for the first section of the Perceived Addictiveness measure, I conducted correlations between the Indicators of Addictiveness subscale and the Addiction Belief Inventory (Luke et al., 2002; See Table 29, Appendix A). While some of the Indicators of Addictiveness showed small to moderate correlations with the Addiction Belief Inventory (Luke et al., 2002), and its subscales, most of the Indicators of Addictiveness did not

appear to be significantly related to this inventory. Rather, the Addiction Belief Inventory's subscales (Luke et al., 2002) were most commonly related to the Negative Aspects and Causes Biological Changes items, suggesting that these Indicators of Addictiveness are most closely aligned to the construct that the Addiction Belief Inventory (Luke et al., 2002) measures.

As a final test of convergent validity for the first section of the Perceived Addictiveness measure, I conducted correlations between the Indicators of Addictiveness subscale and the Definitions of Addiction Scale (Chassin et al., 2007; See Table 31, Appendix A). The Definitions of Addiction Scale and its subscales (Chassin et al., 2007) showed primarily moderate correlations with the Indicators of Addictiveness, such that all Indicators of Addictiveness were related to at least one of the subscales on the Definitions of Addiction Scale (Chassin et al., 2007). For example, all Indicators of Addictiveness, except the Good Aspects and Timeline Dependent Indicators of Addictiveness, were related to the Compulsive subscale. This suggests that this measure focuses on a more similar construct to the Indicators of Addictiveness subscale on the Perceived Addictiveness measure than the Addiction Belief Inventory or the Harmfulness of Objects Scale (Luke et al., 2002; Pedersen & Von Soest, 2015).

To test convergent validity for the second section of the Perceived Addictiveness measure, I examined the correlations of the Level of Addictiveness of each of the object categories with the perceived level of harmfulness of each object category on the Harmfulness of Objects Scale (Pedersen & Von Soest, 2015; See Tables 17 to 22, Appendix A). Each of the five object categories Levels of Addictiveness demonstrated small to moderate significant correlations with their same object category on the Harmfulness of Objects Scale, except for the Controversial objects category which showed a large correlation. This suggests that the level of perceived addictiveness of the objects is moderately related to the harmfulness of these same objects,

suggesting some convergent validity regarding this part of the Perceived Addictiveness measure.

Aim Two: Understanding Whether the Meaning of Addictiveness Changes in Terms of the Object Which is Being Considered

I conducted correlations between the Indicators of Addictiveness subscale (i.e., the first section of the Perceived Addictiveness Measure) and the Levels of Addictiveness of the presented objects and object categories (i.e., the second section of the Perceived Addictiveness Measure) to indicate possible relationships between the perceived addictiveness of objects and Indicators of Addictiveness (See Tables 33 to 38, Appendix A).

This study found various relationships between the Indicators of Addictiveness and Levels of Addictiveness of different factored object categories. The Recognized Addictions objects category showed small to moderate positive correlations with the Psychological Dependence, Incites Cravings, Withdrawal, Creates Tolerance, and Engaged in More Than Intended Indicators of Addictiveness. Medications were perceived to have the highest number of Indicators of Addictiveness in this category. The Technological objects category showed small positive correlations with the Negative Aspects and Negative Consequences Indicators of Addictiveness. The Compulsive/Sexual objects category demonstrated small positive correlations with the Creates Tolerance, Incites Cravings, Engaged in More Than Intended, and Good Aspects Indicators of Addictiveness, and pornography was related to the highest number of Indicators of Addictiveness. The Controversial objects category only had one object, cannabis, which had a small positive correlation with the Incites Cravings indicator. The Other objects factor showed small to moderate positive correlations with the Good Aspects, Creates Tolerance, Engaged More than Intended, and Timeline Dependent Indicators of Addictiveness, with exercise and eating showing the highest number of correlations with Indicators of Addictiveness.

The four objects not included in the factor structure also showed small correlations with various Indicators of Addictiveness, with sugary food having the highest number of correlations with Indicators of Addictiveness. In conclusion, the results indicate a complex understanding of addictiveness and different profiles of perceived addictiveness for each object category.

Hypothesis Two: Significant Differences Between Objects in Terms of Which Indicators of Addictiveness are Selected. I ran a series of MANCOVA analyses on the Indicators of Objects' Addictiveness subscale the Perceived Addictiveness Scale to understand which Indicators of Addictiveness were thought to suggest addictiveness for various objects, with the demographic variables added as potential correlates. Graphic profiles showing the percentage of endorsement for each Indicator of Addictiveness for various objects and object categories are shown in Figures 1-8, Appendix A. Mauchly's *W* were significant for all Indicators of Addictiveness, ranging from 0.45 to 0.83 for the object categories and about 0.00 for individual objects (See Tables 47 and 108, Appendix A). Given that sphericity was not assumed, the Greenhouse-Geiser statistic was used for the within-subjects tests.

Differences Between Objects in Endorsement of Indicators of Addictiveness. To understand whether there were any significant differences between objects in terms of their endorsement for each Indicator of Addictiveness, we looked at the Greenhouse-Geiser within-subjects tests. When using the object categories, there were no significant differences between objects for any of the Indicators of Addictiveness (See Tables 109 to 123, Appendix A). When objects were entered individually, there were significant differences between objects for the Physical Dependence ($F = 2.31$, $\eta_p^2 = 0.02$) and Causes Biological Changes ($F = 2.05$, $\eta_p^2 = 0.02$) Indicators of Addictiveness only (See Tables 48 to 62, Appendix A). These results suggest that differences between objects may only exist at the individual, rather than factored object

category, level and only with regards to the Physical Dependence and Causes Biological Changes Indicators of Addictiveness.

Hypothesis Three: Substances and Gambling Were Perceived as More Addictive, With More Indicators of Addictiveness, Than Other Objects. To understand specific differences between means for endorsement in an Indicator of Addictiveness for the factored object categories and individual objects, I looked at the post-hoc tests for Indicators of Addictiveness with significant main effects for objects and object categories. Given that there were no main effects when factored object categories were used, these post-hoc tests are not presented but can be seen in Appendix A (Tables 139 to 153). Similarly, the only significant main effects when objects were entered individually appeared for the Physical Dependence and Causes Biological Changes Indicators of Addictiveness, as such post-hoc tests are only presented on the Physical Dependence and Causes Biological Changes Indicators of Addictiveness (see the following tables for all post-hoc tests when objects are entered individually: Appendix A: Tables 78 to 107).

Physical Dependence. To understand the specific differences between mean endorsement in the Physical Dependence Indicator of Addictiveness for each object, I conducted post-hoc tests (see Appendix A: Tables 80 and 81 for post-hoc test results). Individuals endorsed the Physical Dependence Indicator of Addictiveness similarly for alcohol, nicotine, cocaine, opioids, caffeine, and eating (means = 0.69 to 0.84), as well as cannabis and medications (means = 0.63 and 0.70) in some instances. Individuals endorsed this Indicator of Addictiveness similarly for masturbation, gambling, sexual activity with a partner, pornography, playing games, technology, social media, and adrenaline (means = 0.08 to 0.23), as well as smartphones, sugary food, shopping, television, collecting objects, and another person or relationship in some instances

(means = 0.03 to 0.41). Individuals also endorsed this Indicator of Addictiveness similarly for another person or relationship, food, and exercise (means = 0.30 to 0.49). Overall, it appears that the Physical Dependence Indicator of Addictiveness was similarly endorsed for substances and eating, and at a higher rate than other objects which appeared more similar to each other.

Causes Biological Changes. To understand the specific differences between mean endorsement of the Causes Biological Changes Indicator of Addictiveness for each object, I conducted post-hoc tests (see Appendix A: Tables 102 and 103 for all post-hoc test results). Individuals endorsed the Causes Biological Changes Indicator of Addictiveness similarly for alcohol, cocaine, opioids, and nicotine (means = 0.80 to 0.88), as well as cannabis and medications in some instances (means = 0.72 and 0.74). Endorsement for this Indicator of Addictiveness for cannabis and medications was also similar to caffeine (mean = 0.62). Individuals endorsed this Indicator of Addictiveness similarly for gambling, masturbation, sexual activity with a partner, pornography, exercise, eating, smartphones, technology, social media, sugary food, food, and adrenaline (means = 0.25 to 0.47), as well as playing games, shopping, and another person or relationship in some instances (means = 0.23 to 0.25). Further, individuals endorsed this Indicator of Addictiveness similarly for playing games, television, shopping, food, another person or relationship, and collecting objects (means = 0.15 to 0.26), as well as technology (mean = 0.30) in some instances. Similar to the Physical Dependence Indicator of Addictiveness, it appears that the Causes Biological Changes Indicator of Addictiveness was most highly endorsed for substances, with all other objects endorsed at a low to moderate rate.

Aim Three: Understanding how Demographics are Related to Perceived Addictiveness

Hypothesis Four: Older, More Conservative, More Religious, Higher Educated Individuals With Less Personal Experience of Addiction and Higher Income Perceive Objects as More Addictive. To understand how each of the demographic variables relate to the perceived addictiveness of objects on the Perceptions of Addictiveness measure, I conducted correlations between the Level of Addictiveness of presented objects on this measure and each of the demographics (See Table 43, Appendix A).

Results showed small correlations between the demographics and various objects and object categories. Personal addiction experience included individuals reporting that they have a friend or family member who they believe has had an addiction or that they believe they have had an addiction. Personal addiction experience showed positive correlations with the Recognized Addictions, Compulsive/Sexual, and Other objects categories. Being in a relationship was positively correlated with the Technological objects category. Small negative correlations appeared between current income and the Other objects category. Small negative correlations also suggested that identifying as a minoritized sexual orientation was related to higher belief that the Recognized Addictions category's objects were addictive. Positive correlations also appeared between some individual objects and age, personal addiction experience, identifying as cis-gender, participants' sex, being in a relationship, identifying as a minoritized race, political ideology, religiousness, current income, and identifying as heterosexual. Some individual objects were also negatively correlated with age and current income. Overall, these results suggested that personal addiction experience was most often related to higher belief that an object was addictive and other demographics may also be variably related to the belief that a specific object is addictive.

Hypothesis Five: Different Indicators of Addictiveness Will be Selected Based on Individual Demographic Factors. To understand how each of the demographic variables relate to the perceptions of Indicators of Addictiveness on the Perceptions of Addictiveness measure, I conducted correlations between each of the Indicators of Addictiveness on this measure and each of the demographics (See Table 45, Appendix A). Participants' sex was positively correlated with the Physical Dependence, Psychological Dependence, Creates Tolerance, Negative Aspects, Negative Consequences, and Good Aspects Indicators of Addictiveness. Personal addiction experience was positively related to the Withdrawal, Incites Cravings, Feels Irresistible, Engaged in More Than Intended, and Treatment Needed Indicators of Addictiveness. Identifying as cis-gender was also positively correlated with the Feels Irresistible and Engaged in More Than Intended Indicators of Addictiveness. Age was negatively related to the Loss of Control indicator. These results suggested that participants' sex and personal addiction experience appeared to be most frequently related to these Indicators of Addictiveness and notably related to different sets of Indicators of Addictiveness.

Significant Interaction Between Demographics and Factored Objects for Some Indicators of Addictiveness. To understand how each of the demographics interacted with the object categories and their relationships to the Indicators of Addictiveness, I conducted within-subjects tests as part of the MANCOVAs (See Tables 109 to 123, Appendix A, and for results when objects were entered individually, see Tables 48 to 62, Appendix A).

The within-subjects effects for the interaction between participants' sex and object categories was significant for the Feels Required (F = 2.52, η_p^2 = 0.02) and Good Aspects (F = 3.49, η_p^2 = 0.03) Indicators of Addictiveness. Regarding the Feels Irresistible Indicator of Addictiveness, within-subjects effects were significant for the interaction between identifying as

cis-gender and object categories (F = 2.98, η_p^2 = 0.02) and between identifying as heterosexual and object categories (F = 2.60, η_p^2 = 0.02). The interaction between object categories and being in a relationship showed significant within-subjects effects for the Engaged in More Than Intended (F = 3.32, η_p^2 = 0.03) and Loss of Control (F = 2.66, η_p^2 = 0.02) Indicators of Addictiveness. The interaction between object categories and identifying as White showed significant within-subjects effects for the Feels Required Indicator of Addictiveness (F = 2.62, η_p^2 = 0.02). The interaction between object categories and education showed significant within-subjects effects for the Causes Biological Changes Indicator of Addictiveness (F = 2.86, η_p^2 = 0.02). The within-subjects effects for the interaction between religiousness and object categories was significant for the Physical Dependence (F = 3.14, η_p^2 = 0.03) and Treatment Needed (F = 3.39, η_p^2 = 0.03) Indicators of Addictiveness. Within-subjects effects were also significant for the interaction between personal addiction experience and object categories for the Engaged in More Than Intended (F = 3.78, η_p^2 = 0.03) indicator. These results show that multiple Indicators of Addictiveness were impacted by the interaction between demographics and object categories, suggesting that each Indicator of Addictiveness may be suggestive of different object's addictiveness based on the demographic characteristics of respondents.

Demographics Impact on the Relationship Between Indicators of Addictiveness and Factored Objects. To understand whether the demographics were significant covariates in the relationship between the object categories and Indicators of Addictiveness, I consulted between-subjects effects on the MANCOVA analyses (See Tables 124 to 138, Appendix A, and for results when objects are entered individually see Tables 63 to 77, Appendix A).

There was a significant between-subjects effect for religiousness and personal experience of addiction for the Feels Required (F = 4.07, η_p^2 = 0.03 and F = 5.23, η_p^2 = 0.04), Psychological

Dependence (F = 6.34, η_p^2 = 0.05 and F = 9.39, η_p^2 = 0.07), and Feels Irresistible (F = 4.18, η_p^2 = 0.03 and F = 4.77, η_p^2 = 0.04) Indicators of Addictiveness. There was also a significant between-subjects effect for religiousness for the Incites Cravings (F = 7.52, η_p^2 = 0.06) and Negative Aspects (F = 4.12, η_p^2 = 0.03) indicator. There was a significant between-subjects effect for participants' sex in the Physical Dependence (F = 7.60, η_p^2 = 0.06), Treatment Needed (F = 5.27, η_p^2 = 0.04), Good Aspects (F = 12.57, η_p^2 = 0.10), and Negative Consequences (F = 4.47, η_p^2 = 0.040) Indicators of Addictiveness analyses. Between-subjects effects were significant for identifying as cis-gender for the Negative Aspects (F = 4.86, η_p^2 = 0.04) indicator. Being in a relationship showed a significant between-subjects effect for the Psychological Dependence (F = 8.09, η_p^2 = 0.06) and Loss of Control (F = 2.66, η_p^2 = 0.02) indicator. Identifying as heterosexual showed a significant between-subjects effect for the Psychological Dependence (F = 5.22, η_p^2 = 0.04) and Incites Cravings (F = 6.10, η_p^2 = 0.05) Indicators of Addictiveness. Overall, personal experience of addiction and religiousness impacted the endorsement of the highest number of Indicators of Addictiveness. Further, the Psychological Dependence Indicator of Addictiveness was most often affected by demographic variables.

Study 2 Discussion

Across analyses, the Perceived Addictiveness measure appeared to have moderate evidence of convergent validity and generally acceptable metrics of internal consistency, with a five-factor structure for objects. As partially expected in hypothesis two, there appeared to be significant differences in endorsement of Indicators of Addictiveness between objects when considered individually, but only for the Physical Dependence and Causes Biological Changes Indicators of Addictiveness. Somewhat in line with hypothesis three, alcohol, nicotine, opioids, cannabis, medications, caffeine, and cocaine were associated with higher ratings of the Physical

Dependence and Causes Biological Changes Indicators of Addictiveness than other objects, but gambling was more often similar to other objects. Only some elements of hypothesis four bore out in these results, specifically older, more conservative, and more religious individuals perceived some factored object categories as more addictive. Whereas, contrary to this hypothesis, more personal experience of addiction was also related to higher perceived addictiveness of some factored object categories. Finally, in line with hypothesis five, religiousness and personal addiction experience appeared to be the most influential on the relationship between factored object categories and Indicators of Addictiveness.

STUDY 3

As previously noted, the use of pilot testing and revising an inventory created from qualitative results is recommended (Mamabolo & Myres, 2019) and results looking at differences between Indicators of Addictiveness for various objects should be tested for generalizability beyond an undergraduate sample. Therefore, this study sought to test a refined version of the Perceived Addictiveness measure based on results from Study 2 in service of all aims of this dissertation. Further, it focused on responding to the second aim of this dissertation by understanding differences in the Indicators of Addictiveness based on the object under consideration and whether these differences were similar to the results of Study 2. Finally, it aimed to look at ways in which there may be variability in perceptions of addictiveness by demographic variables, which was the third aim of this dissertation, to see if the results of Study 2 may be generalizable.

Method

Institutional Review Board (IRB) approval was sought prior to the following study being conducted (See Appendix D).

Participants

A sample of 500 participants from the general population were collected using Mechanical Turk (MTurk). Compensation for both the study was determined by current market rates for such participation at the time of the study. Participants' average age was 40.4 years old (SD = 11.7 years) and predominantly identified as male (56%), heterosexual (85.8%), White (80.4%), and married (43.6%). Participants median family income when they were growing up was $50,000 to $70,000 and their current average household income was $68,133.83, with the participant being the primary income earner. Most of the participants were employed full-time

(74.8%) and 43.2% had a bachelor's degree. They were also predominantly Christian (49.8%) and Democrat (50.2%). In terms of personal experience of addiction, 63.6% reported that they or someone in their family or friend group either had or may have had an addiction, with alcohol and substances cited as the most common addiction. See Tables 4 to 8 in Appendix A for full demographic data.

Procedure

All participants were first presented with an informed consent page on Qualtrics. Following this, participants were asked demographic, religiousness, and political ideology questions. Next participants were asked to complete the Perceived Addictiveness measure in sequence (see below for a full description and Appendix B for this measure). Following this, participants were asked to complete a question related to the accessibility of this measure. Finally, participants completed measures used to assess validity. See Appendix C for full outline of Study 3.

Measures

For means, standard deviations, and internal consistency coefficients for each of the measures, see Tables 9 to 14 in Appendix A.

Demographic Variables. The following demographic variables were collected for each participant: age, sex, gender identity, race/ethnicity, sexual orientation, relationship status, education, employment, and childhood and annual income. Moreover, participants were asked if they believed they or someone they knew had ever been addicted to anything, what this object was, and if they ever received treatment for this.

For the purposes of the correlation and MANCOVA analyses, some of these demographics were dichotomized to improve interpretability. Sex was recoded as male assigned at birth or not male assigned at birth. Gender identity was recoded as identifying as cis-gender or

not identifying as cis-gender. Race/ethnicity was recoded as identifying as White or identifying as a minoritized race/ethnicity. Sexual orientation was recoded as identifying as heterosexual or not identifying as heterosexual. Relationship status was recoded as in a relationship or not in a relationship. Finally, personal experience of addiction was recoded as reported any personal experience of addiction or no personal experience of addiction.

Religiousness. Participants were asked their religious/spiritual identification (i.e., Protestant, Jewish, None, Spiritual but not religious, etc.) in a free response format. Religiousness was measured by asking participants about their religious participation and religious belief salience.

Religious Belief Salience (Blaine & Crocker, 1995) was measured by asking participants to rate their agreement to four statements (e.g., "My religious/spiritual beliefs lie behind my whole approach to life") on a 12-point Likert Scale (1 = *does not apply*/*I have no religious/spiritual belief*; 2 = *strongly disagree*; 12 = *strongly agree*). Religious participation (Exline et al., 2000) was measured by asking participants to rate their frequency of engagement in six activities (e.g., "prayed or meditated", "thought about religious/spiritual issues") in the last week on a 6-point scale (*not at all, once, a few times, on most days, daily,* and *more than once per day*). These two scales were combined by standardizing all responses and averaging across all items to give an overall religiousness *z*-score, as has been done in previous works (e.g. Exline & Grubbs, 2011). The average religiousness score was 0.004 (SD = 0.88), with a range of -1.06 to 2.04.

Political Ideology. Political ideology was assessed via a sliding scale rating of affiliation with political ideologies (i.e., left/liberal vs right/conservative) on a gradient of -10 to +10. The average political ideology rating was -1.34 (SD = 6.39). Self-identification with parties was

measured by asking participants to report with which party they most strongly identify (*Republican, Democrat, Independent, other (please specify),* and *none*).

Appetitive and Compulsive Definitions of Addiction Scale. The Definitions of Addiction Scale (Chassin et al., 2007) includes two subscales (appetitive and compulsive) looking at how much 13 items indicate that someone is addicted to a particular behavior, on a 5 point Likert scale of "not at all" to "very much." As suggested by Lang and Rosenberg (2017), the appetitive item "Getting high" was not included because this item refers primarily to a response to substances, rather than behaviors. Participants average appetitive subscale score was 3.26 (SD = 1.02). The average compulsive subscale score in Study 2 was 4.37 (SD = 0.67). Previous research demonstrated a reliability coefficient for the compulsive subscale of 0.81 to 0.89 and for the appetitive subscale of 0.71 to 0.88 (Lang & Rosenberg, 2017). Our study found reliabilities of 0.83 for the appetitive subscale and 0.89 for the compulsive subscale using McDonald's Omega.

Harmfulness of Objects Scale. The Harmfulness of Drugs Scale (Pedersen & Von Soest, 2015) is based on Nutt et al.'s (2007) nine parameters of perceived risk, which is a measure of harmfulness used to assess expert perceptions. This measure was developed to allow the measurement of perceptions in non-addiction experts as well and asks participants to score presented substances in terms of perceived risk of harm on a scale of 1 (*not harmful*) to 6 (*very harmful*). Perceived risk of harm is assessed in terms of: (i) physical harm (e.g. cancer, cardiovascular disease, lung disease, liver disease); (ii) mental health conditions (e.g. learning disabilities, apathy, anxiety, depression, psychosis); (iii) dependence (e.g. problems with quitting use despite serious consequences); (iv) injuries (e.g. drowning, falls or traffic accidents, quarrels, violence); and (v) social consequences (e.g. break-up of family relations, educational problems,

problems with the police). Average harmfulness scores ranged from 2.04 for television to 5.18 for opioids. Previous work has demonstrated a reliability coefficient of 0.69, 0.72, and 0.82 for tobacco, alcohol, and cannabis respectively. This work found reliability coefficients ranging from 0.74 for nicotine to 0.90 for cannabis and medications.

Addiction Belief Inventory. The Addiction Belief Inventory (Luke et al., 2002) includes 30 items which cover eight categories regarding beliefs about addiction to substances and alcohol: moral weakness, coping, genetic basis, responsibility for recovery, responsibility for actions, reliance on experts, chronic disease, and inability to control. Participants are asked to rate their agreement to these items on a scale of 1 (*strongly disagree*) to 5 (*strongly agree*). This scale was developed to assess public perceptions of addiction in terms of expected beliefs about addiction, rather than diagnostic criteria. To allow this measure to be utilized as a measure of convergent validity in this study, the items were modified to refer to individuals who are addicted to any object, rather than just substances or alcohol. The subscales of this measure have previously demonstrated reliability coefficients of between 0.61 and 0.83. This study found that the subscales had reliability coefficients of between 0.55 and 0.88.

Perceived Addictiveness. The Perceived Addictiveness measure was created using the responses from the above two studies which depict ways in which certain objects may be seen to be addictive and prior ways of measuring levels of perceived addictiveness of an object (see Appendix B). This measure contains three complementary parts presented in sequence. Participants were first shown several Indicators of Addictiveness that an object is addictive (e.g., it feels irresistible) and asked their level of agreement that each statement would indicate that something is addictive (1: *Not at all indicative that something is addictive*; 5: *Extremely indicative that something is addictive*). In other words, this signals which Indicators of

Addictiveness are most suggestive of general addictiveness. “Physical Dependence” (Mean = 3.46, SD = 0.87) and “Good Aspects” (Mean = 1.38, SD = 1.31) were the most and least endorsed Indicators of Addictiveness respectively.

Participants were then asked to rate their agreement that each of the presented substances and behaviors are addictive on a scale of 1 (*not at all*) to 5 (*extremely addictive*; Levels of Addictiveness subscale). Based on the results of Study 2, the following objects were rated: alcohol, nicotine, masturbation, cocaine, cannabis, sexual activity with a partner, opioids, pornography, gambling, playing games (e.g., video games), exercise, eating/food, shopping, smartphones, technology, social media, sugary food, work, television shows or movies, caffeinated drinks, another person or a relationship, medications, adrenalin heightening activities (e.g., rollercoasters, skydiving, etc.), and collecting objects. Notably, the object “food in general” was combined with “eating” and the object “work” was added. Opioids (Mean = 3.42, SD = 1.08) and nicotine (Mean = 3.42, SD = 1.02) were rated as the most highly addictive objects. Work (Mean = 1.30, SD = 1.16) was rated as the least addictive object.

Finally, participants were presented with a matrix containing the Indicators of Addictiveness which they selected as at least somewhat indicative of addictiveness on the Indicators of Addictiveness subscale alongside a list of potentially addictive objects which they rated as at least somewhat addictive on the Levels of Addictiveness subscale (i.e., given a rating of 2 or more). Participants were asked to select all the Indicators of Addictiveness which they believe suggest that each object is addictive. In this way, this section measures the Indicators of Addictiveness which suggest addictiveness for specific objects (Indicators of Objects’ Addictiveness subscale). For the purposes of the MANCOVA looking at the relationship between Indicators of Addictiveness and the objects in their factored categories, an individual

was coded as endorsing an Indicator of Addictiveness for a factor if they had endorsed any of the included objects of that factor for the indicator.

Content Validity and Feedback. Participants were asked an open-ended response question: "Are there any other suggestions you have for ways to improve this measure?"

Analyses

I repeated the analyses conducted in Study 2 with the data from Study 3 to identify whether there was consistency in results and further understand how the objects and Indicators of Addictiveness are related, and how demographics impact these relationships. Means and standard deviations were calculated for all measures and presented in Appendix A: Tables 9 to 14. Internal consistency, using Cronbach's alpha and McDonald's omega total (Revelle & Condon, 2019), was also calculated and presented in the same table for each of the sections on the Perceived Addictiveness, Addiction Belief Inventory, Definitions of Addiction, and Harmfulness of Objects scales (Chassin et al., 2007; Luke et al., 2002; Pedersen & Von Soest, 2015).

To examine the consistency of the factors, validity, and relationships found in Study 2 in a more general sample, I first reanalyzed the factors to clarify the five-factor structure of the object section of the Perceptions of Addictiveness measure. Mirroring Study 2, I considered items loaded onto factors if their loading was 0.3 or greater on only one factor, except when otherwise noted for theoretical reasons. If items did not exceed this threshold or appeared to have similar loading on two or more factors, I did not consider them part of that factor. To allow for easier interpretation of the following analyses, the object categories derived from this factor analysis were also included as an average of the addictiveness rating for all included objects in the correlations and as a binary endorsement of at least one of the included objects in the

MANCOVA analyses.

I then again conducted correlations between the Indicators of Addictiveness and Levels of Addictiveness subscales for presented objects on the Perceptions of Addictiveness measure and the Addiction Belief Inventory, the Harmfulness of Objects Scale, and the Definitions of Addiction Scale (Chassin et al., 2007; Luke et al., 2002; Pedersen & Von Soest, 2015) to understand the convergent validity of the Perceptions of Addictiveness measure.

Pearson correlations were used to understand the relationships between religiousness, political ideology, and each of the demographic variables and the Levels of Addictiveness and Indicators of Addictiveness subscales on the Perceived Addictiveness measure. Pearson correlations were also conducted to understand the relationships between each of the objects' and object categories' Levels of Addictiveness and Indicators of Addictiveness on the Perceived Addictiveness measure.

Finally, I conducted a series of MANCOVA looking at differences between objects in their endorsement of each of the Indicators of Addictiveness (Indicators of Objects' Addictiveness subscale), with each of the demographics as covariates. The first set of MANCOVAs included the object categories derived from the factor analysis and the second set of MANCOVAs used the individual objects. As such, thirty MANCOVA analyses were conducted in total.

Results

In Service of All Aims: Validating and Refining the Perceived Addictiveness

Factor Structure of the Perceived Addictiveness Measure. To understand the underlying factor structure of the objects on the Perceived Addictiveness measure, an exploratory factor analysis, using principal axis factoring and oblimin rotation, was conducted,

specifying a five-factor structure based on Study 2 (See Table 16, Appendix A). Three factors appeared to remain relatively consistent: i) Recognized Addictions (Eigenvalue = 3.06, 12.76% variance explained), including opioids, cocaine, nicotine, gambling, and alcohol, but not medications, ii) Technological objects (Eigenvalue = 9.15, 38.11% variance explained), including smartphones, technology, social media, and playing games, and iii) Sexual objects (Eigenvalue = 1.49, 6.23% variance explained), including masturbation, pornography, and sexual activity with a partner, but not adrenaline, and collecting objects. All other objects either loaded onto a different factor than in Study 2 or appeared similarly loaded onto multiple factors, and therefore a three-factor structure as described above was used in this study. Overall, this suggests that a three-factor structure best fit the data for the second section of the Perceived Addictiveness measure.

Internal Consistency for the Perceived Addictiveness Measure. To understand the internal consistency of the Perceived Addictiveness measure, Cronbach's alpha and McDonald's total omega scores were calculated for the first two sections of this measure (See Tables 9 and 10, Appendix A). The first section of the Perceived Addictiveness measure, focused on Indicators of Addictiveness, demonstrated good internal consistency ($\alpha = 0.85$; McDonald's $\omega = 0.87$). The second section of this measure, focused on Level of Addictiveness of objects, can be broken down into three object categories: the Recognized Addictions object category, which demonstrated good internal consistency ($\alpha = 0.84$; McDonald's $\omega = 0.74$); the Technological objects category, which demonstrated good internal consistency ($\alpha = 0.86$; McDonald's $\omega = 0.87$), and the Sexual objects factor, which demonstrated limited internal consistency ($\alpha = 0.78$; McDonald's $\omega = 0.55$).

Convergent Validity for the Perceived Addictiveness Measure. To test convergent validity for the first section of the Perceived Addictiveness measure, I conducted Pearson Product-Moment Correlations between the Indicators of Addictiveness subscale and the subscales of the Harmfulness of Objects Scale (Pedersen & Von Soest, 2015; See Tables 28, Appendix A). The Creates Tolerance, Incites Cravings, Engaged in More Than Intended, Negative Aspects, Negative Consequences, Good Aspects, and Timeline Dependent Indicators of Addictiveness demonstrated some small correlations with the subscales on the Harmfulness of Objects Scale (Pedersen & Von Soest, 2015). In particular, the mental dependence and social harmfulness categories on the Harmfulness of Objects Scale (Pedersen & Von Soest, 2015) appeared to be most often related to one of the Indicators of Addictiveness on the Perceived Addictiveness measure. Overall, this suggests that the Indicators of Addictiveness subscale on the Perceived Addictiveness measure may be only somewhat similar construct to the Harmfulness of Objects Scale (Pedersen & Von Soest, 2015).

To further test convergent validity for the first section of the Perceived Addictiveness measure, I conducted correlations between the Indicators of Addictiveness subscale and the Addiction Belief Inventory (Luke et al., 2002; See Table 30, Appendix A). Most of the Indicators of Addictiveness on the Perceived Addictiveness measure showed small correlations with the overall Addiction Belief Inventory (Luke et al., 2002) and its Chronic Disease, Reliance on Experts, Responsibility for Actions, Responsibility for Recovery, and Coping subscales. However, many of the Indicators of Addictiveness were not related to the Moral Weakness, Genetic Basis, and Inability to Control subscales. This suggests that while the Indicators of Addictiveness on the Perceived Addictiveness measure may have some convergent validity with the Addiction Belief Inventory (Luke et al., 2002), they do not appear to be as focused on the

same constructs as the moral, genetic, or lack of control subscales.

As a final test of convergent validity for the first section of the Perceived Addictiveness measure, I conducted correlations between the Indicators of Addictiveness subscale and the Definitions of Addiction Scale (Chassin et al., 2007; See Table 32, Appendix A). Similar to the results from Study 2, the Definitions of Addiction Scale (Chassin et al., 2007) and its subscales showed primarily moderate to large correlations with the Indicators of Addictiveness subscale on the Perceived Addictiveness measure, where all Indicators of Addictiveness were related to at least one of the subscales on the Definitions of Addiction Scale (Chassin et al., 2007). This suggests that this measure focuses on a similar construct to the Indicators of Addictiveness subscale on the Perceived Addictiveness measure, and perhaps more so than the Addiction Belief Inventory or the Harmfulness of Objects Scale (Luke et al., 2002; Pedersen & Von Soest, 2015).

To test convergent validity for the second section of the Perceived Addictiveness measure, I examined the correlations of the Level of Addictiveness of each of the object categories with the perceived level of harmfulness of each object category on the Harmfulness of Objects Scale (Pedersen & Von Soest, 2015; See Tables 23 to 26, Appendix A). Each of the three object categories' Level of Addictiveness correlated moderately with their same object category on the Harmfulness of Objects Scale. However, the Technological object category showed large correlations. This suggests that the level of perceived addictiveness of the objects is moderately related to the harmfulness of these same objects, suggesting some convergent validity regarding this part of the Perceived Addictiveness measure.

Aim Two: Understanding Whether the Meaning of Addictiveness Changes in Terms of the Object Which is Being Considered

I conducted correlations between the Indicators of Addictiveness subscale (i.e., the first section of the Perceived Addictiveness Measure) and the Levels of Addictiveness of objects and object categories (i.e., the second section of the Perceived Addictiveness Measure) to indicate possible relationships between the objects and Indicators of Addictiveness (See Tables 39 to 42, Appendix A).

This study found various relationships between the Indicators of Addictiveness and the Levels of Addictiveness of different factored object categories. The Recognized Addictions object category demonstrated small to moderate positive correlations with all of the Indicators of Addictiveness, except the Good Aspects and Timeline Dependent Indicators of Addictiveness, and opioids were related to the highest number of Indicators of Addictiveness. The Technological objects category achieved small positive correlations with all of the Indicators of Addictiveness and social media was related to the highest number of Indicators of Addictiveness. The Good Aspects, Creates Tolerance, Engaged in More Than Intended, Negative Aspects, Treatment Needed, and Timeline Dependent Indicators of Addictiveness showed small positive correlations with the Sexual objects category, and pornography was related to the highest number of Indicators of Addictiveness. The twelve objects not included in the factor structure also showed small correlations with various Indicators of Addictiveness, although all were related to the Negative Aspects Indicator of Addictiveness, and caffeine was related to the highest number of Indicators of Addictiveness. In conclusion, the results indicate a complex understanding of addictiveness and different profiles of perceived addictiveness for each object category.

Hypothesis Two: Significant Differences Between Objects in Terms of Which Indicators of Addictiveness are Selected. I ran multiple MANCOVA analyses on the Indicators of Objects' Addictiveness subscale of the Perceived Addictiveness Scale to understand which Indicators of Addictiveness were thought to be indicative of the addictiveness of each of the objects, with the demographic variables added in as potential correlates. Graphic profiles showing the percentage of endorsement for each Indicator of Addictiveness for various objects and object categories are shown in Figures 9 to 14, Appendix A. The first set of MANCOVAs included the three object categories and the second set of MANCOVAs used the individual objects. Mauchly's *W* were significant for all Indicators of Addictiveness, ranging from 0.00 to 0.02, when the objects were entered individually. Mauchly's W were non-significant for the Psychological Dependence, Withdrawal, Feels Irresistible, Loss of Control, Negative Aspects, Good Aspects, Timeline Dependent, and Treatment Needed Indicators of Addictiveness, ranging from 0.99 to 1.00, for the object categories. For all other Indicators of Addictiveness Mauchly's *W* was significant, ranging from 0.85 to 0.99. See Appendix A: Tables 47 and 108 for results of Mauchly's *W* tests. Given that sphericity was not assumed in most cases, the Greenhouse-Geiser statistic was used for the within-subjects tests.

Differences Between Objects in Endorsement of Indicators of Addictiveness. To understand whether there are any significant differences between objects in terms of their endorsement for each Indicator of Addictiveness, we looked at the Greenhouse-Geiser within-subjects tests (See Tables 48 to 62 and 109 to 123, Appendix A). When using the object categories, there were significant differences between objects for the Physical Dependence (F = 12.40, η_p^2 = 0.03), Withdrawal (F = 7.40, η_p^2 = 0.02), Creates Tolerance (F = 4.23, η_p^2 = 0.01), Incites Cravings (F = 1.81, η_p^2 = 0.00), Timeline Dependent (F = 11.17, η_p^2 = 0.02), and

Treatment Needed (F = 5.84, η_p^2 = 0.01) Indicators of Addictiveness. When objects were entered individually, there were significant differences between objects for all Indicators of Addictiveness. These results suggest that many of the differences between objects may only exist at the individual level, rather than factored object category; however, there were factored object category differences for six of the Indicators of Addictiveness.

Hypothesis Three: Substances and Gambling Were Perceived as More Addictive, With More Indicators of Addictiveness, Than Other Objects. To understand specific differences between means for endorsement in an Indicator of Addictiveness for the factored object categories and individual objects, I looked at the post-hoc tests for Indicators of Addictiveness with significant main effects for objects and object categories (See Tables 78 to 107 and 139 to 153, Appendix A). Given that there were main effects of the object categories for only the Physical Dependence, Withdrawal, Creates Tolerance, Incites Cravings, Timeline Dependent, and Treatment Needed Indicators of Addictiveness, post-hoc tests are only presented on these Indicators of Addictiveness for the factored objects. Whereas, post-hoc tests are presented for individual objects for the remaining Indicators of Addictiveness, since there were main effects for all Indicators of Addictiveness when objects were entered individually.

Feels Required. To understand the specific differences between mean endorsement in the Feels Required Indicator of Addictiveness for each object, I conducted post-hoc tests (see Tables 78 and 79, Appendix A for post-hoc test results).

Individuals endorsed the Feels Required Indicator of Addictiveness similarly for alcohol, nicotine, and opioids (means = 0.76 to 0.82), but less so for cocaine, cannabis, medications, and caffeine, which appeared similar to other objects such as eating (means = 0.47 to 0.65). Individuals endorsed this Indicator of Addictiveness similarly for masturbation, sexual activity

with a partner, pornography, playing games, shopping, technology, another person or relationship, adrenaline, and work (means = 0.17 to 0.24), as well as gambling, collecting objects, and television (means = .12 to .31) at times. Individuals endorsed this Indicator of Addictiveness for eating and smartphones (means = 0.50 and 0.40) in a similar way to social media (mean = 0.41). Finally, endorsement for this Indicator of Addictiveness for exercise, social media, and smartphones (means = 0.30 to 0.41) was similar to sugary food (mean = 0.37). Overall, it appears that alcohol, nicotine, and opioids had the highest rate of endorsement for the Feels Required Indicator of Addictiveness, whereas there was more variability across all other objects.

Physical Dependence. To understand the specific differences between mean endorsement in the Physical Dependence Indicator of Addictiveness for each factored object category, I conducted post-hoc tests (see Table 140, Appendix A for post-hoc test results). All three object categories appeared significantly different in terms of individuals endorsement of the Physical Dependence indicator. The Recognized Addictions object category (mean = 0.85) was the most highly endorsed, followed by the Sexual objects category (mean = 0.19), and then the Technological objects category (mean = 0.13). Overall, it appears that individuals endorse the Physical Dependence Indicator of Addictiveness more for the Recognized Addictions objects category than the other two object categories, although there were smaller differences between these object categories too.

Psychological Dependence. To understand the specific differences between mean endorsement in the Psychological Dependence Indicator of Addictiveness for each object, I conducted post-hoc tests (see Tables 82 and 83, Appendix A for post-hoc test results).

Individuals endorsed the Psychological Dependence Indicator of Addictiveness for

nicotine (mean = 0.69) in a similar way to alcohol and opioids (means = 0.75 and 0.68). Endorsement for this Indicator of Addictiveness was also similar for cocaine, cannabis, caffeine, and medications (means = 0.54 to 0.64). Endorsement for this Indicator of Addictiveness appeared similar for masturbation, sexual activity with a partner, pornography, playing games, exercise, shopping, technology, and another person or relationship (means = 0.30 to 0.38), as well as gambling, adrenaline, eating, smartphones, social media, and sugary food (means = 0.28 to 0.45). Individuals endorsed this Indicator of Addictiveness similarly for adrenaline, work, and television (means = 0.22 to 0.28), as well as collecting objects and technology at times (means = 0.21 and 0.30). Overall, it appears that the Psychological Dependence Indicator of Addictiveness is most highly endorsed for alcohol, opioids, and nicotine, followed by cocaine, cannabis, caffeine, and medications, and then all other objects at varying rates.

Withdrawal. To understand the specific differences between mean endorsement in the Withdrawal Indicator of Addictiveness for each factored object category, I conducted post-hoc tests (see Tables 142, Appendix A for post-hoc test results). All three object categories appeared significantly different in terms of individuals endorsement of the Withdrawal indicator. The Recognized Addictions object category (mean = 0.87) was the most highly endorsed, followed by the Technological objects category (mean = 0.40), and then the Sexual objects category (mean = 0.29). Overall, it appears that individuals endorsed the Withdrawal Indicator of Addictiveness more for the Recognized Addictions object category than the other two object categories, although endorsement was also higher for the Technological objects category compared to the Sexual objects category.

Creates Tolerance. To understand the specific differences between mean endorsement in the Creates Tolerance Indicator of Addictiveness for each factored object category, I conducted

post-hoc tests (see Table 143, Appendix A for post-hoc test results). All three object categories appeared significantly different in terms of individuals endorsement of the Creates Tolerance indicator. The Recognized Addictions object category (mean = 0.86) was the most highly endorsed, followed by the Sexual objects category (mean = 0.37), and then the Technological objects category (mean = 0.23). Overall, it appears that individuals endorsed the Creates Tolerance Indicator of Addictiveness more for the Recognized Addictions object category than the other two object categories, although endorsement was also higher for the Sexual objects category compared to the Technological objects category.

Incites Cravings. To understand the specific differences between mean endorsement in the Incites Cravings Indicator of Addictiveness for each factored object category, I conducted post-hoc tests (see Table 144, Appendix A for post-hoc test results). All three object categories appeared significantly different in terms of individuals endorsement of the Incites Cravings indicator. The Recognized Addictions object category (mean = 0.87) was the most highly endorsed, followed by the Sexual objects category (mean = 0.62) and the Technological objects category (mean = 0.59). Overall, it appears that individuals endorsed the Incites Cravings Indicator of Addictiveness more for the Recognized Addictions object category than the other two object categories, which were not significantly different from each other in terms of their endorsement of this indicator.

Feels Irresistible. To understand the specific differences between mean endorsement in the Feels Irresistible Indicator of Addictiveness for each object, I conducted post-hoc tests (see Tables 90 and 91, Appendix A for post-hoc test results).

Individuals endorsed the Feels Irresistible Indicator of Addictiveness somewhat similarly for alcohol, nicotine, cocaine, and opioids (means = 0.66 to 0.74). Endorsement for this Indicator

of Addictiveness for gambling, caffeine, cannabis, and medications also appeared somewhat similar (means = 0.42 to 0.52), as well as similar to other objects such as sugary food (mean = 0.40). Individuals endorsed this Indicator of Addictiveness similarly for masturbation, sexual activity with a partner, playing games, smartphones, eating, and adrenaline (means = 0.24 to 0.36), as well as shopping, technology, exercise, television, collecting objects, another person or relationship, pornography, social media, and sugary food at times (means = .18 to .40). These results suggest that alcohol, nicotine, cocaine, and opioids have higher mean endorsement scores for this Indicator of Addictiveness, followed by gambling caffeine, cannabis, and medications, and then other to varying degrees.

Engaged in More Than Intended. To understand the specific differences between mean endorsement in the Engaged in More Than Intended Indicator of Addictiveness for each object, I conducted post-hoc tests (see Tables 92 and 93, Appendix A for post-hoc test results).

Individuals endorsed the Engaged in More Than Intended Indicator of Addictiveness similarly for alcohol, cocaine, and opioids (means = 0.68 to 0.74). Endorsement for this Indicator of Addictiveness also appeared similar for nicotine, opioids, gambling, sugary food, and social media (means = 0.54 to 0.68), and cannabis (mean = 0.52) in some instances. Individuals similarly endorsed this Indicator of Addictiveness for cannabis, pornography, playing games, eating, shopping, smartphones, caffeine, and medications (means = 0.43 to 0.52), as well as social media and masturbation (means = 0.54 and 0.41) at times. Individuals endorsed the Engaged in More Than Intended Indicator of Addictiveness for pornography, sugary food, and eating similarly (means = 0.49 to 0.56). Endorsement for this Indicator of Addictiveness also appeared similar for sexual activity with a partner, exercise, another person or relationship, adrenaline, collecting objects, and work (means = 0.20 to 0.26), as well as technology and

television in some instances (means = 0.31 and 0.28). Overall, these results suggest that endorsement of this Indicator of Addictiveness was similar for gambling, alcohol, cocaine, nicotine, opioids, social media, sugary food, and cannabis, whereas other substances were more similar to other objects in terms of lower endorsement of this indicator.

Loss of Control. To understand the specific differences between mean endorsement in the Loss of Control Indicator of Addictiveness for each object, I conducted post-hoc tests (see Tables 94 and 95, Appendix A for post-hoc test results).

Individuals endorsed the Loss of Control Indicator of Addictiveness similarly for alcohol, nicotine, cocaine, and opioids (means = 0.71 to 0.77). Endorsement for this Indicator of Addictiveness for gambling (mean = 0.61) appeared similar to sugary food (mean = 0.53). This Indicator of Addictiveness was similarly endorsed for cannabis, pornography, eating, smartphones, social media, sugary food, caffeine, and medications (means = 0.44 to 0.53), as well as playing games at times (mean = 0.39). Individuals endorsed this Indicator of Addictiveness in a similar way for medications, masturbation, playing games, and shopping (means = 0.36 to 0.44), as well as technology in some instances (mean = 0.30). Finally, endorsement for this Indicator of Addictiveness was similar for sexual activity with a partner, exercise, television, another person or relationship, adrenaline, and work (means = 0.20 to 0.26), as well as technology and collecting objects in some instances (means = 0.30 and 0.27). These results suggest that alcohol, nicotine, cocaine, and opioids have similar high mean endorsement scores for this Indicator of Addictiveness, followed by gambling, and then all other objects. There also appeared to be some nuance in terms of endorsement for this Indicator of Addictiveness between many of the behaviors, with many of the other substances, food related, and technology-related objects being moderately endorsed for this indicator.

Negative Aspects. To understand the specific differences between mean endorsement in the Negative Aspects Indicator of Addictiveness for each object, I conducted post-hoc tests (see Tables 96 and 97, Appendix A for post-hoc test results).

Individuals endorsed the Negative Aspects Indicator of Addictiveness similarly for alcohol, cocaine, and opioids (means = 0.71 to 0.74). Endorsement for the Negative Aspects Indicator of Addictiveness for nicotine and gambling (means = 0.57 to 0.62) also appeared similar. Individuals endorsed this Indicator of Addictiveness similarly for cannabis, pornography, social media, sugary food, and medications (means = 0.38 to 0.46), as well as playing games and caffeine (means = 0.24 and 0.34) in some instances. This Indicator of Addictiveness was endorsed in a similar way for masturbation, sexual activity with a partner, playing games, and another person or relationship (means = 0.22 to 0.26), as well as smartphones, technology, adrenaline, and collecting objects in some instances (means = 0.20 to 0.30). Endorsement for this Indicator of Addictiveness was also similar for masturbation, eating, smartphones, shopping, caffeine, and adrenaline (means = 0.13 to 0.34), as well as social media (mean = 0.38) at times. Finally, individuals endorsed work, television, collecting objects similarly (means = 0.15 to 0.20), as well as sexual activity with a partner and exercise (means = 0.22 and 0.13) at times. These results suggest that alcohol, cocaine, and opioids have similar high mean endorsement scores for this Indicator of Addictiveness, followed by gambling and nicotine, and then all other objects.

Negative Consequences. To understand the specific differences between mean endorsement in the Negative Consequences Indicator of Addictiveness for each object, I conducted post-hoc tests (see Tables 98 and 99, Appendix A for post-hoc test results).

Individuals endorsed the Negative Consequences Indicator of Addictiveness similarly for

alcohol, cocaine, and opioids (means = 0.77 to 0.80). Endorsement for the Negative Consequences Indicator of Addictiveness for nicotine, cannabis, pornography, smartphones, and social media (means = 0.42 to 0.50) appear similar. Endorsement for the Negative Consequences Indicator of Addictiveness for gambling (mean = 0.68) appeared different from all objects. Individuals endorsed the Negative Consequences Indicator of Addictiveness similarly for masturbation, sexual activity with a partner, eating, technology, caffeine, another person or relationship, adrenaline, and work (means = 0.24 to 0.31), as well as sugary food, television, and collecting objects in some instances (means = 0.21 to 0.33). Endorsement for this Indicator of Addictiveness was similar for medications, work, technology, sugary food, and shopping (means = 0.30 to 0.39), as well as playing games, pornography, smartphones, and masturbation at times (means = 0.30 to 0.48). This Indicator of Addictiveness was also similarly endorsed for exercise, television, and collecting objects (means = 0.16 to 0.22). These results suggest that alcohol, cocaine, and opioids have similar high mean endorsement scores for this Indicator of Addictiveness, followed by gambling, and then all other objects.

Good Aspects. To understand the specific differences between mean endorsement in the Good Aspects Indicator of Addictiveness for each object, I conducted post-hoc tests (see Tables 100 and 101, Appendix A for post-hoc test results).

Endorsement for the Good Aspects Indicator of Addictiveness for opioids, pornography, gambling, alcohol, caffeine, medications, smartphones, and sugary food appeared similar (means = 0.15 to 0.22), as well as nicotine, cannabis, collecting objects, and cocaine in some instances (means = 0.13 to 0.23). Endorsement for this Indicator of Addictiveness for alcohol, cannabis, shopping, smartphones, technology, social media, caffeine, medications, adrenaline, collecting objects, and work (means = 0.19 to 0.27) appeared similar, as well as masturbation, sugary food,

television, and another person or relationship in some instances (means = 0.17 to 0.28). This Indicator of Addictiveness was similarly endorsed for masturbation, playing games, eating, television, another person or relationship, and work (means = 0.27 to 0.34), as well as exercise, sexual activity with a partner, shopping, technology, and social media in some instances (means = 0.25 to 0.39). These results suggest that endorsement scores for this Indicator of Addictiveness overall were low, although technological and some sexual objects appeared to have the highest endorsement for this indicator.

Causes Biological Changes. To understand the specific differences between mean endorsement in the Causes Biological Changes Indicator of Addictiveness for each object, I conducted post-hoc tests (see Tables 102 and 103, Appendix A for all post-hoc test results).

Endorsement for the Causes Biological Changes Indicator of Addictiveness appeared somewhat similar for alcohol, nicotine, cocaine, and opioids (means = 0.74 to 0.80). Individuals also similarly endorsed this Indicator of Addictiveness for cannabis, caffeine, and medications (means = 0.52 to 0.56), as well as sugary food (mean = 0.43) at times. Endorsement for the Causes Biological Changes Indicator of Addictiveness for gambling, masturbation, pornography, exercise, eating, social media, and adrenaline appeared similar (means = 0.22 to 0.29), as well as playing games and smartphones (means = 0.18 and 0.20) in some instances. This Indicator of Addictiveness was also similarly endorsed for sexual activity with a partner, playing games, exercise, shopping, and smartphones (means = 0.16 to 0.22), as well as technology, television, and another person or relationship in some instances (means = 0.12 to 0.15). Endorsement for this Indicator of Addictiveness was similar for technology, television, another person or relationship, and collecting objects (means = 0.10 to 0.15), as well as work (mean = 0.08) in some instances. These results suggest that the alcohol, nicotine, cocaine, and opioids have

somewhat similar high mean endorsement scores for this Indicator of Addictiveness, followed by cannabis, caffeine, medications, and sugary food, and then all other objects.

Timeline Dependent. To understand the specific differences between mean endorsement in the Timeline Dependent Indicator of Addictiveness for each object factor, I conducted post-hoc tests (see Table 152, Appendix A for post-hoc test results). The Recognized Addictions object category (mean = 0.69) appeared to be significantly higher than both other factors in terms of endorsement of the Timeline Dependent indicator. Whereas, the Sexual objects factor (mean = 0.30) appeared to be similar to the Technological objects category (mean = 0.32) in endorsement of this indicator. Overall, it appears that individuals endorsed the Timeline Dependent Indicator of Addictiveness more for the Recognized Addictions object category than the other two object categories, which were more similar in terms of endorsement.

Treatment Needed. To understand the specific differences between mean endorsement in the Treatment Needed Indicator of Addictiveness for each object factor, I conducted post-hoc tests (see Table 153, Appendix A for post-hoc test results). The Recognized Addictions object category (mean = 0.87) appeared to be significantly higher than both other factors in terms of endorsement of the Treatment Needed indicator. The Sexual objects factor (mean = 0.61) appeared to be the next most endorsed factor for this Indicator of Addictiveness, followed by the Technological objects category (mean = 0.45). Overall, it appears that individuals endorsed the Treatment Needed Indicator of Addictiveness more for the Recognized Addictions object category than the other two object categories, although endorsement was also higher for the Sexual objects category compared to the Technological objects category.

Aim Three: Understanding how Demographics are Related to Perceived Addictiveness

Hypothesis Four: Older, More Conservative, More Religious, Higher Educated Individuals With Less Personal Experience of Addiction and Higher Income Perceive Objects as More Addictive. To understand how each of the demographic variables relate to the perceived addictiveness of objects on the Perceptions of Addictiveness measure, I conducted correlations between the Level of Addictiveness of presented objects on this measure and each of the demographics (See Table 44, Appendix A).

Religiousness showed a small positive correlation with all five factors. Age was positively correlated with the Recognized Addictions object category and negatively correlated with the Technological and Sexual objects categories. Sex was positively related to the Recognized Addictions and Technological objects categories. Gender was negatively correlated with the Other objects category, such that identifying as cis-gender was related to less belief that these objects were addictive. White racial identity was positively correlated with the Recognized Addictions objects category, and negatively correlated with the Sexual objects category. Being in a relationship was positively related to the Technological, Sexual, and Other objects categories. Positive correlations appeared between some individual objects and religiousness, age, participants' sex, identifying as heterosexual, identifying as White, and being in a relationship. Some individual objects also appeared to be negatively correlated with being in a relationship, identifying as White, identifying as cis-gender, participants' sex, and age. Overall, these results suggested that religiousness was most often related to higher belief that an object was addictive and other demographics may also be variably related to the belief that a specific object is addictive.

Hypothesis Five: Different Indicators of Addictiveness Will be Selected Based on Individual Demographic Factors. To understand how each of the demographic variables relate to the perceptions of Indicators of Addictiveness on the Perceptions of Addictiveness measure, I conducted correlations between each of the Indicators of Addictiveness on this measure and each of the demographics (See Table 46, Appendix A).

Correlations between the demographic variables and Indicators of Addictiveness suggested that age and education level appeared to be most frequently related to these Indicators of Addictiveness. Age was positively correlated with the Creates Tolerance, Feels Irresistible, Loss of Control, Negative Aspects, Negative Consequences, Causes Biological Changes, and Treatment Needed Indicators of Addictiveness. Education was negatively related to the Feels Required, Physical Dependence, Feels Irresistible, Engaged in More Than Intended, Loss of Control and positively related to the Timeline Dependent and Good Aspects Indicators of Addictiveness. Sex was positively related to the Creates Tolerance, Feels Irresistible, Loss of Control, Negative Consequences, and Treatment Needed Indicators of Addictiveness. Identifying as heterosexual was positively correlated with Psychological Dependence, Feels Irresistible, Negative Consequences, and Causes Biological Changes Indicators of Addictiveness. white racial identity was negatively related to the Good Aspects indicator. Being in a relationship was negatively related to the Physical Dependence Indicator of Addictiveness and positively related to the Good Aspects and Timeline Dependent Indicators of Addictiveness. Current income was positively correlated with the Incites Cravings, Negative Aspects, God, Causes Biological Changes, and Timeline Dependent Indicators of Addictiveness. Political ideology was negatively related to Engaged in More Than Intended and Loss of Control and positively related to Timeline Dependent Indicators of Addictiveness. Religiousness was positively correlated with the Good

Aspects and Timeline Dependent Indicators of Addictiveness and negatively correlated with the Withdrawal and Loss of Control Indicators of Addictiveness. Finally, personal addiction experience was related to the Negative Consequences and Causes Biological Changes Indicators of Addictiveness. These results suggested that age and education level appeared to be most frequently related to these Indicators of Addictiveness and notably related to different sets of Indicators of Addictiveness.

Significant Interaction Between Demographics and Factored Objects for Some Indicators of Addictiveness. To understand how each of the demographics interacted with the object categories and their relationships to the Indicators of Addictiveness, I conducted within-subjects tests (See Tables 109 to 123, Appendix A, and for results when objects were entered individually, see Tables 48 to 62, Appendix A).

The within-subjects effects for the interaction between participants' sex and object categories was significant for the Negative Aspects (F = 3.78, η_p^2 = 0.01), Causes Biological Changes (F = 3.19, η_p^2 = 0.01), and Treatment Needed (F = 5.28, η_p^2 = 0.01) Indicators of Addictiveness. Regarding the Psychological Dependence (F = 4.55, η_p^2 = 0.01), Timeline Dependent (F = 4.36, η_p^2 = 0.01), and Treatment Needed (F = 4.00, η_p^2 = 0.01) Indicators of Addictiveness, within-subjects effects were significant for the interaction between identifying as cis-gender and object categories. The interaction between identifying as heterosexual and object categories was significant for the Withdrawal (F = 5.34, η_p^2 = 0.01), Loss of Control (F = 4.03, η_p^2 = 0.01), Negative Consequences (F = 3.56, η_p^2 = 0.01), and Treatment Needed (F = 4.63, η_p^2 = 0.01) Indicators of Addictiveness. The interaction between object categories and being in a relationship showed significant within-subjects effects for the Physical Dependence (F = 3.20, η_p^2 = 0.01), Withdrawal (F = 3.78, η_p^2 = 0.01), Creates Tolerance (F = 3.34, η_p^2 = 0.01), and

Incites Cravings (F = 3.78, η_p^2 = 0.01) Indicators of Addictiveness. The interaction between object categories and identifying as White showed significant within-subjects effects for the Causes Biological Changes Indicator of Addictiveness (F = 3.05, η_p^2 = 0.01). The interaction between object categories and education showed significant within-subjects effects for the Physical Dependence, Withdrawal, Creates Tolerance, Feels Irresistible, Good Aspects, and Treatment Needed (F = 3.11 to 9.01, η_p^2 = 0.01 to 0.02). The interaction between object categories and current income showed significant within-subjects effects for the Negative Aspects (F = 5.68, η_p^2 = 0.01) and Treatment Needed (F = 4.86, η_p^2 = 0.01) indicator. The interaction between object categories and political ideology showed significant within-subjects effects for the Treatment Needed (F = 3.95, η_p^2 = 0.01) indicator. The within-subjects effects for the interaction between religiousness and object categories was significant for the Feels Required, Physical Dependence, Creates Tolerance, Loss of Control, Negative Consequences, and Causes Biological Changes Indicators of Addictiveness (F = 4.27 to 8.34, η_p^2 = 0.01 to 0.02). Within-subjects effects were also significant for the interaction between personal addiction experience and object categories for the Physical Dependence (F = 4.29, η_p^2 = 0.01) indicator. Within-subjects effects were also significant for the interaction between age and object categories for the Feels Required, Psychological Dependence, Loss of Control, Negative Aspects, Causes Biological Changes, and Treatment Needed Indicator of Addictiveness (F = 3.10 to 7.33, η_p^2 = 0.01 to 0.02).

These results show that all, but one, Indicators of Addictiveness were impacted by the interaction between demographics and object categories, with education, age, and religiousness interacting with object categories the most frequently. This suggests that each Indicator of Addictiveness may be suggestive of different object's addictiveness based on the demographic

characteristics of respondents.

Demographics Impact on the Relationship Between Indicators of Addictiveness and Factored Objects. To understand whether the demographics were significant covariates in the relationship between the object categories and Indicators of Addictiveness, I consulted between-subjects effects (See Tables 124 to 138, Appendix A, and for results when objects are entered individually see Tables 63 to 77, Appendix A).

There was a significant between-subjects effect for religiousness (F = 3.94 to 14.85, η_p^2 = 0.01 to 0.03) and personal experience of addiction (F = 4.24 to 18.12, η_p^2 = 0.01 to 0.04) for all Indicators of Addictiveness, except Feels Required, Physical Dependence, Creates Tolerance, Good Aspects, and Timeline Dependent. There was also a significant between-subjects effect for personal experience of addiction for the Creates Tolerance (F = 9.88, η_p^2 = 0.02) and Causes Biological Changes (F = 7.22, η_p^2 = 0.02) indicator. There was a significant between-subjects effect for participants' sex in the Negative Aspects (F = 4.19, η_p^2 = 0.01) and Negative Consequences (F = 5.25, η_p^2 = 0.01) Indicators of Addictiveness analyses. Being in a relationship showed a significant between-subjects effect for the Treatment Needed (F = 3.91, η_p^2 = 0.01) indicator. Identifying as heterosexual showed a significant between-subjects effect for the Physical Dependence (F = 5.26, η_p^2 = 0.01) and Negative Consequences (F = 6.26, η_p^2 = 0.01) Indicators of Addictiveness. Between-subjects effects were significant for childhood income for the Withdrawal (F = 4.76, η_p^2 = 0.01), Negative Aspects (F = 4.03, η_p^2 = 0.01), Causes Biological Changes (F = 4.79, η_p^2 = 0.01), and Treatment Needed (F = 4.07, η_p^2 = 0.01) indicator. Between-subjects effects were significant for education for the Incites Cravings (F = 4.83, η_p^2 = 0.01) and Negative Consequences (F = 4.95, η_p^2 = 0.01) indicator. Between-subjects effects were significant for identifying as age for the Causes Biological Changes (F = 5.02, η_p^2 =

0.01) indicator. Overall, personal experience of addiction and religiousness impacted the endorsement of the highest number of Indicators of Addictiveness. Further, the Negative Consequences Indicator of Addictiveness was most often affected by demographic variables.

Study 3 Discussion

Across analyses, the Perceived Addictiveness measure appeared to continue to have moderate evidence of convergent validity and generally acceptable metrics of internal consistency, with a consistent three-factor structure for objects' Level of Addictiveness. As expected in hypothesis two, there appeared to be significant differences in endorsement of Indicators of Addictiveness between objects when considered individually. However, when considered as factors there only appeared to be differences for the Physical Dependence, Withdrawal, Creates Tolerance, Incites Cravings, Timeline Dependent, and Treatment Needed Indicators of Addictiveness. Somewhat in line with hypothesis three, alcohol, nicotine, opioids, and cocaine were perceived as more often suggested by most of the Indicators of Addictiveness than other objects, while gambling, medications, caffeine, and cannabis were more similar to other objects at times. Further, when looking at the object categories, the Recognized Addictions object category was perceived to be significantly more suggested by all Indicators of Addictiveness, except the Good Aspects indicator. However, in some cases there were also significant differences between behaviors or the Technological and Sexual object categories. Only some elements of hypothesis four bore out in these results, specifically more religious individuals perceived most objects as more addictive and older individuals perceived substances and gambling as more addictive. However, younger individuals perceived sexual and technological objects as more addictive. Finally, in line with hypothesis five, religiousness appeared to be the most influential on the relationship between objects and Indicators of

Addictiveness, although several other demographics effected this relationship in multiple circumstances.

GENERAL DISCUSSION

Debates continue regarding what is meant when an object is called *addictive* and what factors may affect those perceptions. As such, at the outset of this study, I proposed three aims: 1) to understand what is meant when individuals refer to something as *addictive*, 2) to understand whether the object being discussed changes the perceived meaning of *addictiveness* or the amount of distress expected, and 3) to understand which factors may be correlates of the above perceptions. In service of the first aim, I conducted a phenomenological, hermeneutic, qualitative study (Study 1) looking at what it means to say something is addictive. Using the results of this study and in service of all three aims, I created a measure of Perceived Addictiveness (including perceived Indicators of Addictiveness and perceived Levels of Addictiveness of various objects), for which I tested convergent validity, internal consistency, and underlying factor structure in the two following studies. In service of the second aim, I examined the descriptive statistics regarding the perceived addictiveness of 16 objects in Study 1, conducted correlations between the perceived Indicators of Addictiveness and perceived Levels of Addictiveness of various objects (i.e., parts one and two of the Perceived Addictiveness measure) in undergraduates (Study 2) and a national sample (Study 3), and conducted a series of MANCOVA analyses to assess which Indicators of Addictiveness were thought to suggest the addictiveness of various objects and object categories (Indicators of Objects' Addictiveness subscale) in Studies 2 and 3. In service of the third aim, I conducted correlations in Studies 2 and 3 between multiple demographic and individual factors and both the Indicators of Addictiveness and Levels of Addictiveness of various objects, and included these demographic and individual factors as potential covariates in the MANCOVA analyses in Studies 2 and 3. Below, I summarize the results of these three studies, elaborate and discuss these results, integrate those results with

previous literature, discuss the implications of my work, and consider limitations and future directions.

Summary of Results

Related to the first aim of this dissertation, results of a qualitative study (Study 1) showed that perceptions of the addictiveness of objects are variable. More specifically, results indicated that there are multiple indicators of addictiveness, including whether the substance or behavior feels required, feels irresistible, necessitates treatment, what the cause is, how the substance or behavior is used, whether it has positive or negative aspects, and the specific substance or behavior itself.

As such, regarding my first hypothesis, that the symptoms presented in the DSM-5 and ICD-11 related to addictive disorders would be present in the perceptions of addictive disorders within the qualitative analysis, results generally supported this conclusion. Specifically, results of Study 1 suggest that there is considerable variation in what individuals mean when they say that something is addictive, expanding beyond diagnostic criteria. For example, on top of including indicators such as a sense of loss of control, perceived indicators of addictiveness also included the positive and negative aspects of a substance or behavior.

In service of all three aims, the Perceived Addictiveness measure was created and demonstrated good internal consistency overall regarding both Indicators of Addictiveness and Levels of Addictiveness of objects, as well as moderate-to-good internal consistency for Levels of Addictiveness of most of the object categories. The Sexual objects category demonstrated limited internal consistency in the national sample, suggesting that there is likely more variability within this factor than other factors. The Perceived Addictiveness measure showed convergent validity with some established measures but also appeared to diverge from other measures.

Specifically, the Indicators of Addictiveness subscale of the Perceived Addictiveness Scale appeared moderately similar to the Definitions of Addiction Scale (Chassin et al., 2007), which focuses on appetitive and compulsive aspects of an object's addictiveness. The Indicators of Addictiveness subscale achieved some primarily small, positive correlations with the subscales of the Addiction Belief Inventory (Luke et al., 2002) and the Harmfulness of Objects Scale (Pedersen & Von Soest, 2015). The objects' Level of Addictiveness on the Perceived Addictiveness measure demonstrated moderate, positive correlations with the Harmfulness of Objects Scale (Pedersen & Von Soest, 2015). Finally, the objects' Level of Addictiveness showed a consistent three-factor structure across Studies 2 and 3, including Recognized Addictions, Sexual objects, and Technological objects.

Related to the second aim of this dissertation, results of the MANCOVA and correlation analyses supported my second hypothesis that there would be significant differences between objects in terms of which Indicators of Addictiveness were selected, suggesting different manifestations of distress. Specifically, there were significant differences in terms of endorsement of various Indicators of Addictiveness based on the object or object category. Results from Studies 2 and 3 suggest that all Indicators of Addictiveness were endorsed as a sign of addictiveness for at least some objects assessed. However, there were significant differences between objects in terms of endorsement for the Physical Dependence and Causes Biological Changes Indicators of Addictiveness in both samples and all Indicators of Addictiveness in the national sample.

Moving further and regarding my third hypothesis, that substances and gambling would be perceived as more addictive, with more Indicators of Addictiveness, than other objects, was only somewhat supported by my results. Generally, substances appeared to have similarly high Levels

of Addictiveness and endorsement for all of the Indicators of Addictiveness, whereas behaviors' endorsement appeared more moderate and variable, particularly in regard to physical or biological Indicators of Addictiveness. Given that the Physical Dependence and Causes Biological Changes Indicators of Addictiveness were the only Indicators of Addictiveness to consistently have differences between objects, it is likely that physical Indicators of Addictiveness are important distinguishing features between substances and behaviors. Notably, while gambling was perceived as more addictive than other behaviors, endorsement for most Indicators of Addictiveness appeared similar to other behaviors. Behaviors, including the Technological and Sexual objects categories appeared more similar to each other in terms of perceived Level of Addictiveness and which Indicators of Addictiveness were endorsed for them. Despite this, there were still some significant variations between behaviors, suggesting more nuance here.

Related to the third aim of this dissertation, all demographics were correlated with at least one of the objects and, with the exception of childhood income, at least one of the Indicators of Addictiveness. These results suggest that these demographics may be important to consider when studying perceptions of addiction.

My fourth hypothesis, that older, more conservative, more religious, higher educated individuals with less personal experience of addiction and higher income would perceive objects to be more addictive than other individuals, was partly supported by these results. Specifically, older, more religious individuals perceived objects to be more addictive, but individuals with more addiction experience also perceived objects to be more addictive.

Finally, my fifth hypothesis, that there would be significant differences in terms of the Indicators of Addictiveness selected with regard to individual demographic factors (e.g., age,

gender, personal experience, etc.) and other key variables (i.e., political ideology and religiosity), was supported by these results. Sex, identifying as heterosexual, being in a relationship, education, religiousness, and personal addiction experience were consistently significant covariates in the relationship between objects and Indicators of Addictiveness, with religiousness and personal addiction experience being the most influential. Conversely, white racial identity and income did not appear to affect the relationship between objects and Indicators of Addictiveness, which is contrary to my hypotheses, and family income and age were only significant covariates in the national sample. As such, there was variability in which demographic covariates significantly impacted the relationship between objects/object categories and Indicators of Addictiveness.

Evaluating the Perceived Addictiveness Measure

There appeared to be some convergent validity for the Perceived Addictiveness measure when compared to the Definitions of Addiction Scale, the Addiction Belief Inventory, and the Harmfulness of Objects Scale (Chassin et al., 2007; Luke et al., 2002; Pedersen & Von Soest, 2015). The appetitive and compulsive aspects of an object's addictiveness are the foci of the Definitions of Addiction Scale (Chassin et al., 2007). These aspects were also two of the major Indicators of Addictiveness and themes highlighted in the present work in both the qualitative study (Study 1) and Perceived Addictiveness measure (Studies 2 and 3), which likely explains the similarities found between these scales. Despite having various indicators of addictiveness regarding the "goodness or badness" of an object, biological changes, and feeling out of control, the Indicators of Addictiveness subscale did not appear related to the moral, genetic, or lack of control subscales of the Addiction Belief Inventory (Luke et al., 2002). Similarly, while multiple Indicators of Addictiveness relate to negative consequences as an element of addictiveness, the

various Indicators of Addictiveness did not appear related to the categories of harmfulness in the Harmfulness of Objects Scale (Pedersen & Von Soest, 2015). While it is unclear why this was the case, it seems likely that the more general and broad view of the Indicators of Addictiveness subscale on the Perceived Addictiveness measure may not have clearly mapped onto these more specific areas. As such, the Indicators of Addictiveness included in this measure have some similarities to other quantitative measures.

The organization of the various potentially addictive objects appeared to show a consistent three-factor structure: Recognized Addictions, Sexual objects, and Technological objects. Further, the factor including sexual objects initially also included behaviors such as collecting objects and adrenaline-seeking activities, suggesting an overall compulsive/impulsive behaviors factor. However, this was not consistent in Study 3, in which these two behaviors (collecting objects and adrenaline-seeking activities) loaded onto the Other factor instead of with the sexual behaviors, leading to questions about how similar sexual objects are perceived to be to compulsive/impulsive behaviors. In some ways, this echoes ongoing debates in scientific literature about the appropriate taxonomical classification of CSBD in diagnostic manuals (Fuss et al., 2019; Sassover & Weinstein, 2020).

What Addictive Means

These results show a wide range of potential meanings of *addictive*, based on multiple factors. The qualitative results highlight this variability and potential areas of meaning that diagnostic manuals miss, such as whether something is considered socially acceptable.

Integration With Prior Literature

Prior works have focused on how the public perceives DSM criteria or models of addiction as indicative of whether an object is *addictive* (e.g., Broadus & Evans, 2015; Lang & Rosenberg,

2017), many of which are similar to the indicators of addictiveness found in the qualitative study, such as the physical effects of an object. As such, it appears likely that many in the public consider these criteria as potential indicators of addictiveness. In other words, the view that objects produce pleasurable effects which reinforce continued use resulting in problems in an individual's life appears to be both a pervasive indicator of addictiveness in diagnostic manuals and in public perception. However, past work suggests that such criteria does not allow participants to accurately identify addictive behaviors in vignettes (Jamieson & Dowrick, 2021). As such, using diagnostic criteria may be limited in terms of capturing the full meaning of *addictive* which clients may use, and therefore also in terms of their diagnostic accuracy. This is supported by my results which also note other indicators of addictiveness which are not included in diagnostic criteria and may help these problems with accuracy.

Results from all three studies suggest that the perceived indicators of addictiveness expand beyond diagnostic definitions. The indicators of addictiveness identified through the qualitative study also include how "good" the object was perceived to be, the type of object that was being considered, whether the object creates a kind of psychological dependence, and the type of treatment that could be important. These indicators of addictiveness reflect those identified in other qualitative research focused on indicators of addictiveness of nicotine and food addiction (Collins et al., 2021; O'Loughlin et al., 2002; Wang et al., 2004). In this way, objects appeared to be considered more on a continuum of addictiveness with a range of potential indicators of addictiveness that may be better described by more ontological (Hellman, 2021) or dimensional frameworks, such as the HiTOP framework (e.g., Kotov et al., 2018). For example, Boness et al. (2021) created a similar dimensional framework for alcohol use disorder, and some of the indicators of addictiveness identified in this dissertation map onto these

dimensions (e.g., the Feels Irresistible theme from Study 1 maps onto most of Boness and colleague's Super-domain of Cognitive Control). These results also expand upon other studies looking at indicators of addictiveness for substances by looking more broadly at any object that they perceived as *addictive* (e.g., O'Loughlin et al., 2002; Wang et al., 2004). In these ways, the Perceived Addictiveness measure can be seen as more comprehensive than prior measures of beliefs about addictiveness.

As alluded to earlier, some prior works have used qualitative methods to understand perceptions of addiction, such as Carter et al.'s (2020) study looking at children's perceptions of a video game addiction. They categorized three uses of the term *addiction* which have similarities to the indicators of addictiveness coded in my qualitative study. Specifically, their study suggested that the use could be considered as (i) in reference to a preferred or favorite game, (ii) referring to spending lots of time playing a certain game without compulsion or problems, or (iii) as a compulsion to keep playing a game. These could be seen as similar to the (i) Good Aspects, (ii) Timeline Dependent, and (iii) Feels Irresistible indicators of addictiveness found in Study 1. Carter et al.'s (2020) definitions also highlight the potential continuum of addictiveness that may be perceived as possible for an object.

Given the variability in the endorsement of the "Good Aspects" and "Negative Aspects" Indicators of Addictiveness, public perceptions of addictiveness may also be somewhat related to the Moral/Ethical models, which note the importance of the "goodness" or "badness" of an object. Rather than being bad in themselves, substances may be considered to have worse negative outcomes when they become *addictive* than behaviors, thereby also explaining why they have higher overall endorsement of Indicators of Addictiveness. Higher scores on the Harmfulness of Objects Scale (Pedersen & Von Soest, 2015) for substances, compared to

behaviors, appears to support this hypothesis.

Different Objects Appear Addictive in Different Ways

There appeared to be significant variability between objects in terms of the endorsement of each Indicator of Addictiveness and across Indicators of Addictiveness, suggesting that there is not one clear set of indicators of addictiveness for all objects but rather different profiles of indicators of addictiveness for certain types of objects. Specifically, objects which are commonly considered *addictive* by the scientific community (i.e., substances and the Recognized Addictions object category) were perceived to be more addictive than other objects; and participants endorsed almost all Indicators of Addictiveness as highly suggestive of these objects' addictiveness. Sexual and Technological object categories appeared to be perceived as the next most addictive, though the Indicators of Addictiveness which suggested this addictiveness appeared to be more variable, and the other non-factored objects inconsistently appeared similar to these object categories.

The Physical Dependence and Causes Biological Changes Indicators of Addictiveness appeared to be the only Indicators of Addictiveness in which there were consistently significant differences between objects, suggesting that this may be an important difference in the way objects are perceived (or not perceived) as addictive. Behaviors in general also appeared to be similar and higher in their endorsement of the Good Aspects Indicator of Addictiveness than substances, suggesting that substances are perceived as mostly bad things which can be addictive but behaviors can be good things which are addictive. However, more differences were noted between objects in the national sample than the undergraduate sample.

When looking specifically at behaviors assessed, there was considerable variation between objects in terms of endorsement of Indicators of Addictiveness and they were generally

considered significantly less addictive. Regarding the sexual objects in this dissertation, pornography was considered more addictive and often endorsed the Indicators of Addictiveness at a higher rate than masturbation and sexual activity with a partner in the national sample. This suggests that pornography use is perceived as the most addictive sexual object, while masturbation and sexual activity with a partner are more similar. Regarding the technological objects, technology and playing games appeared to be perceived as less addictive and endorsing the Indicators of Addictiveness at a lower rate than smartphones and social media in the national sample. These results suggest that smartphones and social media are perceived as more addictive than gaming.

Integration With Prior Literature

Prior works have blamed the variability and overall endorsement of indicators of addictiveness on the high number of objects which are considered addictive, leading to the belief that the concept of *addictiveness* has been lost (Coleman, 1990). While such authors may be excused for believing this given the high variability in the results of this dissertation, there also appeared to be some distinct groups of objects which had similar levels of endorsement for each indicator. This suggests that the concept of *addictiveness* has not lost its meaning but rather has more variation than we typically admit, particularly between substances and behaviors.

Current definitions and understanding of substance use disorders and related addictive disorders focus more on the physical aspects, particularly in relation to the Medical/Disease model or the Brain Disease model of addiction (e.g., Volkow et al., 2016). This focus on the biological and physical aspects of *addictiveness* appears to also be in the public conception of *addictiveness* for substances, but less so for behaviors, given that my results. These results are similar to those of Alavi et al. (2012), who found that physical aspects of addictiveness were a

key way of distinguishing substances and behaviors in scientific literature's definition of *addictiveness*. However, they are contrary to the results of Jamieson and Dowrick (2021) who found that gambling was seen as more addictive than substances using ICD-10 criteria.

The public perceptions found in my studies appear to somewhat align with scientific debates, particularly in terms of differences between substances and behaviors and between behaviors themselves. The diagnostic manuals recognize various substances and gambling as potentially addictive objects, and these were also the objects that were seen as most addictive. However, as scientific debate continues about how gambling may be considered *addictive* and how the criteria should be the same or different from substances, participants in my studies also endorsed most of the Indicators of Addictiveness at lower rates for gambling than they did for substances. Such differences suggest that, though gambling is seen to be *addictive* generally, it is judged as such in a different way than substances. Similarly, while cannabis is not a behavior, it's addictiveness is culturally controversial with many arguing against it's addictiveness in the scientific community (e.g., Fares, 2018; Gritsenko et al., 2020). In my results, cannabis initially appeared to act uniquely and was considered its own factor in Study 2, but in the national sample it appeared closely related to various other objects and object categories in terms of Level of Addictiveness. Further, the endorsement of each Indicator of Addictiveness for cannabis was most often like other substances, even though it was often seen as less addictive. This suggests that the social context of an object, even when it is a substance, can affect the perceptions of addictiveness.

Socially there has been increasing emphases put on the potentially addictive nature of technology, such as social media and playing games, and sexual behaviors, such as pornography. Current debates around the concept of behavioral addictions, particularly technology and sexual

addictions, focuses on which objects may be addictive, how to avoid over-pathologizing, delineating diagnostic criteria, and whether such struggles fit best with addictive disorders or another category of diagnoses (e.g., Billieux et al., 2015; Kardefelt-Winther et al., 2017; Satchell et al., 2020; Van der Linden, 2015). While these debates are beyond the scope of this paper, my results suggest that sexual behaviors and technology generally are considered *addictive* in the public mind. They also show that the diagnostic criteria for these struggles may have some differences to the already acknowledged substance use disorders. In this way, it is possible that these difficulties may fit better with another or new category of diagnoses, focusing less on the physical aspects of addictiveness.

Moreover, it appears that perceptions of the addictive nature of technology and sexual behaviors may also be nuanced. Prior works highlight the perceived potential addictiveness of pornography over other compulsive sexual behaviors (Grubbs et al., 2020), which is also mirrored in the results of this dissertation showing that pornography was considered more addictive than masturbation or sexual activity with a partner. Regarding the technological objects, there has been concern that the addition of Gaming Disorder to the ICD was sped up by public and political pressure rather than careful scientific inquiry (e.g., Rooij et al., 2018). My results showed that smartphones and social media were perceived as more addictive than gaming in a US sample, which suggests that individuals in the USA likely see gaming as less problematic than suggested by the ICD, supporting this concern. This is perhaps even more the case given that the Negative Aspects Indicator of Addictiveness was endorsed more highly for social media than playing games, suggesting that social media may be considered as worse for people than gaming in public opinion. As such, it is likely that differing perceptions of gaming and addiction in other countries may have impacted the decision to include this diagnosis in the

ICD.

The Impact of Demographics on Perceived Addictiveness

Religiousness and personal addiction experience appeared to be the most consistent and influential covariates in the relationship between objects and Indicators of Addictiveness. However, it is clear from these results that other demographic variables also matter in how people evaluate the Level of Addictiveness of a particular object.

Integration With Prior Literature

Given prior works and history, it is not surprising that religiousness was an important factor. These prior works have shown that higher religiosity is related to beliefs that certain objects are more addictive, such as pornography (e.g., Bradley et al., 2016), and historical situations show us how religion can affect social beliefs about addictiveness (e.g., American Temperance Movement). Similarly, prior works have noted that personal experience of addiction can impact beliefs about the addictiveness of an object, whereby less addiction experience is related to views that objects are more *addictive* (e.g., Blomqvist, 2012).

My results suggest that some of these demographics impact the perceptions of addictiveness, which may impact wider scientific views. In this way, the concept of *addictiveness* may be seen as at least somewhat of a social construction (e.g., Davies, 1998). Relatedly, perceptions of addictiveness may be seen to follow the Moral/Ethical model, given that the objects which individuals consider to be negative are perceived more addictive. However, such perceptions and social beliefs are likely to change over time, as they have before, and therefore the beliefs about what is *addictive* and what suggests *addictiveness* may also change. In this way, these results can be seen as a snapshot of current perspectives on *addictiveness*, a way to measure such perceptions in the future, and a starting point for which

factors may be important in the future.

Implications

Overall, results from these studies point to some factors which impact what is considered *addictive* and what *addictiveness* means. The nature of these findings may have some implications for researchers, clinicians, and policy makers. Below, I consider these implications.

Research Implications

Future research is needed to investigate whether the Perceptions of Addictiveness measure continues to be reliable and valid, potential factors impacting perceptions of addictiveness, how these perceptions change over time, and how they affect clinical work and public policy. While this project included two studies which assessed the Perceptions of Addictiveness measure, more work is needed to ensure its validity, internal consistency, and reliability when assessing perceptions.

Given that, historically, perceptions of addiction and addictiveness have changed over time, it is imperative that future work continue to look at ways in which these perceptions change and the factors which influence these changes. Longitudinal studies looking at changes in perceptions of more controversial objects which are becoming increasingly available, such as cannabis, and factors which affect these perceptions would be beneficial. Such works would allow a clearer picture of how these perceptions may change and how a variety of factors may impact them. While the Perceived Addictiveness measure in this dissertation appeared to show promise as a method of assessing such changing perceptions, future research should continue to assess its validity and reliability over time, as well as modify it as necessary based on potential changing views of addictiveness. This could be done by adding a qualitative question asking for any further Indicators of Addictiveness or addictive objects at the end of each subscale.

Results from the current work note the importance of religiousness, personal addiction experience, and the type of object being discussed on perceptions of addictiveness. However, further work is needed to understand nuances more fully within these variables in terms of their relationship with perceptions of addiction, particularly in the case of personal addiction experience. Other factors may further account for variability in perceptions of addictiveness, such as the object or closeness of personal addiction experience a person has had. Prior work has noted the potential link between perceptions of addictiveness and stereotyping of objects or discrimination of those who are considered users of those objects (e.g., Cover, 2006), suggesting that this may be a fruitful area of research. It would also be beneficial to study how these results may translate into other cultures and countries (e.g., Park, 2020). Research looking into how relationships between these potential covariates and perceptions of addictiveness impact clinical work, public policy, and research decisions (such as funding) may also be important in uncovering potential biases within these domains.

Future work should also focus on how beliefs about addictiveness impact clinical work and public policy. Specifically, treatment availability and rules about use can be significantly impacted by whether an object is considered *addictive* by those in power, which can make obtaining help for distress regarding some objects difficult and cause potentially unnecessary pain for those who use an object. As such, researchers should look at how the perceived addictiveness of an object impacts providers' and policy makers' perceptions of responses to that object, and the factors which may affect these beliefs. While some work has been done looking at substances (e.g., Bonar & Rosenberg, 2010), more needs to be done to focus on other substances and behaviors. Further, work should continue to look at how client and provider demographics and experiences may impact these perceptions, and therefore client's ability to

cope with distress and obtain treatment if needed.

Clinical Implications

Perceptions of addictiveness can impact treatment availability and understanding client perspectives could improve providers' ability to support those in distress. These results suggest that perceptions of addictiveness can vary, and that personal addiction experience and religiousness may be important factors in these perceptions. Prior work has noted similar potential biases in terms of both treatment and diagnosis of addictions. For example, prior work has found that more religious providers were more likely to perceive a client as a "sex addict" and that pornography is a serious public health issue than those with lower religiosity (Droubay & Butters, 2020; Hecker et al., 1995). Further, higher religiosity appears to be related to more negative attitudes towards addiction in general and a stronger support of spiritually based treatments in providers (Grant Weinandy & Grubbs, 2021). As such, providers should be aware of potential biases that they may have when diagnosing and treating those in distress.

Given that we know beliefs about addiction can impact treatment availability and that education can change these perceptions to be potentially more accurate (e.g., Goddard, 2003; Karam-Hage et al., 2001; Leshner, 1997), it would likely be beneficial for providers to receive evidence-based education on a full range of potentially addictive disorders. Such education should target all providers, including nurses, doctors, and therapists, allowing for a more consistent provision of treatment options and wider understanding of potential distress. This education could focus on potential client beliefs about addictiveness, ways in which demographics can impact provider beliefs, and a variety of treatments that could help perceived distress.

The results of this project suggest variability in terms of beliefs about addictiveness,

suggesting that providers should be aware that their beliefs about addictiveness may not align with their client's or other providers' beliefs. Similarly, client perceptions of addictiveness may not align with diagnostic manuals, which could lead to client's reporting undiagnosable distress. This distress should still receive adequate attention and clinicians may consider using treatments such as Acceptance and Commitment Therapy or harm reduction techniques to support client's engagement in more value consistent behavior. Further, given this variability in perceptions, providers would be well-advised to ask clients about their beliefs about the *addictiveness* of an object and not assume similar beliefs or understanding. Finally, prior works have noted the impact of diagnostic manuals' definitions on public perceptions of addiction, which suggests that these manuals should also be careful about how they use this term (e.g., Kelly, 2008; Klein et al., 2013).

Public Policy Implications

Perceptions of addictiveness matter in terms of influencing policy making, treatment availability, the consequences of use for the public, and public perceptions of addictiveness (e.g., Leshner, 1997). One such example lies in the consideration of pornography as a public health crisis, a resolution that has been proposed or passed by 17 states so far and an issue which has garnered significant discussion in scientific literature and public forums (e.g., Grubbs et al., 2022; Nelson & Rothman, 2020). These scientific works have noted the religious influence on such resolutions, highlighted the lack of research support for several cited consequences, and questioned the use of the term *public health crisis* in this context, given that pornography has not been shown to fit this definition. As such, there is concern that these policy changes are negatively impacting the population by rerouting resources from other potential concerns, stigmatizing individuals and behaviors, and restricting sexual freedom. In this way and related to

my results, policy makers should be particularly careful about their own biases and beliefs about addictiveness and the use of the term *addictive*.

Policy makers have previously been cautioned to be aware of how their worldview may impact their beliefs and decisions regarding addictiveness (e.g., Peyser, 2002). The results of this project highlight the importance of policy makers doing this by noting the wide variability in perceptions and the impact of personal factors, such as religiousness, on these perceptions. Given this, policy makers would likely benefit from taking time to consider their own biases when making decisions about addictions and focusing on scientific research looking at the actual impact and problems experienced by those who use an object.

Limitations

This study has several limitations, including researcher biases, sample biases, variable convergent validity for the Perceived Addictiveness measure, some reduced variance within demographic variables, and small effect sizes.

Particularly in the case of the qualitative Study 1, it is likely that my own biases and beliefs somewhat impacted the interpretation of data. For example, the high similarity between the indicators of addictiveness and diagnostic criteria may be related to my own background knowledge and the factor analysis may have been impacted by my own beliefs about which objects go together. However, my use of consultation with others through this process may have mitigated some of this bias.

There was also bias within the samples, both in terms of demographics and the sampling methods. Specifically, the samples included a high number of individuals who identified as White, heterosexual, cis-gender, college educated, middle class, and Christian. In my results, identifying as White and income did not appear to affect the relationship between objects and

factors, which is contrary to prior research (e.g., Provine, 2011). This may be due to sampling bias and low variance in these demographics within the samples, for example, undergraduates likely have more similar and higher income. The differences in significance between the undergraduate and national samples may also be due to the wider variance in these demographics in a non-college sample. All samples were also focused on populations living in the USA. In this way, the generalizability of these results is limited, particularly in terms of understanding non-WEIRD populations (e.g., Rad et al., 2018). While the inclusion of both a college sample and national sample allows these results to be more generalizable, there have been issues noted with MTurk, which was used to collect the national sample (Hauser et al., 2019). Attention checks were used to help mitigate these known problems, but it is acknowledged that such concerns may be attributable to this work too. Nevertheless, these studies were designed to be exploratory in nature and therefore give a potential starting point for future works in this area.

The Perceived Addictiveness measure showed no to minimal correlations with the Harmfulness of Objects Scale and the Addiction Belief Inventory (Luke et al., 2002; Pedersen & Von Soest, 2015), potentially due to modifications made to these measures. These measures were modified to focus on additions in general and not just substances, which was done to allow it to be a measure of convergent validity on all objects. However, doing so may have changed the measures validity itself, thereby unintentionally reducing possible convergent validity.

Some of the demographic variables were made dichotomous for the purposes of the correlation and MANCOVA analyses, but this may have reduced variance and my ability to understand more nuanced differences. For example, within the personal addiction experience variable there may have been differences between whether experience was in the person's life or one of their friends or family, or between the object with which they had addiction experience.

These results noted the importance of these demographics in an exploratory way, suggesting that these nuances are studied moving forwards.

Finally, while multiple demographics were used as covariates and many objects were included, the effect sizes remained relatively small for each of the Indicators of Addictiveness in the MANCOVA analyses. It is likely that other factors may be important when trying to understand what impacts perceptions of addictiveness. For example, country of origin, social relationships, and media exposure may impact perceptions in a meaningful way (e.g., Burke & MillerMacPhee, 2020) and these also require further research. Alternatively, the multiple covariates which interacted with the objects included in the MANCOVA could have reduced the overall power, leading to artificially smaller effect sizes (Leppink, 2018).

CONCLUSION

The definitions of *addictiveness* and what is considered an *addiction* have been fluid over time, often being heavily influenced by multiple contextual factors (e.g., Ferentzy & Turner, 2013; London, 2005; White, 1998). Prior works looked at various beliefs about addiction, including beliefs about models of addiction and harmfulness of drugs (e.g., Blomqvist, 2012; Broadus & Evans, 2015). Most of these works focused on substances and only three quantitative studies have looked at perceptions of what indicates that something is addictive, all of which focused on a narrow set of objects and diagnostic manual criteria (Chassin et al., 2007; Jamieson & Dowrick, 2021; Lang & Rosenberg, 2017). As such, there continues to be conflict about what is meant when something is called *addictive* and what factors affect those perceptions (e.g., Clark, 2011; Kardefelt-Winther et al., 2017; Kelly, 2008; Satchell et al., 2020). Results from a qualitative study suggested multiple potential indicators of addictiveness that shared many of the same features as current diagnostic criteria for addiction. These qualitative responses were then adapted into a Perceived Addictiveness measure. Using an undergraduate and national sample, results from factor analyses for this new measure showed that there were three consistent object categories in terms of Level of Addictiveness: Recognized Addictions, Technological objects, and Sexual objects. Finally, correlational and MANCOVA analyses showed that there was variability in terms of which Indicators of Addictiveness were perceived to suggest that each of the objects and object categories were addictive, and multiple demographics impacted these relationships. Overall, these results show that both the focus of an addiction and individual differences (i.e., religiousness and personal addiction experience) affect which indicators of addictiveness are seen to suggest that an object is *addictive*. As such, researchers, clinicians, and policy makers should be aware of biases related to perceptions of addictiveness in their work and

response to users of objects, be thoughtful of their use of this term, and take time to better understand the nuances in these perceptions.

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APPENDIX A: TABLES AND FIGURES

Study 1

Demographics

Table 1.
Demographics of Participants at Baseline in Study 1 (August 2019).

	Number (Percentage) of Participants or Means (SD)
Gender	
Female	618 (55%)
Male	505 (45%)
Age	55 (SD = 16)
Race/Ethnicity	
White/Caucasian	815 (72.6%)
African American/Black	121 (10.8%)
Asian	21 (1.9%)
Hispanic	102 (9.1%)
Native American	9 (.8%)
Middle Eastern	3 (.3%)
Mixed	32 (2.8%)
Other	20 (1.8%)
Relationship/Marital Status	
Married	588 (52.4%)
Never married	252 (22.4%)
Domestic/Civil partnership	49 (4.4%)
Divorced	137 (12.2%)
Separated	21 (1.9%)
Widowed	76 (6.8%)
Education	
No high school	52 (4.6%)
High school graduate	390 (34.7%)
Some college	241 (21.5%)
2-year college	151 (13.4%)
4-year college	180 (16%)
Post-graduate	109 (9.7%)
Employment Status	
Full-time	401 (35.7%)
Part-time	96 (8.5%)
Temporarily laid off	4 (.4%)
Unemployed	59 (5.3%)
Retired	350 (31.2%)
Permanently disabled	99 (8.8%)
Homemaker	71 (6.3%)
Student	30 (2.7%)
Other	13 (1.2%)
Religion	
Protestant	415 (37%)
Roman Catholic	208 (18.5%)
Mormon	20 (1.8%)
Eastern or Greek Orthodox	12 (1.1%)
Jewish	24 (2.1%)
Muslim	5 (.4%)
Buddhist	6 (.5%)
Hindu	2 (.2%)
Atheist	70 (6.2%)
Agnostic	72 (6.4%)
Nothing in particular	211 (18.8%)
Other	78 (6.9%)
Political Party Ideology	
Democrat	394 (35.1%)
Republican	337 (30%)
Independent	316 (28.1%)
Other	47 (4.2%)
Not sure	29 (2.6%)
Average Annual Income	$50,000 - $59,000

Note: N = 1,123

Themes and Subthemes

Table 2.
Themes and Subthemes Identified in Study 1, Alongside a Brief Definition of Each and the Number of Responses in Which They Were Mentioned.

Theme/Subtheme Name	Definition	Number (Percentage) of Responses
Feels Required	Suggested that the object causes a feeling of need to have said object, often to live or survive	392 (34.9%) Incl. Subthemes: 544 (48.4%)
Physical Dependence	Suggested that the body depends on the object to function	108 (9.6%)
Psychological Dependence	Suggested that the individual depends on the object to function psychologically or depends on it to cope with psychological struggles	85 (7.6%)
Induces a Withdrawal	Suggested that the individual experiences noticeable physical or psychological effects when the object is not available	52 (4.6%)
Creates Tolerance	Suggested that individual needs more of the object over time to get same effect	8 (.7%)
Incites Cravings	Suggested that the individual experiences a strong urge or desire (craving) for the object	195 (17.4%)
Feels Irresistible	Suggested that the object causes the individual to compulsively and irresistibly engage with the object (e.g., a habit or going to great lengths to engage with the object)	431 (38.4%) Incl. Subthemes: 751 (66.9%)
Encourages Over-use	Suggested that the individual engages with the object more than they want, intend, or feel they should do	42 (3.7%)
Loss of Control	Suggested that makes individual feels unable to control their engagement or stop it	441 (39.3%)
Quality of Object	Includes a statement about the "goodness" or "badness" of the object, experience, or consequences	0 (0%) Incl. Subthemes: 272 (24.2%)
Bad or Negative	Suggested that addictive objects, experiences, or consequences are bad, problematic, or negative	202 (18%)
Negative Consequences	Suggested that addictive objects have negative or bad consequences and interfere with other areas of life (e.g., occupation, family, valued actions)	113 (10.1%)
Good or Positive	Suggested that addictive objects, experiences, or consequences are good, positive, pleasurable, or beneficial in some way	97 (8.7%)
Causation	Suggested that addictiveness is, or is not, caused by something, or has no cause (i.e., does not exist)	0 (0%) Incl. Subthemes: 40 (3.6%)
Biological Changes	Suggested that addictiveness is caused by brain chemistry changes or has a biological/disease basis	35 (3.1%)
Choice or Not Real	Suggested that nothing is addictive or that an individual chooses to act in a way that others perceive as addictive	5 (.4%)
Variable	Suggested that the levels of addictiveness may change or vary in some way	7 (.6%) Incl. Subtheme: 101 (9%)
Time Dependent	Suggested that there are a certain number of times or length of time in which an addictive object must be used for it to produce addictive behaviour	95 (8.5%)
Class of Object	Indicated that specific types of objects may be addictive	0 (0%) Incl. Subthemes: 298 (26.5%)
Substances Only	Suggested that only substances/drugs can be addictive	47 (4.2%)
Non-substances Included	Suggested that non-substances (e.g., activities, people, or behaviours) or that anything can be addictive	231 (20.6%)
Socially Unacceptable	Suggested that only socially unacceptable objects can be addictive (i.e., addictiveness is a social construct)	6 (.5%)
Specific Example	Gave a specific example of something which may be addictive (including personal examples)	143 (12.7%)
Treatment	Suggested that treatment is required to help an individual	18 (1.6%) Incl. Subtheme: 24 (2.1%)
Spirituality is Important	Noted that spirituality is important in avoiding addictive objects	6 (.5%)
Unsure	Reported being unsure or not knowing what addictive means	13 (1.2%)

Note. Themes are bolded and subthemes of subthemes are italicized to aid in reading; $N = 1{,}123$.

Levels of Addictiveness for Objects

Table 3.
Means and Standard Deviations for The Ratings of Addictiveness for 16 Objects Sometimes Perceived as Addictive as Presented in Study 1.

Object	Mean	Standard Deviation
Opioids	2.86	.45
Nicotine[1]	2.86	.43
Cocaine[1]	2.83	.47
Alcohol	2.75	.51
Gambling	2.70	.54
Video Games	2.46	.64
Eating[1]	2.45	.63
Pornography[2]	2.44	.67
Social Media[2]	2.43	.65
Smartphones[2]	2.39	.65
Cannabis	2.28	.71
Shopping	2.26	.64
Technology	2.22	.68
Sexual Activity with a Partner[2]	2.17	.69
Masturbation	2.14	.70
Exercise[2]	2.03	.66

Note: N = 1,123, except where noted due to non-response; Range = 1-3; [1] N = 1,121; [2] N = 1,122.

Studies 2 and 3

Demographics

Table 4.
Basic Demographic Information Regarding Individuals From Both Samples.

	Mean (SD) or Number of Participants (% of Sample)	
	Undergraduate Sample	National Sample
Age	19.7 (2.2)	4.4 (11.7)
Sex		
Male	32 (20.6%)	281 (56.2%)
Female	123 (79.4%)	218 (43.6%)
Other	0	1 (.2%)
Gender		
Male	30 (19.4%)	280 (56%)
Female	118 (76.1%)	215 (43%)
Transgender Male	0	1 (.2%)
Transgender Female	1 (.6%)	1 (.2%)
Genderqueer	2 (1.3%)	1 (.2%)
Non-binary	3 (1.9%)	1 (.2%)
Agender	1 (.6%)	1 (.2%)
Sexual Orientation		
Heterosexual	104 (67.1%)	429 (85.8%)
Gay	2 (1.3%)	4 (.8%)
Lesbian	6 (3.9%)	8 (1.6%)
Bisexual	31 (20%)	38 (7.6%)
Asexual	3 (1.9%)	9 (1.8%)
Pansexual	3 (1.9%)	9 (1.8%)
Queer	3 (1.9%)	0
Prefer not to say	3 (1.9%)	3 (.6%)
Race		
White	135 (87.1%)	402 (80.4%)
African American/Black	15 (9.7%)	57 (11.4%)
American Indian/Native American/Alaska Native	2 (1.3%)	9 (1.8%)
Asian/ Pacific Islander	3 (1.9%)	27 (5.4%)
Middle Eastern	0	1 (.2%)
Latino/Hispanic	5 (3.2%)	33 (6.6%)
Other	0	2 (.4%)
Prefer not to say	1 (.6%)	5 (1%)
Relationship Status		
Single, not in a committed relationship	74 (47.7%)	155 (31%)
Single, in a committed relationship	68 (43.9%)	47 (9.4%)
Living with partner	13 (8.4%)	44 (8.8%)
Engaged	1 (.6%)	1 (.2%)
Married	1 (.6%)	218 (43.6%)
Divorced	0	32 (6.4%)
Separated	0	5 (1%)
Widowed	0	7 (1.4%)
Prefer Not to Say	3 (1.9%)	5 (1%)
Polyamorous	0	1 (.2%)

Note: Undergraduate Sample: $N = 155$; National Sample: $N = 500$

Table 5.
Socioeconomic Status Information for Individuals in Both Samples.

	Mean (SD) or Number of Participants (% of Sample)	
	Undergraduate Sample	National Sample
Childhood Family Income (Median; Mode)	$70,000-$90,000; $50,000-$70,000 [1]	$50,000-$70,000 $0-$30,000 [4]
Current Annual Household Income	$78,632.16 ($65,311.82)[3]	$68,133.83 ($57,735.75)[5]
Primary Income Earner		
Self	18 (11.6%)	342 (68.4%)
Spouse or Partner	7 (4.5%)	111 (22.2%)
Parent(s)	128 (82.6%)	41 (8.2%)
Other	2 (1.3%)	6 (1.2%)
Employment Status		
Full time	0	374 (74.8%)
Part-time	89 (57.4%)	74 (14.8%)
Job-seeking and unemployed	22 (14.2%)	8 (1.6%)
Unemployed	42 (27.1%)	31 (6.2%)
Retired	0	13 (2.6%)
Other	2 (1.3%)	0
Education		
Did not graduate high school	-	1 (.2%)
High School Graduate	40 (25.8%)	59 (11.8%)
Some college	105 (67.7%)	104 (20.8%)
Associate degree	7 (4.5%)	52 (10.4%)
Bachelor's Degree	2 (1.3%)	216 (43.2%)
Master's Degree	0	55 (11%)
Doctorate Degree	0	13 (2.6%)
Other	1 (.6%)	0
Year in School		
Freshman	64 (41.3%)[2]	-
Sophomore	43 (27.7%)[2]	-
Junior	30 (19.4%)[2]	-
Senior	16 (10.3%)[2]	-
Graduate Student	1 (.6%)[2]	-
Did not respond	1 (.6%)[2]	-

Note: Undergraduate Sample: $N = 155$; National Sample: $N = 500$; [1]$N = 153$, [2]$N = 154$, [3]$N = 152$, [4]$N = 499$, [5]$N = 498$.

Table 6.
Religiosity of Individuals in Both Samples.

	Mean (SD) or Number of Participants (% of Sample)	
	Undergraduate Sample	National Sample
Religiousness	2.50 (2.08), range = 0-6[1]	.004 (.88); range = -1.06-2.04 [2]
Religion		
Agnostic	25 (16.1%)	103 (20.6%)
Atheist	14 (9%)	63 (12.6%)
Christian	86 (55.5%)	249 (49.8%)
Christian Only	37 (23.2%)	63 (12.6%)
Catholic	35 (22.6%)	104 (20.8%)
Protestant	14 (9%)	80 (16%)
Protestant only	1 (.6%)	28 (5.6%)
Baptist	1 (.6%)	24 (4.8%)
Lutheran	7 (4.5%)	2 (.4%)
Methodist	2 (1.3%)	7 (1.4%)
Non-denominational	1 (.6%)	6 (1.2%)
Evangelical	0	3 (.6%)
Pentecostal	2 (1.3%)	1 (.2%)
Presbyterian	0	1 (.2%)
Born Again Christian	0	1 (.2%)
Church of Christ	0	1 (.2%)
Unitarian Universalist	0	1 (.2%)
Seventh Day Adventist	0	4 (.8%)
Latter Day Saints	0	1 (.2%)
Jehovah Witness	0	1 (.2%)
Jewish	0	9 (1.8%)
Buddhist	1 (.6%)	7 (1.4%)
Hindu	0	1 (.2%)
Muslim	0	2 (.4%)
Omnist	1 (.6%)	1 (.2%)
Gnostic	0	1 (.2%)
Pagan	0	3 (.6%)
Eckankar	0	1 (.2%)
Satanist	0	1 (.2%)
Spiritual but not religious	3 (1.9%)	14 (2.8%)
Not sure	3 (1.9%)	1 (.2%)
None	22 (14.2%)	45 (9%)

Note: Undergraduate Sample: $N = 155$; National Sample: $N = 500$; [1]$N = 138$, [2]$N = 497$

Table 7.
Political Ideology and Affiliation for Individuals in Both Samples.

	Mean (SD) or Number of Participants (% of Sample)	
	Undergraduate Sample	National Sample
Political Ideology	-2.38 (5.30)	-1.34 (6.39)
Political Affiliation		
Republican	61 (39.4%)	111 (22.2%)
Democrat	4 (2.6%)	251 (50.2%)
Libertarian	0	9 (1.8%)
Green	10 (6.5%)	3 (.6%)
Independent	36 (23.2%)	95 (19%)
Tea Party	3 (1.9%)	0
No affiliation	41 (26.5%)	29 (5.8%)
Other	0	2 (.4%)

Note: Undergraduate Sample: $N = 155$; National Sample: $N = 500$

Table 8.
Self-Reported Experience with Addiction for Individuals in Both Samples.

	Mean (SD) or Number of Participants (% of Sample)	
	Undergraduate Sample	National Sample
Previously diagnosed with an addictive disorder	1 (.6%)	56 (11.2%)
Alcohol	1 (.6%)	22 (4.4%)
Drugs	-	22 (4.4%)
Nicotine	-	4 (.8%)
Opioids	-	3 (.6%)
Benzodiazepines	-	2 (.4%)
Cocaine	-	1 (.2%)
Sedative/Hypnotic	-	1 (.2%)
Cannabis	-	2 (.4%)
Kratom	-	1 (.2%)
Sex	-	2 (.4%)
Shopping	-	1 (.2%)
Other/Unknown	-	13 (2.6%)
Family member diagnosed with an addictive disorder	38 (24.5%)	135 (27%)
Alcohol	27 (17.4%)	76 (15.2%)
Drugs	16 (10.3%)	61 (12.2%)
Opioids	1 (.6%)	17 (3.4%)
Nicotine	3 (1.9%)	2 (.4%)
Cocaine	-	4 (.8%)
Benzodiazepines	-	1 (.2%)
Cannabis	-	1 (.2%)
Methamphetamines	-	9 (1.8%)
Gambling	1 (.6%)	4 (.8%)
Sex	-	1 (.2%)
Other/Unknown	1 (.6%)	8 (1.6%)
Friend diagnosed with an addictive disorder	23 (14.8%)	123 (24.6%)
Alcohol	5 (3.2%)	68 (13.6%)
Drugs	13 (8.4%)	60 (12%)
Opioids	1 (.6%)	18 (3.6%)
Nicotine	2 (1.3%)	-
Cannabis	-	1 (.2%)
Cocaine	1 (.6%)	2 (.4%)
Medications	1 (.6%)	-
Benzodiazepines	-	3 (.6%)
Stimulant	-	1 (.2%)
Methamphetamines	-	5 (1%)
Gambling	1 (.6%)	1 (.2%)
Other/Unknown	4 (2.6%)	8 (1.6%)
Believe I have an undiagnosed addictive disorder	17 (11%)	62 (12.4%)
Alcohol	-	22 (4.4%)

Table 8 continued.

	Mean (SD) or Number of Participants (% of Sample)	
	Undergraduate Sample	National Sample
Drugs	9 (5.8%)	28 (5.6%)
Nicotine	3 (1.9%)	7 (1.4%)
Benzodiazepines	-	2 (.4%)
Opioids	-	1 (.2%)
Methamphetamines	-	1 (.2%)
Cocaine	-	1 (.2%)
Sedative	-	1 (.2%)
MDMA	-	1 (.2%)
Cannabis	1 (.6%)	7 (1.4%)
Caffeine	-	2 (.4%)
Medications	1 (.6%)	-
Pornography	2 (1.3%)	4 (.8%)
Masturbation	-	1 (.2%)
Sex	-	1 (.2%)
Eating/Food	-	2 (.4%)
Gambling	-	4 (.8%)
Internet	-	1 (.2%)
Shopping	-	2 (.4%)
Unknown/Other	8 (5.1%)	7 (1.4%)
Someone I know has an undiagnosed addictive disorder	42 (27.1%)	98 (19.6)
Alcohol	25 (16.1%)	48 (9.6%)
Drugs	16 (10.3%)	46 (9.2%)
Nicotine	2 (1.3%)	3 (.6%)
Benzodiazepines	-	1 (.2%)
Opioids	-	15 (3%)
Methamphetamines	-	2 (.4%)
Cocaine	-	6 (1.2%)
Tranquilizers	-	1 (.2%)
Stimulant	-	2 (.4%)
Antidepressant	-	1 (.2%)
Cannabis	3 (1.9%)	2 (.4%)
Pornography	1 (.6%)	1 (.2%)
Sex	1 (.6%)	-
Gambling	-	4 (.8%)
Gaming	1 (.6%)	1 (.2%)
Shopping	-	1 (.2%)
Food/Eating	-	1 (.2%)
TV	-	1 (.2%)
Hoarding	-	2 (.4%)
Stress	-	3 (.6%)
Unknown/Other	5 (3.2%)	5 (1%)

Table 8 continued.

	Mean (SD) or Number of Participants (% of Sample)	
	Undergraduate Sample	National Sample
No personal experience with addiction	63 (40.6%)	182 (36.4%)
Received Treatment for addictive disorder	1 (.6%)	44 (8.8%)

Note: Undergraduate Sample: $N = 155$; National Sample: $N = 500$

Internal Consistency, Means, and Standard Deviations

Table 9.
Means, Standard Deviations, and Internal Consistency of the Perceived Addictiveness of Objects Measure in Both Samples.

	Undergraduate Sample			National Sample		
	Mean (SD)	Internal Consistency (α)	Internal Consistency (McDonald's ω)	Mean (SD)	Internal Consistency (α)	Internal Consistency (McDonald's ω)
Perceived Level of Addictiveness	2.57 (.68)	.942	.93	2.18 (.69)	.925	.93
Recognized Addictions Category	3.13 (.82)	.871	.85	3.09 (.84)	.836	.74
Alcohol	2.76 (1.09)	-	-	2.75 (1.07)	-	-
Nicotine	3.20 (.82)	-	-	3.42 (1.02)	-	-
Cocaine	3.45 (1.02)	-	-	3.19 (1.09)	-	-
Opioids	3.51 (.99)	-	-	3.42 (1.08)	-	-
Medications [1]	2.62 (1.22)	-	-	2.10 (1.16)	-	-
Gambling	2.90 (1.15)	-	-	2.69 (1.13)	-	-
Technological Category	2.90 (.89)	.850	.87	2.31 (.96)	.862	.87
Playing games	2.12 (1.21)	-	-	2.13 (1.14)	-	-
Smartphones	3.17 (1.00)	-	-	2.42 (1.13)	-	-
Technology	3.04 (1.07)	-	-	2.06 (1.17)	-	-
Social Media	3.25 (.98)	-	-	2.61 (1.13)	-	-
Compulsive/ Sexual Category	2.08 (.88)	.809	.79	1.85 (1.00)	.778	.55
Masturbation	2.15 (1.16)	-	-	1.70 (1.18)	-	-
Sexual activity with a partner	2.06 (1.07)	-	-	1.72 (1.19)	-	-
Pornography	2.30 (1.23)	-	-	2.13 (1.23)	-	-
Adrenaline [1]	2.15 (1.18)	-	-	1.85 (1.12)	-	-
Collecting Objects [1]	1.73 (1.17)	-	-	1.52 (1.11)	-	-
Controversial Category	2.35 (1.26)	N/A	-	-	-	-
Cannabis [1]	2.35 (1.26)	-	-	1.95 (1.26)	-	-
Other Category	2.29 (.94)	.846	.78	-	-	-
Exercise [1]	2.01 (1.15)	-	-	1.46 (1.05)	-	-
Eating [1]	2.40 (1.15)	-	-	2.03 (1.21)	-	-
Shopping [1]	2.39 (1.10)	-	-	1.78 (1.05)	-	-
Food in general [1]	2.34 (1.14)	-	-	-	-	-
Not Included in Factors	-	-	-	-	-	-
Sugary Food	2.63 (1.11)	-	-	2.43 (1.16)	-	-
Television shows or movies	2.06 (1.22)	-	-	1.59 (1.12)	-	-
Caffeinated drinks	2.66 (1.18)	-	-	2.49 (1.08)	-	-
Another person or a relationship	2.18 (1.20)	-	-	1.54 (1.19)	-	-
Work	-	-	-	1.30 (1.16)	-	-

Note: Undergraduate Sample: $N = 155$; National Sample: $N = 500$; [1] = Not included in factors in the National Sample.

Table 10.
Means, Standard Deviations, and Internal Consistency of the Perceived Indicators of Addictiveness Measure in Both Samples.

	Undergraduate Sample			National Sample		
	Mean (SD)	Internal Consistency (α)	Internal Consistency (McDonald's ω)	Mean (SD)	Internal Consistency (α)	Internal Consistency (McDonald's ω)
Perceived Indicator of Addictiveness	3.02 (.55)	.852	.88	3.03 (.55)	.846	.87
Feels Required	3.45 (.78)	-	-	3.42 (.79)	-	-
Physical Dependence	3.16 (.94)	-	-	3.46 (.87)	-	-
Psychological Dependence	3.41 (.75)	-	-	3.33 (.85)	-	-
Induces a Withdrawal	3.27 (.86)	-	-	3.42 (.77)	-	-
Creates Tolerance	3.14 (.99)	-	-	3.18 (.97)	-	-
Incites Cravings	3.05 (.99)	-	-	3.04 (.98)	-	-
Feels Irresistible	3.38 (.78)	-	-	3.37 (.87)	-	-
Engaged in More Than Intended	3.05 (.95)	-	-	3.16 (.94)	-	-
Loss of Control	3.53 (.71)	-	-	3.46 (.80)	-	-
Negative Aspects	2.51 (1.24)	-	-	2.64 (1.21)	-	-
Negative Consequences	3.05 (.99)	-	-	2.95 (1.07)	-	-
Good Aspects	1.72 (1.19)	-	-	1.38 (1.31)	-	-
Causes Biological Changes	3.08 (1.00)	-	-	3.21 (.94)	-	-
Timeline Dependent	2.28 (1.16)	-	-	2.17 (1.22)	-	-
Treatment Needed	3.26 (.93)	-	-	3.28 (.87)	-	-

Note: Undergraduate Sample: $N = 155$; National Sample: $N = 500$.

Table 11.
Means, Standard Deviations, and Internal Consistency of the Definition of Addictiveness Measure in Both Samples.

	Undergraduate Sample			National Sample		
	Mean (SD)	Internal Consistency (α)	Internal Consistency (McDonald's ω)	Mean (SD)	Internal Consistency (α)	Internal Consistency (McDonald's ω)
Definition of Addictiveness	3.14 (.56)	.855	.89	4.00 (.63)	.851	.87
Appetitive	2.31 (.98)	.852	.85	3.26 (1.02)	.822	.83
Compulsive	3.55 (.54)	.875	.88	4.37 (.67)	.889	.89

Note: Undergraduate Sample: $N = 155$; National Sample: $N = 500$.

Table 12.
Means, Standard Deviations, and Internal Consistency of the Addiction Belief Inventory in Both Samples.

	Undergraduate Sample			National Sample		
	Mean (SD)	Internal Consistency (α)	Internal Consistency (McDonald's ω)	Mean (SD)	Internal Consistency (α)	Internal Consistency (McDonald's ω)
ABI	2.24 (.38)	.752	.79	3.40 (.38)	.732	.80
Inability to Control	1.73 (.81)	.615	.62	2.93 (.91)	.672	.68
Chronic Disease	2.54 (.75)	.478	.49	3.76 (.75)	.533	.55
Reliance on Experts	2.47 (.94)	.724	.74	3.61 (.91)	.745	.76
Responsibility for Actions	1.16 (.94)	.825	.83	2.16 (1.02)	.817	.82
Responsibility for Treatment	2.92 (.80)	.648	.69	4.22 (.78)	.735	.74
Genetic Basis	2.30 (.80)	.490	.52	2.95 (.98)	.729	.75
Coping	3.09 (.68)	.900	.90	4.01 (.72)	.884	.88
Moral Weakness	1.63 (.88)	.848	.85	3.28 (.89)	.811	.82

Note: Undergraduate Sample: $N = 155$; National Sample: $N = 500$.

Table 13.
Means, Standard Deviations, and Internal Consistency of the Harmfulness of Drugs Scale in Both Samples.

	Undergraduate Sample			National Sample		
	Mean (SD)	Internal Consistency (α)	Internal Consistency (McDonald's ω)	Mean (SD)	Internal Consistency (α)	Internal Consistency (McDonald's ω)
Harmfulness by category						
Physical	2.17 (.81)	.914	.92	2.87 (.80)	.912	.92
Mental	2.76 (1.04)	.950	.95	3.10 (1.05)	.950	.95
Dependence	3.02 (1.12)	.962	.95	3.46 (1.09)	.952	.95
Injuries	2.07 (.96)	.935	.94	2.66 (.93)	.932	.94
Social	2.73 (1.15)	.957	.96	3.21 (1.12)	.949	.95
Harmfulness by object						
Alcohol	4.36 (.80)	.844	.85	5.17 (.93)	.876	.88
Nicotine	3.79 (1.03)	.761	.79	4.11 (1.12)	.731	.74
Masturbation	2.05 (1.22)	.807	.81	2.49 (1.28)	.862	.86
Cocaine	4.58 (.58)	.749	.78	5.07 (1.00)	.868	.87
Cannabis	3.25 (1.24)	.861	.87	3.40 (1.46)	.902	.90
Sexual Activity with a partner	1.92 (1.21)	.816	.83	2.31 (1.21)	.849	.85
Opioids	4.59 (.59)	.741	.75	5.18 (.96)	.862	.87
Pornography	2.32 (1.24)	.813	.82	3.05 (1.28)	.833	.84
Gambling	2.94 (.99)	.669	.70	3.71 (1.12)	.735	.75
Playing Games	1.94 (1.19)	.830	.83	2.58 (1.17)	.835	.84
Exercise	2.01 (1.40)	.871	.87	2.20 (1.20)	.863	.86
Eating	2.26 (1.32)	.848	.85	2.57 (1.30)	.876	.88
Shopping	1.73 (1.15)	.783	.79	2.39 (1.14)	.832	.83
Smartphones	2.21 (1.12)	.758	.76	2.66 (1.17)	.814	.82
Technology	2.13 (1.13)	.772	.78	2.46 (1.20)	.850	.85
Social Media	2.54 (1.03)	.680	.70	3.05 (1.21)	.798	.81
Sugary Food	2.27 (1.21)	.824	.83	3.12 (1.17)	.805	.81
Food	2.00 (1.29)	.855	.86	-	-	-
TV	1.31 (1.13)	.822	.83	2.04 (1.14)	.873	.85
Caffeine	2.01 (1.20)	.848	.85	2.55 (1.17)	.847	.86
People or Relationships	2.17 (1.17)	.772	.78	2.54 (1.27)	.860	.87
Medications	3.00 (1.26)	.873	.88	3.39 (1.40)	.899	.90
Adrenaline	2.35 (1.31)	.828	.84	2.85 (1.31)	.845	.85
Collecting Objects	1.31 (1.20)	.835	.84	2.07 (1.17)	.867	.87
Work	-	-	-	2.43 (1.25)	.861	.86

Note: Undergraduate Sample: $N = 155$; National Sample: $N = 500$.

Table 14.
Means, Standard Deviations, and Internal Consistency of the Harmfulness of Drugs Scale in Both Samples.

	Undergraduate Sample			National Sample		
	Mean (SD)	Internal Consistency (α)	Internal Consistency (McDonald's ω)	Mean (SD)	Internal Consistency (α)	Internal Consistency (McDonald's ω)
Religiousness	2.50 (2.08); range = 0-6	.913	.92	.004 (.88); range = -1.06-2.04	.969	.97

Note: Undergraduate Sample: $N = 155$; National Sample: $N = 500$.

Factor Analysis

Table 15.
Exploratory Factor Analysis Showing Factor Loadings from Pattern Matrix for Objects for the Undergraduate Sample.

	Factor loadings				
	Other	Recognized Addictions	Technological	Compulsive/ Sexual	Controversial
Eigenvalue	8.845	2.902	1.832	1.331	1.195
% of variance	36.85%	12.09%	7.63%	5.54%	4.98%
Food	**.868**	.019	.021	-.009	-.022
Eating	**.820**	.001	-.103	.051	.038
Shopping	**.612**	-.034	.271	.005	.067
Exercise	**.489**	-.033	-.027	.219	.281
Sugary Food	***.423***	.177	***.415***	-.087	-.082
Opioids	-.146	**.902**	.011	.085	-.022
Cocaine	-.047	**.890**	.001	.034	-.020
Nicotine	-.031	**.604**	.045	-.003	.326
Medications	.314	**.554**	-.019	.107	-.120
Gambling	.098	**.494**	.155	.164	.124
Alcohol	.186	**.469**	-.065	-.036	***.457***
Smartphones	-.033	-.077	**.951**	.009	.000
Technology	-.020	-.077	**.880**	.058	-.033
Social Media	-.067	.170	**.827**	-.094	.117
Playing Games	.099	.141	**.345**	.250	.190
Caffeine	.244	.268	.269	.118	.088
Masturbation	-.085	.080	-.042	**.730**	.078
Pornography	-.095	.245	-.036	**.693**	-.024
Sexual Activity with a Partner	.066	-.089	.070	**.617**	.234
Adrenaline	.232	.071	.090	**.509**	-.135
Collecting Objects	.298	-.041	.025	**.463**	-.013
Another person or Relationships	.201	.042	***.329***	***.370***	-.193
Television	.176	-.128	***.325***	***.336***	.041
Cannabis	.027	.028	.095	.102	**.673**

Note: Undergraduate Sample: $N = 155$; **Bolded** = Significantly loaded on the factor; ***Italicized and Bolded*** = Equally loaded on the factors.

Table 16.
Exploratory Factor Analysis Showing Factor Loadings from Pattern Matrix for Objects for the National Sample.

	Factor loadings				
	Technological	Recognized Addictions	Sexual	Other	Controversial
Eigenvalue	9.146	3.062	1.494	1.180	.904
% of variance	38.11%	12.76%	6.23%	4.92%	3.77%
Smartphones	**.892**	-.017	.048	-.118	.063
Social Media	**.844**	.034	-.044	.063	-.039
Technology	**.700**	-.101	.082	.144	.053
Playing Games	**.319**	.038	.227	.143	.168
Opioids	-.018	**.844**	-.056	-.073	-.007
Nicotine	.024	**.827**	-.070	-.103	.057
Cocaine	.029	**.697**	.133	-.039	-.110
Alcohol	-.093	**.564**	.089	.167	.143
Gambling	.201	**.528**	.169	.152	-.057
Masturbation	.025	-.057	**.860**	-.100	.018
Pornography	.135	.169	**.684**	.031	-.124
Sexual Activity with a Partner	-.017	-.123	**.578**	.101	.212
Cannabis	-.036	.215	***.463***	.094	**.007**
Another person or Relationships	.083	-.109	***.378***	***.340***	.124
Collecting Objects	.049	.050	**-.027**	***.788***	-.007
Work	-.004	-.198	.052	***.715***	.080
Adrenaline	.123	.149	**.066**	***.621***	-.148
Exercise	-.037	-.118	.079	**.536**	.269
Medications	.116	**.268**	.078	***.441***	.010
Television	.277	-.139	.146	***.414***	.169
Shopping	.267	.038	-.018	**.340**	***.330***
Eating/Food in General	.150	.037	.161	**-.039**	***.682***
Sugary Food	.291	.289	-.015	.090	***.345***
Caffeine	.213	.269	-.023	.192	***.329***

Note: National Sample: $N = 500$; **Bolded** = Significantly loaded on the factor; ***Italicized and Bolded*** = Equally loaded on the factors.

Correlations

Correlations with Harmfulness of Addiction Scale.

Table 17.
Correlations Between the Recognized Addictions Object Subscale for the Perceptions of Addictiveness Measure and the Harmfulness of Addiction Scale in the Undergraduate Sample.

Objects	Harmfulness of Addiction Scale Recognized Addictions Category	Alcohol	Nicotine	Opioids	Cocaine	Gambling	Medications
Recognized Addictions Category	.250**	.220**	.221**	.171*	.229**	.254**	.176*
Alcohol	.287**	.378**	.296**	.162*	.213**	.236**	.145
Nicotine	.190*	.212**	.151	.194*	.186*	.141	.137
Opioids	.110	.098	.125	.163*	.173*	.096	.034
Cocaine	.144	.081	.137	.149	.228**	.124	.087
Gambling	.233**	.170*	.242**	.062	.135	.338**	.119
Medications	.198*	.103	.087	.103	.161*	.225**	.285**

Note: Undergraduate Sample: $N = 155$; * ≤ .05; ** ≤ .01; *** ≤ .001.

Table 18.
Correlations Between the Technological Object Subscale for the Perceptions of Addictiveness Measure and the Harmfulness of Addiction Scale in the Undergraduate Sample.

Objects	Harmfulness of Addiction Scale Technological Category	Smartphones	Technology	Social Media	Playing Games
Technological Category	.383**	.377**	.416**	.315**	.372**
Smartphones	.349**	.350**	.371**	.305**	.324**
Technology	.350**	.349**	.420**	.279**	.309**
Social Media	.292**	.318**	.312**	.278**	.234**
Playing Games	.289**	.250**	.288**	.196*	.360**

Note: Undergraduate Sample: $N = 155$; * ≤ .05; ** ≤ .01; *** ≤ .001.

Table 19.
Correlations Between the Compulsive/ Sexual Object Category Subscale for the Perceptions of Addictiveness Measure and the Harmfulness of Addiction Scale in the Undergraduate Sample.

Objects	Harmfulness of Addiction Scale Compulsive/ Sexual Category	Masturbation	Pornography	Sexual Activity with a Partner	Adrenaline	Collecting Objects
Compulsive/ Sexual Category	.415**	.408**	.456**	.384**	.291**	.276**
Masturbation	.284**	.292**	.358**	.276**	.174*	.144
Pornography	.301**	.314**	.452**	.263**	.156	.114
Sexual Activity with a Partner	.322**	.308**	.301**	.343**	.236**	.243**
Adrenaline	.303**	.305**	.248**	.277**	.320**	.193*
Collecting Objects	.357**	.329**	.350**	.312**	.222**	.357**

Note: Undergraduate Sample: $N = 155$; * ≤ .05; ** ≤ .01; *** ≤ .001.

Table 20.
Correlations Between the Controversial Object Subscale for the Perceptions of Addictiveness Measure and the Harmfulness of Addiction Scale in the Undergraduate Sample.

Objects	Harmfulness of Addiction Scale Controversial Category	Cannabis
Controversial Category	.514**	.514**
Cannabis	.514**	.514**

Note: Undergraduate Sample: $N = 155$; * ≤ .05; ** ≤ .01; *** ≤ .001.

Table 21.
Correlations Between the Other Object Subscale for the Perceptions of Addictiveness Measure and the Harmfulness of Addiction Scale in the Undergraduate Sample.

	Harmfulness of Addiction Scale				
Objects	Other Category	Food	Eating	Shopping	Exercise
Other Category	.391**	.409**	.394**	.379**	.349**
Food	.324**	.416**	.326**	.301**	.257**
Eating	.307**	.338**	.341**	.271**	.253**
Shopping	.279**	.248**	.255**	.391**	.213**
Exercise	.381**	.344**	.378**	.294**	.425**

Note: Undergraduate Sample: $N = 155$; * ≤ .05; ** ≤ .01; *** ≤ .001.

Table 22.
Correlations Between the Uncategorized Object Subscale for the Perceptions of Addictiveness Measure and the Harmfulness of Addiction Scale in the Undergraduate Sample.

	Harmfulness of Addiction Scale			
Objects	Sugary Food	Television	Caffeine	Another person or Relationship
Sugary Food	.357**	.221**	.340**	.261**
Television	.215**	.304**	.298**	.188*
Caffeine	.250**	.202*	.372**	.176*
Another person or Relationship	.204*	.256**	.292**	.361**

Note: Undergraduate Sample: $N = 155$; * ≤ .05; ** ≤ .01; *** ≤ .001.

Table 23.
Correlations Between the Recognized Addictions Object Subscale for the Perceptions of Addictiveness Measure and the Harmfulness of Addiction Scale in the National Sample.

Objects	Harmfulness of Addiction Scale Recognized Addictions Category	Alcohol	Nicotine	Opioids	Cocaine	Gambling
Recognized Addictions Category	.386**	.441**	.174**	.436**	.414**	.110*
Alcohol	.336**	.392**	.217**	.293**	.265**	.198**
Nicotine	.281**	.396**	.112*	.374**	.302**	-.019
Opioids	.229**	.351**	.023	.411**	.268**	-.079
Cocaine	.302**	.278**	.145**	.320**	.441**	.023
Gambling	.351**	.306**	.179**	.288**	.316**	.293**

Note: National Sample: $N = 500$; * ≤ .05; ** ≤ .01; *** ≤ .001.

Table 24.
Correlations Between the Technological Object Subscale for the Perceptions of Addictiveness Measure and the Harmfulness of Addiction Scale in the National Sample.

Objects	Harmfulness of Addiction Scale Technological Category	Smartphones	Technology	Social Media	Playing Games
Technological Category	.512**	.497**	.458**	.471**	.456**
Smartphones	.433**	.452**	.375**	.418**	.340**
Technology	.467**	.457**	.460**	.424**	.381**
Social Media	.446**	.431**	.395**	.465**	.344**
Playing Games	.375**	.335**	.311**	.284**	.470**

Note: National Sample: $N = 500$; * ≤ .05; ** ≤ .01; *** ≤ .001

Table 25.
Correlations Between the Sexual Object Category Subscale for the Perceptions of Addictiveness Measure and the Harmfulness of Addiction Scale in the National Sample.

	Harmfulness of Addiction Scale			
Objects	Sexual Category	Masturbation	Pornography	Sexual Activity with a Partner
Sexual Category	.480**	.440**	.433**	.417**
Masturbation	.448**	.463**	.353**	.385**
Pornography	.423**	.341**	.481**	.314**
Sexual Activity with a Partner	.327**	.298**	.244**	.345**

Note: National Sample: $N = 500$; * ≤ .05; ** ≤ .01; *** ≤ .001

Table 26.
Correlations Between the Uncategorized Object Subscale for the Perceptions of Addictiveness Measure and the Harmfulness of Addiction Scale in the National Sample.

	Harmfulness of Objects Scale											
Objects	Cannabis	Exercise	Eating	Shopping	Sugary Food	Television	Caffeine	Another Person or Relationship	Medications	Adrenaline	Collecting Objects	Work
Cannabis	.540**	.241**	.225**	.199**	.224**	.253**	.223**	.223**	.210**	.229**	.214**	.248**
Exercise	.134**	.362**	.334**	.381**	.331**	.430**	.378**	.359**	.278**	.292**	.386**	.350**
Eating	.173**	.306**	.428**	.334**	.365**	.339**	.360**	.333**	.249**	.269**	.286**	.325**
Shopping	.161**	.334**	.369**	.429**	.364**	.392**	.373**	.318**	.284**	.295**	.392**	.350**
Sugary Food	.098*	.221**	.301**	.277**	.380**	.222**	.216**	.246**	.285**	.250**	.213**	.249**
Television	.202**	.433**	.452**	.447**	.406**	.555**	.482**	.449**	.326**	.402**	.436**	.452**
Caffeine	.120**	.269**	.308**	.360**	.338**	.268**	.277**	.253**	.306**	.270**	.274**	.294**
Another person or Relationship	.186**	.366**	.416**	.369**	.346**	.433**	.393**	.447**	.358**	.339**	.386**	.421**
Medications	.090*	.312**	.331**	.311**	.304**	.271**	.296**	.274**	.474**	.320**	.276**	.296**
Adrenaline	.127**	.360**	.377**	.414**	.369**	.390**	.330**	.357**	.380**	.449**	.415**	.364**
Collecting Objects	.156**	.403**	.349**	.418**	.354**	.437**	.343**	.324**	.300**	.365**	.497**	.407**
Work	.205**	.451**	.414**	.451**	.364**	.518**	.432**	.367**	.271**	.373**	.484**	.463**

Note: National Sample: $N = 500$; * ≤ .05; ** ≤ .01; *** ≤ .001.

Table 27.
Correlations Between the Indicators Subscale for the Perceptions of Addictiveness Measure and the Harmfulness of Addiction Scale in the Undergraduate Sample.

	Harmfulness of Addiction Scale				
Indicators	Physical	Mental	Dependence	Injuries	Social
Overall	.166*	.205*	.185*	.156	.183*
Feels Required	-.088	-.021	.019	-.092	.058
Physical Dependence	-.086	.023	.062	-.041	.105
Psychological Dependence	.022	.087	.080	-.005	.128
Induces a Withdrawal	.088	.162*	.136	.016	.117
Creates Tolerance	.184*	.200*	.212**	.130	.230**
Incites Cravings	.147	.189*	.155	.165*	.162*
Feels Irresistible	-.088	-.058	-.058	-.079	-.003
Engaged in More Than Intended	.078	.131	.195*	.058	.187*
Loss of Control	-.081	-.052	.010	-.117	-.041
Negative Aspects	.250**	.183*	.146	.214**	.118
Negative Consequences	.162*	.084	.100	.148	.091
Good Aspects	.233**	.236**	.177*	.338**	.158
Causes Biological Changes	.053	.022	-.006	.015	.003
Timeline Dependent	.228**	.270**	.179*	.269**	.191*
Treatment Needed	.097	.131	.073	.048	-.028

Note: Undergraduate Sample: $N = 155$; * ≤ .05; ** ≤ .01; *** ≤ .001.

Table 28.
Correlations Between the Indicators Subscale for the Perceptions of Addictiveness Measure and the Harmfulness of Addiction Scale in the National Sample.

	Harmfulness of Addiction Scale				
Indicators	Physical	Mental	Dependence	Injuries	Social
Overall	.104*	.170**	.192**	.052	.165**
Feels Required	-.076	.026	.075	-.093*	.029
Physical Dependence	-.082	-.018	.030	-.162**	-.041
Psychological Dependence	-.023	.062	.116**	-.085	.065
Induces a Withdrawal	-.001	.076	.130**	-.052	.080
Creates Tolerance	.080	.125**	.124**	.049	.136**
Incites Cravings	.087	.129**	.113*	.058	.107*
Feels Irresistible	-.067	.033	.084	-.080	.027
Engaged in More Than Intended	.028	.117**	.146**	.017	.095*
Loss of Control	-.055	.039	.096*	-.104*	.031
Negative Aspects	.169**	.152**	.168**	.118**	.167**
Negative Consequences	.104*	.136**	.120**	.061	.129**
Good Aspects	.227**	.203**	.113*	.297**	.194**
Causes Biological Changes	-.023	.028	.095*	-.065	.077
Timeline Dependent	.253**	.159**	.118**	.229**	.168**
Treatment Needed	.030	.059	.081	-.026	.014

Note: National Sample: $N = 500$; * ≤ .05; ** ≤ .01; *** ≤ .001.

Correlations with the ABI Scale.

Table 29.
Correlations Between the Indicators Subscale for the Perceptions of Addictiveness Measure and the ABI Scale in the Undergraduate Sample.

	ABI Scale								
Indicators	Overall	Inability to Control	Chronic Disease	Reliance on Experts	Responsibility for Actions	Responsibility for Recovery	Genetic Basis	Coping	Moral Weakness
Overall	.234**	-.129	.275**	.288**	.127	.120	.117	.141	.026
Feels Required	.173*	.041	.164*	.088	-.108	.245**	.002	.127	.086
Physical Dependence	.161*	-.022	.145	.097	.004	.220**	-.092	.148	.083
Psychological Dependence	.119	-.134	.102	.117	.022	.174*	.113	.113	.011
Induces a Withdrawal	.128	-.077	.194*	.086	.066	.134	.059	.102	-.020
Creates Tolerance	.182*	-.124	.205*	.328**	.108	.079	.205*	.065	-.038
Incites Cravings	.194*	.027	.112	.157	.073	.044	.095	.055	.147
Feels Irresistible	.116	-.045	.045	.130	-.188*	.202*	.064	.227**	.026
Engaged in More Than Intended	.086	-.149	.138	.172*	.095	.028	.166*	.142	-.134
Loss of Control	.083	-.057	.106	.046	-.128	.109	.085	.128	.035
Negative Aspects	.115	-.220**	.296**	.287**	.245**	-.074	-.029	.034	-.037
Negative Consequences	.121	-.140	.284**	.212**	.139	.016	-.050	.044	-.007
Good Aspects	.192*	.110	.097	.171*	.184*	.013	.087	-.053	.116
Causes Biological Changes	.194*	-.110	.234**	.212**	.032	.164*	.212**	.104	-.002
Timeline Dependent	.070	-.105	.069	.142	.228**	-.105	.131	-.031	-.002
Treatment Needed	.077	-.089	.133	.137	.073	-.029	-.042	.148	-.031

Note: Undergraduate Sample: $N = 155$; * ≤ .05; ** ≤ .01; *** ≤ .001.

Table 30.
Correlations Between the Indicators Subscale for the Perceptions of Addictiveness Measure and the ABI Scale in the National Sample.

Indicators	ABI Scale								
	Overall	Inability to Control	Chronic Disease	Reliance on Experts	Responsibility for Actions	Responsibility for Recovery	Genetic Basis	Coping	Moral Weakness
Overall	.297**	-.045	.314**	.228**	-.108*	.243**	.067	.356**	.061
Feels Required	.107*	-.071	.183**	.077	-.206**	.244**	-.027	.263**	-.020
Physical Dependence	.155**	-.072	.218**	.119**	-.200**	.287**	.005	.280**	-.009
Psychological Dependence	.078	-.108*	.127**	.097*	-.190**	.185**	-.005	.229**	-.005
Induces a Withdrawal	.122**	-.089*	.155**	.091*	-.226**	.213**	.005	.282**	.038
Creates Tolerance	.238**	-.030	.237**	.208**	-.109*	.181**	.051	.269**	.076
Incites Cravings	.185**	-.003	.178**	.093*	-.022	.103*	.078	.222**	.029
Feels Irresistible	.131**	-.085	.159**	.155**	-.240**	.274**	-.036	.309**	-.002
Engaged in More Than Intended	.121**	-.076	.136**	.092*	-.099*	.199**	.033	.248**	-.035
Loss of Control	.125**	-.057	.098*	.132**	-.228**	.303**	-.039	.327**	-.022
Negative Aspects	.231**	-.037	.294**	.188**	.011	.074	.121**	.165**	.048
Negative Consequences	.262**	-.103*	.315**	.240**	-.044	.188**	.094*	.290**	.029
Good Aspects	.189**	.175**	.046	.026	.328**	-.155**	.135**	-.091*	.134**
Causes Biological Changes	.115*	-.042	.175**	.075	-.151**	.222**	-.016	.200**	.000
Timeline Dependent	.203**	.156**	.104*	.090*	.203**	-.141**	.049	.010	.162**
Treatment Needed	.195**	-.108*	.270**	.279**	-.126**	.195**	.009	.282**	-.015

Note: National Sample: $N = 500$; * ≤ .05; ** ≤ .01; *** ≤ .001.

Correlations with the Definitions of Addiction Scale.

Table 31.
Correlations Between the Indicators Subscale for the Perceptions of Addictiveness Measure and the Definitions of Addiction Scale in Undergraduates.

	Definitions of Addiction Scale		
Indicators	Overall	Appetitive	Compulsive
Overall	.544**	.405**	.485**
Feels Required	.252**	.074	.328**
Physical Dependence	.290**	.120	.346**
Psychological Dependence	.362**	.193*	.393**
Induces a Withdrawal	.323**	.179*	.344**
Creates Tolerance	.345**	.264**	.302**
Incites Cravings	.332**	.290**	.258**
Feels Irresistible	.226**	.079	.283**
Engaged in More Than Intended	.332**	.218**	.323**
Loss of Control	.212**	.019	.315**
Negative Aspects	.437**	.390**	.332**
Negative Consequences	.420**	.360**	.332**
Good Aspects	.264**	.355**	.093
Causes Biological Changes	.300**	.237**	.256**
Timeline Dependent	.260**	.283**	.152
Treatment Needed	.295**	.229**	.255**

Note: Undergraduate Sample: $N = 155$; * ≤ .05; ** ≤ .01; *** ≤ .001.

Table 32.
Correlations Between the Indicators Subscale for the Perceptions of Addictiveness Measure and the Definitions of Addiction Scale in the National Sample.

	Definitions of Addiction Scale		
Indicators	Overall	Appetitive	Compulsive
Overall	.690**	.410**	.669**
Feels Required	.398**	.099*	.492**
Physical Dependence	.360**	.050	.474**
Psychological Dependence	.470**	.196**	.519**
Induces a Withdrawal	.400**	.111*	.486**
Creates Tolerance	.451**	.287**	.424**
Incites Cravings	.502**	.365**	.437**
Feels Irresistible	.507**	.166**	.596**
Engaged in More Than Intended	.442**	.203**	.475**
Loss of Control	.476**	.080	.618**
Negative Aspects	.413**	.370**	.305**
Negative Consequences	.430**	.307**	.378**
Good Aspects	.133**	.322**	-.058
Causes Biological Changes	.388**	.132**	.452**
Timeline Dependent	.213**	.330**	.052
Treatment Needed	.499**	.294**	.487**

Note: National Sample: $N = 500$; * ≤ .05; ** ≤ .01; *** ≤ .001.

Correlations Between Indicators and Objects Subscales of the Perceptions of Addictiveness Measure.

Table 33.
Correlations Between the Indicator and Recognized Addictions Object Subscales for the Perceptions of Addictiveness Measure in the Undergraduate Sample.

Indicators	Objects Recognized Addictions Category	Alcohol	Nicotine	Opioids	Cocaine	Gambling	Medications
Feels Required	.141	.113	.136	.147	.188*	.038	.066
Physical Dependence	.103	.056	.041	.051	.114	.027	.178*
Psychological Dependence	.276**	.245**	.231**	.226**	.245**	.168*	.198*
Induces a Withdrawal	.217**	.139	.249**	.189*	.151	.147	.168*
Creates Tolerance	.176*	.221**	.135	.061	.049	.154	.188*
Incites Cravings	.313**	.289**	.206**	.266**	.229**	.251**	.227**
Feels Irresistible	.061	-.022	.092	.058	.063	-.035	.139
Engaged in More Than Intended	.235**	.263**	.140	.173*	.090	.190*	.226**
Loss of Control	.123	.064	.102	.188*	.095	.092	.055
Negative Aspects	.062	.129	.017	-.033	-.027	.051	.126
Negative Consequences	-.038	.052	-.053	-.097	-.072	-.013	-.013
Good Aspects	.098	.132	.046	-.020	.003	.087	.180*
Causes Biological Changes	.099	.052	.108	.065	-.002	.063	.173*
Timeline Dependent	.143	.218**	.055	-.019	.068	.037	.271**
Treatment Needed	.095	.068	.180*	.104	-.026	.043	.099

Note: Undergraduate Sample: $N = 155$; * ≤ .05; ** ≤ .01; *** ≤ .001.

Table 34.
Correlations Between the Indicator and Technological Object Subscales for the Perceptions of Addictiveness Measure in the Undergraduate Sample.

Indicators	Objects Technological Category	Smartphones	Technology	Social Media	Playing Games
Feels Required	-.016	-.010	-.013	-.099	.054
Physical Dependence	.055	.004	.039	.040	.092
Psychological Dependence	.067	.000	-.012	.028	.183*
Induces a Withdrawal	.070	.051	.038	.050	.089
Creates Tolerance	.130	.107	.087	.098	.138
Incites Cravings	.116	.024	.010	.094	.234**
Feels Irresistible	-.094	-.093	-.103	-.117	-.013
Engaged in More Than Intended	.119	.059	.017	.098	.205*
Loss of Control	.014	-.012	-.062	.013	.095
Negative Aspects	.200*	.185*	.182*	.118	.177*
Negative Consequences	.187*	.208**	.207**	.162*	.061
Good Aspects	.132	.118	.151	.011	.149
Causes Biological Changes	.053	.045	.046	.059	.030
Timeline Dependent	.050	.052	.038	.028	.046
Treatment Needed	.061	.035	.036	.099	.037

Note: Undergraduate Sample: $N = 155$; * ≤ .05; ** ≤ .01; *** ≤ .001.

Table 35.
Correlations Between the Indicator and Compulsive/ Sexual Object Category Subscales for the Perceptions of Addictiveness Measure in the Undergraduate Sample.

Indicators	Objects Compulsive/ Sexual Category	Masturbation	Pornography	Sexual Activity with a Partner	Adrenaline	Collecting Objects
Feels Required	.025	.048	.158*	-.110	.030	-.050
Physical Dependence	.008	-.028	.065	-.093	.047	.028
Psychological Dependence	-.018	-.047	.030	-.094	.060	-.029
Induces a Withdrawal	.137	.110	.169*	.061	.074	.093
Creates Tolerance	.164*	.062	.062	.139	.137	.222**
Incites Cravings	.168*	.141	.169*	.077	.110	.131
Feels Irresistible	.046	-.013	.044	-.065	.062	.135
Engaged in More Than Intended	.177*	.153	.204*	.080	.098	.124
Loss of Control	.026	.094	.214**	-.110	-.037	-.085
Negative Aspects	.091	.042	.062	.071	.026	.141
Negative Consequences	.038	.000	.032	.016	-.028	.123
Good Aspects	.214**	.139	.106	.191*	.188*	.186*
Causes Biological Changes	.095	.091	.081	.056	.100	.029
Timeline Dependent	.151	.109	.095	.170*	.096	.105
Treatment Needed	.094	.037	.086	.103	.076	.053

Note: Undergraduate Sample: $N = 155$; * ≤ .05; ** ≤ .01; *** ≤ .001.

Table 36.
Correlations Between the Indicator and Controversial Object Subscales for the Perceptions of Addictiveness Measure in the Undergraduate Sample.

Indicators	Objects Controversial Category	Cannabis
Feels Required	.031	.031
Physical Dependence	-.031	-.031
Psychological Dependence	.075	.075
Induces a Withdrawal	.008	.008
Creates Tolerance	.117	.117
Incites Cravings	.215**	.215**
Feels Irresistible	-.030	-.030
Engaged in More Than Intended	.121	.121
Loss of Control	.032	.032
Negative Aspects	.140	.140
Negative Consequences	.039	.039
Good Aspects	.109	.109
Causes Biological Changes	-.011	-.011
Timeline Dependent	.021	.021
Treatment Needed	.078	.078

Note: Undergraduate Sample: $N = 155$; * ≤ .05; ** ≤ .01; *** ≤ .001.

Table 37.
Correlations Between the Indicator and Other Categorized Object Subscales for the Perceptions of Addictiveness Measure in the Undergraduate Sample.

Indicators	Objects Other Category	Food	Eating	Shopping	Exercise
Feels Required	.032	.041	.080	-.073	.052
Physical Dependence	-.014	.070	-.018	-.049	-.050
Psychological Dependence	.078	.143	.051	-.038	.099
Induces a Withdrawal	.063	.006	.087	.038	.076
Creates Tolerance	.208**	.161*	.168*	.159*	.198*
Incites Cravings	.148	.141	.102	.137	.109
Feels Irresistible	.086	.074	.154	.089	-.034
Engaged in More Than Intended	.183*	.141	.208**	.106	.149
Loss of Control	-.139	-.061	-.103	-.128	-.169*
Negative Aspects	.157	.178*	.121	.120	.101
Negative Consequences	.089	.119	.041	.109	.028
Good Aspects	.317**	.272**	.273**	.190*	.311**
Causes Biological Changes	.078	.063	.069	.008	.118
Timeline Dependent	.175*	.135	.159*	.106	.179*
Treatment Needed	.014	-.015	.012	.040	.009

Note: Undergraduate Sample: $N = 155$; * ≤ .05; ** ≤ .01; *** ≤ .001.

Table 38.
Correlations Between the Indicator and Uncategorized Object Subscales for the Perceptions of Addictiveness Measure in the Undergraduate Sample.

Indicators	Objects Caffeine	Sugary Food	Another Person or Relationship	Television
Feels Required	.053	.039	.079	-.031
Physical Dependence	.125	.126	.146	.030
Psychological Dependence	.257**	.113	.170*	.113
Induces a Withdrawal	.161*	.135	.167*	.070
Creates Tolerance	.194*	.252**	.159*	.094
Incites Cravings	.149	.178*	.025	.094
Feels Irresistible	.104	-.007	-.011	-.067
Engaged in More Than Intended	.208**	.130	.083	.188*
Loss of Control	.004	.039	-.045	.088
Negative Aspects	.189*	.216**	.148	.202*
Negative Consequences	.074	.204*	.103	.170*
Good Aspects	.185*	.262**	.181*	.231**
Causes Biological Changes	.143	.143	-.023	.054
Timeline Dependent	.113	.169*	.103	.125
Treatment Needed	.020	.069	.034	.025

Note: Undergraduate Sample: $N = 155$; * ≤ .05; ** ≤ .01; *** ≤ .001.

Table 39.
Correlations Between the Recognized Addictions Object Subscale for the Perceptions of Addictiveness Measure and the Harmfulness of Addiction Scale in the National Sample.

	Harmfulness of Addiction Scale					
Objects	Recognized Addictions Category	Alcohol	Nicotine	Opioids	Cocaine	Gambling
Recognized Addictions Category	.386**	.441**	.174**	.436**	.414**	.110*
Alcohol	.336**	.392**	.217**	.293**	.265**	.198**
Nicotine	.281**	.396**	.112*	.374**	.302**	-.019
Opioids	.229**	.351**	.023	.411**	.268**	-.079
Cocaine	.302**	.278**	.145**	.320**	.441**	.023
Gambling	.351**	.306**	.179**	.288**	.316**	.293**

Note: National Sample: $N = 500$; * ≤ .05; ** ≤ .01; *** ≤ .001.

Table 40.
Correlations Between the Technological Object Subscale for the Perceptions of Addictiveness Measure and the Harmfulness of Addiction Scale in the National Sample.

	Harmfulness of Addiction Scale				
Objects	Technological Category	Smartphones	Technology	Social Media	Playing Games
Technological Category	.512**	.497**	.458**	.471**	.456**
Smartphones	.433**	.452**	.375**	.418**	.340**
Technology	.467**	.457**	.460**	.424**	.381**
Social Media	.446**	.431**	.395**	.465**	.344**
Playing Games	.375**	.335**	.311**	.284**	.470**

Note: National Sample: $N = 500$; * ≤ .05; ** ≤ .01; *** ≤ .001.

Table 41.
Correlations Between the Sexual Object Subscale for the Perceptions of Addictiveness Measure and the Harmfulness of Addiction Scale in the National Sample.

	Harmfulness of Addiction Scale			
Objects	Sexual Category	Masturbation	Pornography	Sexual Activity with a Partner
Sexual Category	.480**	.440**	.433**	.417**
Masturbation	.448**	.463**	.353**	.385**
Pornography	.423**	.341**	.481**	.314**
Sexual Activity with a Partner	.327**	.298**	.244**	.345**

Note: National Sample: $N = 500$; * ≤ .05; ** ≤ .01; *** ≤ .001.

Table 42.
Correlations Between the Uncategorized Object Subscale for the Perceptions of Addictiveness Measure and the Harmfulness of Addiction Scale in the National Sample.

	Harmfulness of Objects Scale											
Objects	Cannabis	Exercise	Eating	Shopping	Sugary Food	Television	Caffeine	Another Person or Relationship	Medications	Adrenaline	Collecting Objects	Work
Cannabis	.540**	.241**	.225**	.199**	.224**	.253**	.223**	.223**	.210**	.229**	.214**	.248**
Exercise	.134**	.362**	.334**	.381**	.331**	.430**	.378**	.359**	.278**	.292**	.386**	.350**
Eating	.173**	.306**	.428**	.334**	.365**	.339**	.360**	.333**	.249**	.269**	.286**	.325**
Shopping	.161**	.334**	.369**	.429**	.364**	.392**	.373**	.318**	.284**	.295**	.392**	.350**
Sugary Food	.098*	.221**	.301**	.277**	.380**	.222**	.216**	.246**	.285**	.250**	.213**	.249**
Television	.202**	.433**	.452**	.447**	.406**	.555**	.482**	.449**	.326**	.402**	.436**	.452**
Caffeine	.120**	.269**	.308**	.360**	.338**	.268**	.277**	.253**	.306**	.270**	.274**	.294**
Another person or Relationship	.186**	.366**	.416**	.369**	.346**	.433**	.393**	.447**	.358**	.339**	.386**	.421**
Medications	.090*	.312**	.331**	.311**	.304**	.271**	.296**	.274**	.474**	.320**	.276**	.296**
Adrenaline	.127**	.360**	.377**	.414**	.369**	.390**	.330**	.357**	.380**	.449**	.415**	.364**
Collecting Objects	.156**	.403**	.349**	.418**	.354**	.437**	.343**	.324**	.300**	.365**	.497**	.407**
Work	.205**	.451**	.414**	.451**	.364**	.518**	.432**	.367**	.271**	.373**	.484**	.463**

Note: National Sample: $N = 500$; * ≤ .05; ** ≤ .01; *** ≤ .001.

Correlations with Demographics.

Table 43.
Correlations Between the Objects subscale for the Perceptions of Addictiveness Measure and demographic variables in the Undergraduate Sample.

Objects	Demographics Age	Sex[1]	Identify as Cis-Gender[2]	Identify as Heterosexual[3]	Identify as White[4]	Relationship Status[5]	Education Level	Individual Income[6]	Childhood Family Income[7]	Political Ideology[8]	Religiousness[9]	Personal Addiction Experience[10]
Overall	.048	.059	.019	-.095	-.026	.123	.068	.005	.017	.047	.139	.180*
Alcohol	.041	.020	.019	-.070	.039	-.003	.006	-.145	-.096	-.003	.035	.184*
Nicotine	.039	.033	.013	-.065	.057	.081	.043	.011	.035	-.012	.028	.167*
Masturbation	-.056	-.128	.053	-.050	-.051	.027	.063	-.164*	.023	.035	.152	.174*
Cocaine	-.027	.020	.027	-.136	.017	.081	.041	.115	.075	.027	.126	.085
Cannabis	.061	-.061	-.134	.166*	.030	.085	-.054	-.020	.104	.177*	.257**	-.036
Sexual Activity with a Partner	.159*	-.122	-.070	.074	-.087	.101	.102	-.124	-.071	.062	.078	.118
Opioids	-.039	-.043	.077	-.166*	-.016	.060	.076	.113	.059	-.152	-.029	.168*
Pornography	-.041	-.071	.175*	-.086	-.095	.025	.011	-.062	-.052	-.033	.235**	.154
Gambling	.051	.037	.128	-.243**	.083	.019	.075	-.036	-.032	-.082	.083	.110
Playing Games	.109	.036	-.047	.035	-.043	.047	.152	.038	.065	.134	.184*	.024
Exercise	.156	.090	-.030	-.071	.055	.029	.091	-.057	-.021	.059	.061	.148
Eating	.066	.095	.114	-.125	-.118	.036	-.025	-.203*	-.149	-.049	.051	.193*
Shopping	.104	.067	.035	-.108	-.108	.098	-.018	-.152	-.007	.006	-.031	.137
Smartphones	-.006	.057	-.069	.013	-.029	.257**	.060	.027	.132	.077	.071	-.016
Technology	.050	-.026	-.095	.060	-.040	.235**	.085	.026	.069	.162*	.094	-.032
Social Media	-.067	-.015	-.056	-.044	.079	.213**	-.014	.066	.141	.139	.081	.062
Sugary Food	-.016	.187*	-.011	-.030	.009	.182*	.144	.041	.047	-.009	.021	.105
Food	.064	.179*	.073	-.116	-.175*	-.024	-.045	-.115	-.064	.011	.082	.079
Television	-.016	.001	-.063	.025	.020	.056	.064	-.064	.061	.073	.153	.097
Caffeine	.063	.193*	-.017	-.085	.087	.017	.043	-.064	.035	.066	.114	.036
Another Person or Relationship	-.159*	.064	-.033	.058	.010	.200*	.098	.106	.064	.067	.110	.101
Medications	.004	.103	.119	-.243**	.006	.042	-.007	-.043	-.122	-.064	.056	.178*
Adrenaline	.035	.040	-.002	-.101	.034	-.001	.055	.022	.023	.021	.018	.197*
Collecting Objects	.116	.087	.051	-.100	-.122	-.009	-.042	-.106	-.028	-.046	-.048	.194*
Recognized Addictions Category	.015	.039	.086	-.204*	.039	.056	.048	-.002	-.026	-.063	.065	.189*
Technological Category	.032	.016	-.080	.021	-.013	.217**	.091	.047	.119	.155	.133	.011
Compulsive/ Sexual Category	.053	-.050	.059	-.073	-.085	.036	.048	-.114	-.028	.008	.118	.223**
Controversial Category	.061	-.061	-.134	.166*	.030	.085	-.054	-.020	.104	.177*	.257**	-.036
Other Category	.118	.131	.058	-.127	-.104	.041	.001	-.159*	-.074	.008	.050	.169*

Note: Undergraduate Sample: $N = 155$; * ≤ .05; ** ≤ .01; *** ≤ .001; [1]Male = 1, Female = 0; [2]Identify as cis-gender = 1, Do not identify as cis-gender = 0; [3]Identify as heterosexual = 1, Do not identify as heterosexual = 0, $N = 152$; [4]Identify as white = 1, Do not identify as white = 0; [5]In a relationship = 1, Not in a relationship = 0, $N = 152$; [6]$N = 152$; [7]$N = 153$; [8]Higher value = more conservative; [9]$N = 138$; [10]Reported some personal addiction experience with self, family, or friend = 1, Did not report personal addiction experience = 0.

Table 44.
Correlations Between the Objects Subscale for the Perceptions of Addictiveness Measure and Demographic Variables in the National Sample.

Objects	Demographics											
	Age	Sex[1]	Identify as Cis-Gender[2]	Identify as Heterosexual[3]	Identify as White[4]	Relationship Status[5]	Education Level	Individual Income[6]	Childhood Family Income[7]	Political Ideology[8]	Religiousness[9]	Personal Addiction Experience[10]
Overall	-.052	.072	-.077	.013	-.074	.125**	.011	.109*	.061	.147**	.164**	.074
Alcohol	.112*	.129**	-.033	-.021	.082	.009	-.060	-.012	.038	.000	.013	.140**
Nicotine	.145**	.120**	-.081	.110*	.158**	-.120**	-.144**	.043	.046	-.099*	-.168**	.038
Masturbation	-.213**	-.092*	.026	-.032	-.175**	.082	-.029	.030	-.010	.150**	.193**	-.012
Cocaine	.089*	.132**	.038	.077	.083	-.014	-.052	.057	.053	-.029	-.106*	-.051
Cannabis	-.006	.103*	-.044	.057	-.143**	.056	-.008	.111*	-.034	.164**	.203**	-.001
Sexual Activity with a Partner	-.197**	-.157**	.023	-.023	-.187**	.076	-.031	.018	.011	.130**	.139**	.049
Opioids	.184**	.131**	-.113*	.093*	.162**	-.146**	-.134**	.010	.068	-.094*	-.199**	.032
Pornography	-.047	.031	-.060	.054	-.134**	.054	-.034	.075	.030	.211**	.235**	.046
Gambling	.058	.123**	-.062	.051	-.028	.006	-.025	.089*	.043	.071	.015	.014
Playing Games	.018	.121**	-.135**	.021	-.125**	.109*	.032	.083	.086	.154**	.208**	.040
Exercise	-.033	-.056	-.083	.008	-.054	.130**	.076	.070	.047	.185**	.189**	.139**
Eating	-.086	-.012	-.103*	.040	-.094*	.154**	.046	.055	-.028	.129**	.139**	.069
Shopping	-.031	.151**	-.074	-.026	-.032	.156**	.062	.007	-.017	.110*	.166**	.067
Smartphones	-.129**	.140**	.016	.006	-.042	.141**	.076	.142**	.093*	.058	.119**	.047
Technology	-.141**	.054	-.091*	-.038	-.096*	.136**	.060	.167**	.090*	.087	.196**	.049
Social Media	-.143**	.067	.034	-.002	-.013	.067	.032	.096*	.052	.106*	.109*	.041
Sugary Food	-.023	.071	-.038	.004	-.028	.101*	-.017	.053	.017	.052	.005	.092*
Television	-.100*	-.031	-.053	-.020	-.111*	.136**	.076	.084	.018	.189**	.191**	.043
Caffeine	-.021	.070	-.046	-.011	-.004	.033	-.025	.038	.008	.000	.010	.049
Another Person or Relationship	-.059	-.053	-.046	-.056	-.064	.087	.024	.061	.093*	.117**	.131**	.039
Medications	-.071	.005	-.043	-.010	.029	.080	-.053	.137**	.057	.075	.041	.073
Adrenaline	-.080	.017	-.076	.016	-.028	.125**	.031	.073	.058	.018	.061	-.004
Collecting Objects	.038	.016	-.029	-.054	-.056	.141**	.097*	.058	.042	.117**	.130**	.026
Work	.046	.004	-.061	-.041	-.101*	.186**	.149**	.038	.037	.180**	.282**	.070
Recognized Addictions Category	.150**	.164**	-.064	.080	.115**	-.066	-.105*	.049	.064	-.036	-.112*	.044
Technological Category	-.118**	.113*	-.053	-.004	-.082	.135**	.059	.145**	.095*	.120**	.188**	.052
Sexual Category	-.137**	-.051	-.031	-.009	-.160**	.128**	.007	.069	.035	.173**	.209**	.029
Controversial Category	-.006	.103*	-.044	.057	-.143**	.056	-.008	.111*	-.034	.164**	.203**	-.001
Other Category	-.063	.032	-.107*	.011	-.075	.179**	.074	.054	-.001	.172**	.200**	.111*

Note: National Sample: $N = 500$; * ≤ .05; ** ≤ .01; *** ≤ .001; [1]Male = 1, Female = 0; [2]Identify as cis-gender = 1, Do not identify as cis-gender = 0; [3]Identify as heterosexual = 1, Do not identify as heterosexual = 0; [4]Identify as white = 1, Do not identify as white = 0; [5]In a relationship = 1, Not in a relationship = 0, $N = 493$; [6]$N = 498$; [7]$N = 499$; [8]Higher value = more conservative; [9]$N = 497$; [10]Reported some personal addiction experience with self, family, or friend = 1, Did not report personal addiction experience = 0.

Table 45.
Correlations Between the Indicators Subscale for the Perceptions of Addictiveness Measure and Demographic Variables in the Undergraduate Sample.

	Demographics											
Indicators	Age	Sex[1]	Identify as Cis-Gender[2]	Identify as Heterosexual[3]	Identify as White[4]	Relationship Status[5]	Education Level	Individual Income[6]	Childhood Family Income[7]	Political Ideology[8]	Religiousness[9]	Personal Addiction Experience[10]
Overall	-.097	.271**	.154	.080	.039	-.049	-.029	-.063	-.045	-.052	.070	.166*
Feels Required	-.042	.113	.074	.100	.051	.023	.057	.149	.126	.025	.117	.085
Physical Dependence	-.082	.257**	.128	.070	.107	.000	.082	.048	-.021	.028	-.017	.140
Psychological Dependence	-.144	.319**	.006	.011	.003	.012	-.006	.026	.036	.006	.066	.091
Induces a Withdrawal	-.060	.143	.113	-.017	-.103	-.065	.070	-.006	-.079	-.158	-.024	.167*
Creates Tolerance	.015	.263**	-.030	.062	.014	.025	.091	.067	-.081	-.023	.091	.152
Incites Cravings	-.062	.059	.115	.104	.099	-.011	-.016	-.079	.040	-.012	.038	.204*
Feels Irresistible	-.002	.126	.172*	-.031	.040	-.141	-.059	-.111	-.094	-.095	-.053	.162*
Engaged in More Than Intended	-.055	.079	.219**	-.054	.042	-.109	.007	-.114	-.115	-.074	-.058	.282**
Loss of Control	-.280**	-.002	.101	.093	.098	-.064	-.072	.093	.150	-.034	.136	.109
Negative Aspects	.012	.211**	.087	.068	.003	.027	-.065	-.019	-.056	.062	.071	-.036
Negative Consequences	-.093	.234**	.116	.065	-.002	-.004	-.085	.047	.005	.049	.121	-.056
Good Aspects	-.102	.160*	.052	.032	.021	.079	.058	-.070	.057	.009	.002	-.040
Causes Biological Changes	.009	.119	.107	.001	.049	-.063	-.062	-.073	-.053	-.113	.072	.090
Timeline Dependent	.035	.153	.054	.130	.011	-.075	-.117	-.138	-.105	-.034	.062	.030
Treatment Needed	-.087	.074	.040	.030	-.080	-.110	-.120	-.061	-.125	-.136	-.038	.171*

Note: Undergraduate Sample: $N = 155$; * ≤ .05; ** ≤ .01; *** ≤ .001; [1]Male = 1, Female = 0; [2]Identify as cis-gender = 1, Do not identify as cis-gender = 0; [3]Identify as heterosexual = 1, Do not identify as heterosexual = 0, $N = 152$; [4]Identify as white = 1, Do not identify as white = 0; [5]In a relationship = 1, Not in a relationship = 0, $N = 152$; [6]$N = 152$; [7]$N = 153$; [8]Higher value = more conservative; [9]$N = 138$; [10]Reported some personal addiction experience with self, family, or friend = 1, Did not report personal addiction experience = 0.

Table 46.
Correlations Between the Indicators Subscale for the Perceptions of Addictiveness Measure and Demographic Variables in the National Sample.

Indicators	Demographics											
	Age	Sex[1]	Identify as Cis-Gender[2]	Identify as Heterosexual[3]	Identify as White[4]	Relationship Status[5]	Education Level	Individual Income[6]	Childhood Family Income[7]	Political Ideology[8]	Religiousness[9]	Personal Addiction Experience[10]
Overall	.125**	.115*	-.050	.117**	-.012	.036	-.036	.111*	.059	-.045	.032	.077
Feels Required	.018	.051	.023	.048	.006	-.065	-.097*	-.014	.031	-.080	-.074	.088
Physical Dependence	.086	.047	-.030	.063	.011	-.100*	-.160**	.036	-.032	-.067	-.063	.056
Psychological Dependence	.077	.037	-.039	.105*	.015	-.056	-.037	.007	.023	-.087	-.055	.071
Induces a Withdrawal	.048	.066	.023	.075	-.003	.002	-.025	.062	.055	-.075	-.107*	.074
Creates Tolerance	.142**	.131**	-.039	.075	-.024	.042	.038	.061	.081	-.019	.004	.036
Incites Cravings	.070	.064	-.066	.069	.040	.070	-.018	.097*	.069	-.011	.065	.059
Feels Irresistible	.104*	.088*	-.043	.108*	-.026	-.022	-.103*	.002	.008	-.065	-.018	.036
Engaged in More Than Intended	.064	.038	.026	.039	-.007	-.019	-.098*	.069	.018	-.117**	-.035	-.008
Loss of Control	.095*	.091*	.017	.077	.064	-.045	-.106*	-.012	.015	-.118**	-.091*	-.004
Negative Aspects	.132**	.079	-.086	.081	.014	.054	.013	.116**	.046	.019	.053	.045
Negative Consequences	.137**	.189**	-.052	.109*	.028	.072	.009	.066	.027	.010	.052	.145**
Good Aspects	-.066	-.039	-.060	-.013	-.146**	.118**	.109*	.091*	.050	.079	.132**	-.029
Causes Biological Changes	.133**	.078	-.022	.115**	.072	.000	-.031	.110*	.001	-.073	.001	.088*
Timeline Dependent	-.026	-.024	.019	.038	-.063	.115*	.122**	.128**	.055	.090*	.186**	.031
Treatment Needed	.108*	.135**	-.056	.047	-.007	.006	-.083	.047	.029	-.009	.040	.000

Note: National Sample: $N = 500$; * ≤ .05; ** ≤ .01; *** ≤ .001; [1]Male = 1, Female = 0; [2]Identify as cis-gender = 1, Do not identify as cis-gender = 0; [3]Identify as heterosexual = 1, Do not identify as heterosexual = 0; [4]Identify as white = 1, Do not identify as white = 0; [5]In a relationship = 1, Not in a relationship = 0, $N = 493$; [6]$N = 498$; [7]$N = 499$; [8]Higher value = more conservative; [9]$N = 497$; [10]Reported some personal addiction experience with self, family, or friend = 1, Did not report personal addiction experience = 0.

MANCOVA Results

When Individual Objects are Entered.

Mauchly's W Test.

Table 47.
Results From the Test of Sphericity Using Mauchly's W For All Indicators with Individual Objects in Both Samples

	Mauchly's *W* in Undergraduates	Mauchly's *W* in National Sample
Feels Required	.001***	.018***
Physical Dependence	.000***	.000***
Psychological Dependence	.000***	.007***
Induces a Withdrawal	.000***	.001***
Creates Tolerance	.000***	.001***
Incites Cravings	.001***	.009***
Feels Irresistible	.001***	.010***
Engaged in More Than Intended	.001***	.011***
Loss of Control	.002***	.015***
Negative Aspects	.000***	.006***
Negative Consequences	.001***	.013***
Good Aspects	.001***	.003***
Causes Biological Changes	.000***	.000***
Timeline Dependent	.000***	.000***
Treatment Needed	.000***	.003***

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001.

Greenhouse-Geiser Within-Subjects MANCOVA Results.

Tables 48.

Greenhouse-Geiser Within-Subjects Results for the Feels Required Indicator with Individual Objects in Both Samples.

	Undergraduate Sample		National Sample	
	F	η_p^2	F	η_p^2
Objects	.822	.007	1.885*	.004
Objects * Religiousness	1.145	.010	5.078***	.011
Objects * In a Relationship[1]	1.315	.011	1.816*	.004
Objects * Identify as Heterosexual[2]	.787	.007	2.924***	.006
Objects * Education	1.432	.012	1.418	.003
Objects * Identify as Cis-Gender[3]	1.019	.008	1.721*	.004
Objects * Personal Experience of Addiction[4]	1.214	.010	.914	.002
Objects * Identify as White[5]	1.173	.010	1.885*	.004
Objects * Political Ideology[6]	.773	.006	1.118	.002
Objects * Childhood Income	1.963*	.016	1.436	.003
Objects * Sex[7]	1.632	.014	2.272**	.005
Objects * Age	.660	.006	3.137***	.007
Objects * Income	1.564	.013	.807	.002

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; [1] In a relationship = 1, Not in a relationship = 0; [2]Identify as heterosexual = 1, Do not identify as heterosexual = 0; [3]Identify as cis-gender = 1, Do not identify as cis-gender = 0; [4] Reported some personal addiction experience with self, family, or friend = 1, Did not report personal addiction experience = 0; [5] Identify as white = 1, Do not identify as white = 0; [6]Higher value = more conservative; [7]Male = 1, Female = 0.

Table 49.

Greenhouse-Geiser Within-Subjects Results for the Physical Dependence Indicator with Individual Objects in Both Samples

	Undergraduate Sample		National Sample	
	F	η_p^2	F	η_p^2
Objects	2.310***	.019	4.453***	.009
Objects * Religiousness	1.307	.011	5.511***	.011
Objects * In a Relationship[1]	1.443	.012	2.054*	.004
Objects * Identify as Heterosexual[2]	1.202	.010	2.109*	.004
Objects * Education	.594	.005	2.105*	.004
Objects * Identify as Cis-Gender[3]	.522	.004	.534	.001
Objects * Personal Experience of Addiction[4]	1.095	.009	2.652**	.006
Objects * Identify as White[5]	.654	.005	2.049*	.004
Objects * Political Ideology[6]	.803	.007	1.123	.002
Objects * Childhood Income	1.495	.012	.882	.002
Objects * Sex[7]	1.228	.010	2.906***	.006
Objects * Age	1.826*	.015	1.266	.003
Objects * Income	.951	.008	1.260	.003

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; [1] In a relationship = 1, Not in a relationship = 0; [2]Identify as heterosexual = 1, Do not identify as heterosexual = 0; [3]Identify as cis-gender = 1, Do not identify as cis-gender = 0; [4] Reported some personal addiction experience with self, family, or friend = 1, Did not report personal addiction experience = 0; [5] Identify as white = 1, Do not identify as white = 0; [6]Higher value = more conservative; [7]Male = 1, Female = 0.

Table 50.
Greenhouse-Geiser Within-Subjects Results for the Psychological Dependence Indicator with Individual Objects in Both Samples.

	Undergraduate Sample		National Sample	
	F	η_p^2	F	η_p^2
Objects	.767	.006	1.961*	.004
Objects * Religiousness	1.181	.010	2.454**	.005
Objects * In a Relationship[1]	.834	.007	2.598***	.005
Objects * Identify as Heterosexual[2]	1.024	.009	1.235	.003
Objects * Education	1.294	.011	2.063*	.004
Objects * Identify as Cis-Gender[3]	.726	.006	1.074	.002
Objects * Personal Experience of Addiction[4]	1.251	.010	.717	.002
Objects * Identify as White[5]	.895	.007	1.600	.003
Objects * Political Ideology[6]	.912	.008	.827	.002
Objects * Childhood Income	.550	.005	1.372	.003
Objects * Sex[7]	1.246	.010	1.542	.003
Objects * Age	1.093	.009	2.740***	.006
Objects * Income	.728	.006	1.020	.002

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; [1] In a relationship = 1, Not in a relationship = 0; [2]Identify as heterosexual = 1, Do not identify as heterosexual = 0; [3]Identify as cis-gender = 1, Do not identify as cis-gender = 0; [4] Reported some personal addiction experience with self, family, or friend = 1, Did not report personal addiction experience = 0; [5] Identify as white = 1, Do not identify as white = 0; [6]Higher value = more conservative; [7]Male = 1, Female = 0.

Table 51.
Greenhouse-Geiser Within-Subjects Results for the Induces a Withdrawal Indicator with Individual Objects in Both Samples

	Undergraduate Sample		National Sample	
	F	η_p^2	F	η_p^2
Objects	1.627	.013	4.937***	.010
Objects * Religiousness	1.162	.010	3.965***	.008
Objects * In a Relationship[1]	1.030	.009	1.683	.004
Objects * Identify as Heterosexual[2]	.630	.005	1.808*	.004
Objects * Education	.679	.006	2.861***	.006
Objects * Identify as Cis-Gender[3]	.733	.006	1.551	.003
Objects * Personal Experience of Addiction[4]	.716	.006	1.132	.002
Objects * Identify as White[5]	.799	.007	2.399**	.005
Objects * Political Ideology[6]	.823	.007	.946	.002
Objects * Childhood Income	.661	.006	.366	.001
Objects * Sex[7]	.718	.006	1.615	.003
Objects * Age	1.461	.012	2.381**	.005
Objects * Income	.550	.005	.403	.001

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; [1] In a relationship = 1, Not in a relationship = 0; [2]Identify as heterosexual = 1, Do not identify as heterosexual = 0; [3]Identify as cis-gender = 1, Do not identify as cis-gender = 0; [4] Reported some personal addiction experience with self, family, or friend = 1, Did not report personal addiction experience = 0; [5] Identify as white = 1, Do not identify as white = 0; [6]Higher value = more conservative; [7]Male = 1, Female = 0.

Table 52.
Greenhouse-Geiser Within-Subjects Results for the Creates Tolerance Indicator with Individual Objects in Both Samples

	Undergraduate Sample		National Sample	
	F	η_p^2	F	η_p^2
Objects	1.149	.010	5.798***	.012
Objects * Religiousness	.669	.006	8.790***	.018
Objects * In a Relationship[1]	.929	.008	1.860*	.004
Objects * Identify as Heterosexual[2]	2.348**	.019	.966	.002
Objects * Education	.841	.007	2.708***	.006
Objects * Identify as Cis-Gender[3]	1.167	.010	.764	.002
Objects * Personal Experience of Addiction[4]	.624	.005	1.087	.002
Objects * Identify as White[5]	.877	.007	1.286	.003
Objects * Political Ideology[6]	1.745*	.014	.549	.001
Objects * Childhood Income	.920	.008	1.842*	.004
Objects * Sex[7]	1.660	.014	1.325	.003
Objects * Age	.726	.006	3.052***	.006
Objects * Income	.937	.008	2.274**	.005

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; [1] In a relationship = 1, Not in a relationship = 0; [2]Identify as heterosexual = 1, Do not identify as heterosexual = 0; [3]Identify as cis-gender = 1, Do not identify as cis-gender = 0; [4] Reported some personal addiction experience with self, family, or friend = 1, Did not report personal addiction experience = 0; [5] Identify as white = 1, Do not identify as white = 0; [6]Higher value = more conservative; [7]Male = 1, Female = 0

Table 53.
Greenhouse-Geiser Within-Subjects Results for the Incites Cravings Indicator with Individual Objects in Both Samples

	Undergraduate Sample		National Sample	
	F	η_p^2	F	η_p^2
Objects	1.271	.011	2.155**	.005
Objects * Religiousness	1.272	.011	2.299**	.005
Objects * In a Relationship[1]	.828	.007	2.228**	.005
Objects * Identify as Heterosexual[2]	.666	.006	2.086**	.004
Objects * Education	1.113	.009	1.860*	.004
Objects * Identify as Cis-Gender[3]	1.236	.010	1.621	.003
Objects * Personal Experience of Addiction[4]	1.075	.009	.659	.001
Objects * Identify as White[5]	1.043	.009	1.379	.003
Objects * Political Ideology[6]	.607	.005	.827	.002
Objects * Childhood Income	.824	.007	.559	.001
Objects * Sex[7]	1.775*	.015	1.317	.003
Objects * Age	1.278	.011	2.876***	.006
Objects * Income	.793	.007	1.100	.002

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; [1] In a relationship = 1, Not in a relationship = 0; [2]Identify as heterosexual = 1, Do not identify as heterosexual = 0; [3]Identify as cis-gender = 1, Do not identify as cis-gender = 0; [4] Reported some personal addiction experience with self, family, or friend = 1, Did not report personal addiction experience = 0; [5] Identify as white = 1, Do not identify as white = 0; [6]Higher value = more conservative; [7]Male = 1, Female = 0.

Table 54.
Greenhouse-Geiser Within-Subjects Results for the Feels Irresistible Indicator with Individual Objects in Both Samples

	Undergraduate Sample		National Sample	
	F	η_p^2	F	η_p^2
Objects	1.542	.013	2.625***	.006
Objects * Religiousness	1.247	.010	4.122***	.009
Objects * In a Relationship[1]	.982	.008	1.708*	.004
Objects * Identify as Heterosexual[2]	1.177	.010	2.481**	.005
Objects * Education	.831	.007	3.237***	.007
Objects * Identify as Cis-Gender[3]	.723	.006	1.187	.002
Objects * Personal Experience of Addiction[4]	.617	.005	.897	.002
Objects * Identify as White[5]	.394	.003	1.424	.003
Objects * Political Ideology[6]	.667	.006	1.380	.003
Objects * Childhood Income	.996	.008	.208	.000
Objects * Sex[7]	1.287	.011	2.172**	.005
Objects * Age	1.207	.010	2.889***	.006
Objects * Income	.756	.006	1.046	.002

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; [1] In a relationship = 1, Not in a relationship = 0; [2]Identify as heterosexual = 1, Do not identify as heterosexual = 0; [3]Identify as cis-gender = 1, Do not identify as cis-gender = 0; [4] Reported some personal addiction experience with self, family, or friend = 1, Did not report personal addiction experience = 0; [5] Identify as white = 1, Do not identify as white = 0; [6]Higher value = more conservative; [7]Male = 1, Female = 0.

Table 55.
Greenhouse-Geiser Within-Subjects Results for the Engaged in More Than Intended Indicator with Individual Objects in Both Samples

	Undergraduate Sample		National Sample	
	F	η_p^2	F	η_p^2
Objects	.790	.007	3.514***	.007
Objects * Religiousness	.988	.008	3.192***	.007
Objects * In a Relationship[1]	.931	.008	1.536	.003
Objects * Identify as Heterosexual[2]	.749	.006	1.287	.003
Objects * Education	1.623	.013	2.000*	.004
Objects * Identify as Cis-Gender[3]	.983	.008	1.772*	.004
Objects * Personal Experience of Addiction[4]	1.157	.010	.639	.001
Objects * Identify as White[5]	.769	.006	1.202	.003
Objects * Political Ideology[6]	1.188	.010	.829	.002
Objects * Childhood Income	.544	.005	.896	.002
Objects * Sex[7]	1.142	.010	1.423	.003
Objects * Age	1.213	.010	2.338**	.005
Objects * Income	.525	.004	1.268	.003

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; [1] In a relationship = 1, Not in a relationship = 0; [2]Identify as heterosexual = 1, Do not identify as heterosexual = 0; [3]Identify as cis-gender = 1, Do not identify as cis-gender = 0; [4] Reported some personal addiction experience with self, family, or friend = 1, Did not report personal addiction experience = 0; [5] Identify as white = 1, Do not identify as white = 0; [6]Higher value = more conservative; [7]Male = 1, Female = 0.

Table 56.
Greenhouse-Geiser Within-Subjects Results for the Loss of Control Indicator with Individual Objects in Both Samples

	Undergraduate Sample		National Sample	
	F	η_p^2	F	η_p^2
Objects	.399	.003	3.297***	.007
Objects * Religiousness	1.687*	.014	3.839***	.008
Objects * In a Relationship[1]	1.544	.013	1.278	.003
Objects * Identify as Heterosexual[2]	.952	.008	2.054**	.004
Objects * Education	.852	.007	1.393	.003
Objects * Identify as Cis-Gender[3]	.524	.004	1.789*	.004
Objects * Personal Experience of Addiction[4]	.716	.006	.779	.002
Objects * Identify as White[5]	1.201	.010	1.079	.002
Objects * Political Ideology[6]	.693	.006	1.114	.002
Objects * Childhood Income	1.248	.010	1.099	.002
Objects * Sex[7]	1.118	.009	1.653	.003
Objects * Age	.639	.005	3.461***	.007
Objects * Income	.896	.007	1.534	.003

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; [1] In a relationship = 1, Not in a relationship = 0; [2]Identify as heterosexual = 1, Do not identify as heterosexual = 0; [3]Identify as cis-gender = 1, Do not identify as cis-gender = 0; [4] Reported some personal addiction experience with self, family, or friend = 1, Did not report personal addiction experience = 0; [5] Identify as white = 1, Do not identify as white = 0; [6]Higher value = more conservative; [7]Male = 1, Female = 0.

Table 57.
Greenhouse-Geiser Within-Subjects Results for the Negative Aspects Indicator with Individual Objects in Both Samples

	Undergraduate Sample		National Sample	
	F	η_p^2	F	η_p^2
Objects	1.292	.011	2.448**	.005
Objects * Religiousness	1.315	.011	2.978***	.006
Objects * In a Relationship[1]	.880	.007	.900	.002
Objects * Identify as Heterosexual[2]	.863	.007	2.962***	.006
Objects * Education	.808	.007	2.156**	.005
Objects * Identify as Cis-Gender[3]	.752	.006	.774	.002
Objects * Personal Experience of Addiction[4]	.719	.006	1.214	.003
Objects * Identify as White[5]	.920	.008	1.253	.003
Objects * Political Ideology[6]	.547	.005	.881	.002
Objects * Childhood Income	.873	.007	.581	.001
Objects * Sex[7]	.908	.008	2.321**	.005
Objects * Age	1.521	.013	3.220***	.007
Objects * Income	.867	.007	1.798*	.004

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; [1] In a relationship = 1, Not in a relationship = 0; [2]Identify as heterosexual = 1, Do not identify as heterosexual = 0; [3]Identify as cis-gender = 1, Do not identify as cis-gender = 0; [4] Reported some personal addiction experience with self, family, or friend = 1, Did not report personal addiction experience = 0; [5] Identify as white = 1, Do not identify as white = 0; [6]Higher value = more conservative; [7]Male = 1, Female = 0.

Table 58.
Greenhouse-Geiser Within-Subjects Results for the Negative Consequences Indicator with Individual Objects in Both Samples

	Undergraduate Sample		National Sample	
	F	η_p^2	F	η_p^2
Objects	1.155	.010	3.496***	.007
Objects * Religiousness	.893	.007	2.981***	.006
Objects * In a Relationship[1]	1.451	.012	1.807*	.004
Objects * Identify as Heterosexual[2]	.989	.008	3.258***	.007
Objects * Education	.970	.008	2.655***	.006
Objects * Identify as Cis-Gender[3]	.589	.005	1.632	.003
Objects * Personal Experience of Addiction[4]	.823	.007	1.158	.002
Objects * Identify as White[5]	1.298	.011	.953	.002
Objects * Political Ideology[6]	1.011	.008	.872	.002
Objects * Childhood Income	.739	.006	1.161	.002
Objects * Sex[7]	.975	.008	2.879***	.006
Objects * Age	1.220	.010	5.083***	.011
Objects * Income	1.070	.009	1.847*	.004

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; [1] In a relationship = 1, Not in a relationship = 0; [2]Identify as heterosexual = 1, Do not identify as heterosexual = 0; [3]Identify as cis-gender = 1, Do not identify as cis-gender = 0; [4] Reported some personal addiction experience with self, family, or friend = 1, Did not report personal addiction experience = 0; [5] Identify as white = 1, Do not identify as white = 0; [6]Higher value = more conservative; [7]Male = 1, Female = 0.

Table 59.
Greenhouse-Geiser Within-Subjects Results for the Good Aspects Indicator with Individual Objects in Both Samples

	Undergraduate Sample		National Sample	
	F	η_p^2	F	η_p^2
Objects	.988	.008	1.786*	.004
Objects * Religiousness	.859	.007	1.594	.003
Objects * In a Relationship[1]	.754	.006	1.420	.003
Objects * Identify as Heterosexual[2]	.814	.007	.930	.002
Objects * Education	1.294	.011	1.431	.003
Objects * Identify as Cis-Gender[3]	.642	.005	.548	.001
Objects * Personal Experience of Addiction[4]	1.507	.013	.610	.001
Objects * Identify as White[5]	.588	.005	.918	.002
Objects * Political Ideology[6]	.429	.004	.810	.002
Objects * Childhood Income	1.007	.008	.972	.002
Objects * Sex[7]	1.534	.013	1.547	.003
Objects * Age	.802	.007	2.258**	.005
Objects * Income	.550	.005	.900	.002

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; [1] In a relationship = 1, Not in a relationship = 0; [2]Identify as heterosexual = 1, Do not identify as heterosexual = 0; [3]Identify as cis-gender = 1, Do not identify as cis-gender = 0; [4] Reported some personal addiction experience with self, family, or friend = 1, Did not report personal addiction experience = 0; [5] Identify as white = 1, Do not identify as white = 0; [6]Higher value = more conservative; [7]Male = 1, Female = 0.

Table 60.
Greenhouse-Geiser Within-Subjects Results for the Causes Biological Changes Indicator with Individual Objects in Both Samples

	Undergraduate Sample		National Sample	
	F	η_p^2	F	η_p^2
Objects	2.052*	.017	3.429***	.007
Objects * Religiousness	.692	.006	5.913***	.012
Objects * In a Relationship[1]	.825	.007	1.760	.004
Objects * Identify as Heterosexual[2]	1.252	.010	2.215*	.005
Objects * Education	.975	.008	2.196*	.005
Objects * Identify as Cis-Gender[3]	.868	.007	.577	.001
Objects * Personal Experience of Addiction[4]	1.325	.011	1.113	.002
Objects * Identify as White[5]	.557	.005	3.303***	.007
Objects * Political Ideology[6]	1.203	.010	.549	.001
Objects * Childhood Income	.697	.006	1.518	.003
Objects * Sex[7]	1.865*	.015	3.146***	.007
Objects * Age	1.316	.011	4.494***	.009
Objects * Income	.515	.004	.840	.002

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; [1] In a relationship = 1, Not in a relationship = 0; [2]Identify as heterosexual = 1, Do not identify as heterosexual = 0; [3]Identify as cis-gender = 1, Do not identify as cis-gender = 0; [4] Reported some personal addiction experience with self, family, or friend = 1, Did not report personal addiction experience = 0; [5] Identify as white = 1, Do not identify as white = 0; [6]Higher value = more conservative; [7]Male = 1, Female = 0.

Table 61.
Greenhouse-Geiser Within-Subjects Results for the Timeline Dependent Indicator with Individual Objects in Both Samples

	Undergraduate Sample		National Sample	
	F	η_p^2	F	η_p^2
Objects	1.239	.010	3.333***	.007
Objects * Religiousness	.500	.004	4.709***	.010
Objects * In a Relationship[1]	.926	.008	1.196	.003
Objects * Identify as Heterosexual[2]	.880	.007	.989	.002
Objects * Education	1.254	.010	.813	.002
Objects * Identify as Cis-Gender[3]	.653	.005	1.000	.002
Objects * Personal Experience of Addiction[4]	.991	.008	.828	.002
Objects * Identify as White[5]	1.109	.009	1.519	.003
Objects * Political Ideology[6]	.492	.004	1.494	.003
Objects * Childhood Income	.750	.006	1.107	.002
Objects * Sex[7]	1.826	.015	.560	.001
Objects * Age	1.913*	.016	1.517	.003
Objects * Income	.820	.007	1.352	.003

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; [1] In a relationship = 1, Not in a relationship = 0; [2]Identify as heterosexual = 1, Do not identify as heterosexual = 0; [3]Identify as cis-gender = 1, Do not identify as cis-gender = 0; [4] Reported some personal addiction experience with self, family, or friend = 1, Did not report personal addiction experience = 0; [5] Identify as white = 1, Do not identify as white = 0; [6]Higher value = more conservative; [7]Male = 1, Female = 0

Table 62.
Greenhouse-Geiser Within-Subjects Results for the Treatment Needed Indicator with Individual Objects in Both Samples

	Undergraduate Sample		National Sample	
	F	η_p^2	F	η_p^2
Objects	1.543	.013	4.259***	.009
Objects * Religiousness	1.269	.011	1.845*	.004
Objects * In a Relationship[1]	.780	.007	1.376	.003
Objects * Identify as Heterosexual[2]	.749	.006	3.211***	.007
Objects * Education	1.214	.010	3.889***	.008
Objects * Identify as Cis-Gender[3]	1.729	.014	2.589**	.005
Objects * Personal Experience of Addiction[4]	.685	.006	1.159	.002
Objects * Identify as White[5]	1.399	.012	.934	.002
Objects * Political Ideology[6]	.956	.008	1.437	.003
Objects * Childhood Income	.653	.005	1.111	.002
Objects * Sex[7]	.843	.007	2.224**	.005
Objects * Age	.964	.008	2.762***	.006
Objects * Income	.647	.005	1.475	.003

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; [1] In a relationship = 1, Not in a relationship = 0; [2]Identify as heterosexual = 1, Do not identify as heterosexual = 0; [3]Identify as cis-gender = 1, Do not identify as cis-gender = 0; [4] Reported some personal addiction experience with self, family, or friend = 1, Did not report personal addiction experience = 0; [5] Identify as white = 1, Do not identify as white = 0; [6]Higher value = more conservative; [7]Male = 1, Female = 0.

Between-Subjects MANCOVA Results.

Table 63.
Between-Subjects Results for the Feels Required Indicator with Individual Objects in Both Samples.

	Undergraduate Sample		National Sample	
	F	η_p^2	F	η_p^2
Religiousness	3.919	.032	1.805	.004
In a Relationship[1]	.394*	.003	.398	.001
Identify as Heterosexual[2]	1.695	.014	.204	.000
Education	.079	.001	1.111	.002
Identify as Cis-Gender[3]	1.176	.010	.112	.000
Personal Experience of Addiction[4]	3.507	.029	3.190	.007
Identify as White[5]	3.147	.026	.562	.001
Political Ideology[6]	.300	.003	.750	.002
Childhood Income	.747	.006	.029	.000
Sex[7]	1.168	.010	.918	.002
Age	.281	.002	.115	.000
Income	.015	.000	.981	.002

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; [1] In a relationship = 1, Not in a relationship = 0; [2]Identify as heterosexual = 1, Do not identify as heterosexual = 0; [3]Identify as cis-gender = 1, Do not identify as cis-gender = 0; [4] Reported some personal addiction experience with self, family, or friend = 1, Did not report personal addiction experience = 0; [5] Identify as white = 1, Do not identify as white = 0; [6]Higher value = more conservative; [7]Male = 1, Female = 0.

Table 64.
Between-Subjects Results for the Physical Dependence Indicator with Individual Objects in Both Samples.

	Undergraduate Sample		National Sample	
	F	η_p^2	F	η_p^2
Religiousness	.132	.001	4.447*	.009
In a Relationship[1]	.495	.004	.007	.000
Identify as Heterosexual[2]	.049	.000	3.815	.008
Education	.409	.003	2.015	.004
Identify as Cis-Gender[3]	1.959	.016	.175	.000
Personal Experience of Addiction[4]	2.925	.024	.109	.000
Identify as White[5]	1.047	.009	.050	.000
Political Ideology[6]	.904	.008	.580	.001
Childhood Income	1.509	.013	.396	.001
Sex[7]	7.086**	.056	1.748	.004
Age	1.001	.008	.033	.000
Income	.355	.003	.050	.000

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; [1] In a relationship = 1, Not in a relationship = 0; [2]Identify as heterosexual = 1, Do not identify as heterosexual = 0; [3]Identify as cis-gender = 1, Do not identify as cis-gender = 0; [4] Reported some personal addiction experience with self, family, or friend = 1, Did not report personal addiction experience = 0; [5] Identify as white = 1, Do not identify as white = 0; [6]Higher value = more conservative; [7]Male = 1, Female = 0.

Table 65.
Between-Subjects Results for the Psychological Dependence Indicator with Individual Objects in Both Samples.

	Undergraduate Sample		National Sample	
	F	η_p^2	F	η_p^2
Religiousness	2.701	.022	9.692**	.020
In a Relationship[1]	4.426*	.036	.314	.001
Identify as Heterosexual[2]	9.070**	.071	.047	.000
Education	4.164*	.034	2.183	.005
Identify as Cis-Gender[3]	.650	.005	.242	.001
Personal Experience of Addiction[4]	7.818**	.062	5.179*	.011
Identify as White[5]	2.097	.017	5.133*	.011
Political Ideology[6]	2.303	.019	2.398	.005
Childhood Income	.493	.004	.610	.001
Sex[7]	7.454**	.059	4.142*	.009
Age	2.425	.020	1.235	.003
Income	.006	.000	.822	.002

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; [1] In a relationship = 1, Not in a relationship = 0; [2]Identify as heterosexual = 1, Do not identify as heterosexual = 0; [3]Identify as cis-gender = 1, Do not identify as cis-gender = 0; [4] Reported some personal addiction experience with self, family, or friend = 1, Did not report personal addiction experience = 0; [5] Identify as white = 1, Do not identify as white = 0; [6]Higher value = more conservative; [7]Male = 1, Female = 0.

Table 66.
Between-Subjects Results for the Induces a Withdrawal Indicator with Individual Objects in Both Samples.

	Undergraduate Sample		National Sample	
	F	η_p^2	F	η_p^2
Religiousness	1.347	.011	12.213***	.025
In a Relationship[1]	.338	.003	.342	.001
Identify as Heterosexual[2]	2.403	.020	.448	.001
Education	.029	.000	1.680	.004
Identify as Cis-Gender[3]	.207	.002	.005	.000
Personal Experience of Addiction[4]	5.070*	.041	5.187*	.011
Identify as White[5]	3.839	.031	2.824	.006
Political Ideology[6]	.461	.004	.006	.000
Childhood Income	2.016	.017	2.864	.006
Sex[7]	.057	.000	.965	.002
Age	.188	.002	.002	.000
Income	1.280	.011	.300	.001

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; [1] In a relationship = 1, Not in a relationship = 0; [2]Identify as heterosexual = 1, Do not identify as heterosexual = 0; [3]Identify as cis-gender = 1, Do not identify as cis-gender = 0; [4] Reported some personal addiction experience with self, family, or friend = 1, Did not report personal addiction experience = 0; [5] Identify as white = 1, Do not identify as white = 0; [6]Higher value = more conservative; [7]Male = 1, Female = 0.

Table 67.
Between-Subjects Results for the Creates Tolerance Indicator with Individual Objects in Both Samples.

	Undergraduate Sample		National Sample	
	F	η_p^2	F	η_p^2
Religiousness	.301	.003	8.758**	.018
In a Relationship[1]	.292	.002	.009	.000
Identify as Heterosexual[2]	1.134	.009	.065	.000
Education	.068	.001	1.524	.003
Identify as Cis-Gender[3]	.059	.000	.446	.001
Personal Experience of Addiction[4]	1.676	.014	6.594*	.014
Identify as White[5]	.707	.006	.079	.000
Political Ideology[6]	.423	.004	.933	.002
Childhood Income	.858	.007	1.492	.003
Sex[7]	1.158	.010	.854	.002
Age	.007	.000	.147	.000
Income	.000	.000	.566	.001

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; [1] In a relationship = 1, Not in a relationship = 0; [2]Identify as heterosexual = 1, Do not identify as heterosexual = 0; [3]Identify as cis-gender = 1, Do not identify as cis-gender = 0; [4] Reported some personal addiction experience with self, family, or friend = 1, Did not report personal addiction experience = 0; [5] Identify as white = 1, Do not identify as white = 0; [6]Higher value = more conservative; [7]Male = 1, Female = 0.

Table 68.
Between-Subjects Results for the Incites Cravings Indicator with Individual Objects in Both Samples.

	Undergraduate Sample		National Sample	
	F	η_p^2	F	η_p^2
Religiousness	6.607*	.053	14.779***	.030
In a Relationship[1]	.228	.002	.099	.000
Identify as Heterosexual[2]	8.678**	.068	.068	.000
Education	.021	.000	4.569*	.010
Identify as Cis-Gender[3]	.071	.001	.390	.001
Personal Experience of Addiction[4]	1.984	.016	3.010	.006
Identify as White[5]	.523	.004	2.639	.006
Political Ideology[6]	.031	.000	.224	.000
Childhood Income	2.320	.019	.302	.001
Sex[7]	.028	.000	3.536	.007
Age	.148	.001	.203	.000
Income	.277	.002	1.397	.003

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; [1] In a relationship = 1, Not in a relationship = 0; [2]Identify as heterosexual = 1, Do not identify as heterosexual = 0; [3]Identify as cis-gender = 1, Do not identify as cis-gender = 0; [4] Reported some personal addiction experience with self, family, or friend = 1, Did not report personal addiction experience = 0; [5] Identify as white = 1, Do not identify as white = 0; [6]Higher value = more conservative; [7]Male = 1, Female = 0.

Table 69.
Between-Subjects Results for the Feels Irresistible Indicator with Individual Objects in Both Samples.

	Undergraduate Sample		National Sample	
	F	η_p^2	F	η_p^2
Religiousness	2.007	.017	15.307***	.031
In a Relationship[1]	1.257	.010	.188	.000
Identify as Heterosexual[2]	.340	.003	.360	.001
Education	.628	.005	.622	.001
Identify as Cis-Gender[3]	.487	.004	.029	.000
Personal Experience of Addiction[4]	1.763	.015	2.391	.005
Identify as White[5]	2.238	.018	2.060	.004
Political Ideology[6]	.012	.000	.125	.000
Childhood Income	1.073	.009	1.422	.003
Sex[7]	.488	.004	2.376	.005
Age	.688	.006	.065	.000
Income	.386	.003	1.277	.003

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; [1] In a relationship = 1, Not in a relationship = 0; [2]Identify as heterosexual = 1, Do not identify as heterosexual = 0; [3]Identify as cis-gender = 1, Do not identify as cis-gender = 0; [4] Reported some personal addiction experience with self, family, or friend = 1, Did not report personal addiction experience = 0; [5] Identify as white = 1, Do not identify as white = 0; [6]Higher value = more conservative; [7]Male = 1, Female = 0.

Table 70.
Between-Subjects Results for the Engaged in More Than Intended Indicator with Individual Objects in Both Samples.

	Undergraduate Sample		National Sample	
	F	η_p^2	F	η_p^2
Religiousness	1.868	.015	13.638***	.028
In a Relationship[1]	.450	.004	.279	.001
Identify as Heterosexual[2]	.129	.001	.127	.000
Education	1.443	.012	2.800	.006
Identify as Cis-Gender[3]	.753	.006	.022	.000
Personal Experience of Addiction[4]	5.831*	.047	4.324*	.009
Identify as White[5]	.024	.000	6.491*	.014
Political Ideology[6]	.233	.002	1.880	.004
Childhood Income	.844	.007	2.545	.005
Sex[7]	1.849	.015	3.559	.007
Age	.891	.007	.036	.000
Income	.007	.000	.910	.002

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; [1] In a relationship = 1, Not in a relationship = 0; [2]Identify as heterosexual = 1, Do not identify as heterosexual = 0; [3]Identify as cis-gender = 1, Do not identify as cis-gender = 0; [4] Reported some personal addiction experience with self, family, or friend = 1, Did not report personal addiction experience = 0; [5] Identify as white = 1, Do not identify as white = 0; [6]Higher value = more conservative; [7]Male = 1, Female = 0.

Table 71.
Between-Subjects Results for the Loss of Control Indicator with Individual Objects in Both Samples.

	Undergraduate Sample		National Sample	
	F	η_p^2	F	η_p^2
Religiousness	1.133	.009	7.439**	.015
In a Relationship[1]	.038	.000	1.434	.003
Identify as Heterosexual[2]	2.143	.018	.000	.000
Education	.673	.006	3.757	.008
Identify as Cis-Gender[3]	.137	.001	1.285	.003
Personal Experience of Addiction[4]	1.654	.014	2.393	.005
Identify as White[5]	.040	.000	4.895*	.010
Political Ideology[6]	.055	.000	2.100	.004
Childhood Income	.881	.007	1.628	.003
Sex[7]	1.810	.015	1.317	.003
Age	.711	.006	.280	.001
Income	.820	.007	1.449	.003

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; [1] In a relationship = 1, Not in a relationship = 0; [2]Identify as heterosexual = 1, Do not identify as heterosexual = 0; [3]Identify as cis-gender = 1, Do not identify as cis-gender = 0; [4] Reported some personal addiction experience with self, family, or friend = 1, Did not report personal addiction experience = 0; [5] Identify as white = 1, Do not identify as white = 0; [6]Higher value = more conservative; [7]Male = 1, Female = 0.

Table 72.
Between-Subjects Results for the Negative Aspects Indicator with Individual Objects in Both Samples.

	Undergraduate Sample		National Sample	
	F	η_p^2	F	η_p^2
Religiousness	4.111*	.033	11.296***	.023
In a Relationship[1]	.834	.007	1.974	.004
Identify as Heterosexual[2]	.331	.003	.235	.000
Education	1.535	.013	2.302	.005
Identify as Cis-Gender[3]	7.386	.058	2.147	.005
Personal Experience of Addiction[4]	.253	.002	5.039*	.011
Identify as White[5]	.436	.004	.005	.000
Political Ideology[6]	.362	.003	.033	.000
Childhood Income	.865	.007	4.245*	.009
Sex[7]	2.662	.022	5.060*	.011
Age	.203	.002	.002	.000
Income	.015	.000	2.081	.004

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; [1] In a relationship = 1, Not in a relationship = 0; [2]Identify as heterosexual = 1, Do not identify as heterosexual = 0; [3]Identify as cis-gender = 1, Do not identify as cis-gender = 0; [4] Reported some personal addiction experience with self, family, or friend = 1, Did not report personal addiction experience = 0; [5] Identify as white = 1, Do not identify as white = 0; [6]Higher value = more conservative; [7]Male = 1, Female = 0.

Table 73.
Between-Subjects Results for the Negative Consequences Indicator with Individual Objects in Both Samples.

	Undergraduate Sample		National Sample	
	F	η_p^2	F	η_p^2
Religiousness	.676	.006	1.247***	.021
In a Relationship[1]	.005	.000	.226	.000
Identify as Heterosexual[2]	.327	.003	.097	.000
Education	.039	.000	2.806	.006
Identify as Cis-Gender[3]	1.758	.015	1.175	.002
Personal Experience of Addiction[4]	2.616	.022	9.039**	.019
Identify as White[5]	.355	.003	1.266	.003
Political Ideology[6]	1.732	.014	.167	.000
Childhood Income	2.127	.018	1.342	.003
Sex[7]	4.143*	.034	4.349*	.009
Age	.120	.001	.047	.000
Income	.178	.001	2.986	.006

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; [1] In a relationship = 1, Not in a relationship = 0; [2]Identify as heterosexual = 1, Do not identify as heterosexual = 0; [3]Identify as cis-gender = 1, Do not identify as cis-gender = 0; [4] Reported some personal addiction experience with self, family, or friend = 1, Did not report personal addiction experience = 0; [5] Identify as white = 1, Do not identify as white = 0; [6]Higher value = more conservative; [7]Male = 1, Female = 0.

Table 74.
Between-Subjects Results for the Good Aspects Indicator with Individual Objects in Both Samples.

	Undergraduate Sample		National Sample	
	F	η_p^2	F	η_p^2
Religiousness	.555	.005	3.267	.007
In a Relationship[1]	.766	.006	5.970*	.012
Identify as Heterosexual[2]	3.742	.030	.901	.002
Education	.021	.000	.115	.000
Identify as Cis-Gender[3]	.350	.003	.146	.000
Personal Experience of Addiction[4]	.564	.005	2.991	.006
Identify as White[5]	.054	.000	.544	.001
Political Ideology[6]	2.881	.024	.058	.000
Childhood Income	.107	.001	.000	.000
Sex[7]	9.158**	.071	.983	.002
Age	.000	.000	.001	.000
Income	.120	.001	5.369*	.011

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; [1] In a relationship = 1, Not in a relationship = 0; [2]Identify as heterosexual = 1, Do not identify as heterosexual = 0; [3]Identify as cis-gender = 1, Do not identify as cis-gender = 0; [4] Reported some personal addiction experience with self, family, or friend = 1, Did not report personal addiction experience = 0; [5] Identify as white = 1, Do not identify as white = 0; [6]Higher value = more conservative; [7]Male = 1, Female = 0.

Table 75.
Between-Subjects Results for the Causes Biological Changes Indicator with Individual Objects in Both Samples.

	Undergraduate Sample		National Sample	
	F	η_p^2	F	η_p^2
Religiousness	1.291	1.291	7.211**	.015
In a Relationship[1]	2.115	2.115	3.112	.007
Identify as Heterosexual[2]	2.624	2.624	.391	.001
Education	.244	.244	1.246	.003
Identify as Cis-Gender[3]	.096	.096	1.154	.002
Personal Experience of Addiction[4]	1.916	1.916	4.456*	.009
Identify as White[5]	.002	.002	7.923**	.016
Political Ideology[6]	.107	.107	.031	.000
Childhood Income	2.439	2.439	1.180	.002
Sex[7]	.106	.106	.194	.000
Age	.068	.068	.876	.002
Income	.844	.844	.421	.001

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; [1] In a relationship = 1, Not in a relationship = 0; [2]Identify as heterosexual = 1, Do not identify as heterosexual = 0; [3]Identify as cis-gender = 1, Do not identify as cis-gender = 0; [4] Reported some personal addiction experience with self, family, or friend = 1, Did not report personal addiction experience = 0; [5] Identify as white = 1, Do not identify as white = 0; [6]Higher value = more conservative; [7]Male = 1, Female = 0.

Table 76.
Between-Subjects Results for the Timeline Dependent Indicator with Individual Objects in Both Samples.

	Undergraduate Sample		National Sample	
	F	η_p^2	F	η_p^2
Religiousness	.004	.000	.395	.001
In a Relationship[1]	.496	.004	1.027	.002
Identify as Heterosexual[2]	.582	.005	1.017	.002
Education	.100	.001	.008	.000
Identify as Cis-Gender[3]	.496	.004	.062	.000
Personal Experience of Addiction[4]	2.719	.022	.245	.001
Identify as White[5]	.778	.006	.124	.000
Political Ideology[6]	.030	.000	.100	.000
Childhood Income	.007	.000	.126	.000
Sex[7]	.731	.006	.476	.001
Age	.091	.001	.117	.000
Income	1.609	.013	2.983	.006

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; [1] In a relationship = 1, Not in a relationship = 0; [2]Identify as heterosexual = 1, Do not identify as heterosexual = 0; [3]Identify as cis-gender = 1, Do not identify as cis-gender = 0; [4] Reported some personal addiction experience with self, family, or friend = 1, Did not report personal addiction experience = 0; [5] Identify as white = 1, Do not identify as white = 0; [6]Higher value = more conservative; [7]Male = 1, Female = 0.

Table 77.
Between-Subjects Results for the Treatment Needed Indicator with Individual Objects in Both Samples.

	Undergraduate Sample		National Sample	
	F	η_p^2	F	η_p^2
Religiousness	.017	.000	7.899**	.016
In a Relationship[1]	.620	.005	1.686	.004
Identify as Heterosexual[2]	1.372	.011	.026	.000
Education	.799	.007	.866	.002
Identify as Cis-Gender[3]	1.863	.015	1.234	.003
Personal Experience of Addiction[4]	2.206	.018	4.390*	.009
Identify as White[5]	.183	.002	2.224	.005
Political Ideology[6]	2.920	.024	.448	.001
Childhood Income	2.613	.021	1.009	.002
Sex[7]	3.177	.026	.459	.001
Age	.314	.003	.664	.001
Income	2.024	.017	1.813	.004

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; [1] In a relationship = 1, Not in a relationship = 0; [2]Identify as heterosexual = 1, Do not identify as heterosexual = 0; [3]Identify as cis-gender = 1, Do not identify as cis-gender = 0; [4] Reported some personal addiction experience with self, family, or friend = 1, Did not report personal addiction experience = 0; [5] Identify as white = 1, Do not identify as white = 0; [6]Higher value = more conservative; [7]Male = 1, Female = 0.

Post-hoc Test MANCOVA Results.

Table 78.
Means and Standard Deviations for all Individuals Objects Regarding the Feels Required Indicator in Both Samples.

	Undergraduate Mean (SD)	National Mean (SD)
Alcohol	.712 (.455)	.821 (.383)
Nicotine	.841 (.367)	.809 (.393)
Masturbation	.205 (.405)	.201 (.401)
Cocaine	.773 (.421)	.647 (.478)
Cannabis	.508 (.502)	.466 (.499)
Sexual Activity with a Partner	.212 (.410)	.236 (.425)
Opioids	.780 (.416)	.762 (.426)
Pornography	.235 (.426)	.207 (.406)
Gambling	.288 (.455)	.306 (.461)
Playing Games	.136 (.344)	.228 (.420)
Exercise	.485 (.502)	.298 (.458)
Eating	.659 (.476)	.501 (.501)
Shopping	.182 (.387)	.203 (.403)
Smartphones	.546 (.500)	.400 (.490)
Technology	.538 (.500)	.224 (.417)
Social Media	.515 (.502)	.413 (.493)
Sugary Food	.296 (.458)	.368 (.483)
Food	.500 (.502)	-
Work	-	.193 (.395)
Television	.129 (.336)	.136 (.343)
Caffeine	.599 (.492)	.622 (.485)
Another Person or Relationship	.439 (.498)	.228 (.420)
Medications	.667 (.473)	.530 (.500)
Adrenaline	.197 (.399)	.173 (.378)
Collecting Objects	.121 (.328)	.127 (.334)

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001.

Table 79.
Pairwise Comparisons for all Individuals Objects Regarding the Feels Required Indicator in the Both Samples

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.	25.
1. Alcohol	-		***	***	***	***		***	***	***	***	***	***	***	***	***	***	_	***	***	***	***	***	***	***
2. Nicotine		-	***	***	***	***		***	***	***	***	***	***	***	***	***	***	_	***	***	***	***	***	***	***
3. Masturbation	***	***	-	***	***		***		***		**	***		***		***	***	_		***		***		**	
4. Cocaine			***	-	***	***	***	***	***	***	***	***	***	***	***	***	***	_	***		***	**	***	***	***
5. Cannabis	**	***	***	***	-	***	***	***	***	***	***		***		***			_	***	***	***		***	***	***
6. Sexual Activity with a Partner	***	***		***	***	-	***					***		***		***	***	_	***	***		***		***	
7. Opioids			***		***	***	-	***	***	***	***	***	***	***	***	***	***	_	***	***	***	***	***	***	***
8. Pornography	***	***		***	***		***	-	***		*	***		***		***	***	_	*	***		***		***	
9. Gambling	***	***		***	**		***		-	*		***	***			**		_	***	***		***	***	***	***
10. Playing Games	***	***		***	***		***		*	-		***		***		***	***	_	***	***		***		***	
11. Exercise	**	***	***	***		***	***	**		***	-	***	***	*		***		_	***	***		***	***	***	***
12. Eating		*	***			***		***	***	***		-	***	*	***		***	_	***	***	***		***	***	***
13. Shopping	***	***		***	***		***				***	***	-	***		***	***	_	**	***		***		***	
14. Smartphones		***	***	**		***	**	***	***	***			***	-	***			_	***	***	***	***	***	***	***
15. Technology		***	***	*		***	**	***	***	***			***		-	***	***	_	***	***		***		***	
16. Social Media	*	***	***	***		***	***	***	**	***			***			-		_	***	***	***	*	***	***	***
17. Sugary Food	***	***		***	*		***			*		***		***	**	**	-	_	***	***	***	***	***	***	***
18. Food	*	***	***	**		***	**	***	*	***			***				*	-	-	-	-	-	-	-	-
19. Television	***	***		***	***		***		*		***	***		***	***	***	*	***	-	***	***	***			
20. Caffeine		***	***			***	*	***	***	***			***				***		***	-	***	*	***	***	***
21. Another Person or Relationship	**	***	**	***		***	***	*		***		**	***						***		-	***		***	
22. Medications		*	***			***		***	***	***			***				***		***		**	-	***	***	***
23. Adrenaline	***	***		***	***		***				***	***		***	***	***		***		***	***	***	-		
24. Collecting Objects	***	***		***	***		***		**		***	***		***	***	***	**	***		***	***	***		-	*
25. Work	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; Below diagonal = Undergraduate Sample, Above Diagonal = National Sample

Table 80.
Means and Standard Deviations for all Individuals Objects Regarding the Physical Dependence Indicator in Both Samples.

	Undergraduate Mean (SD)	National Mean (SD)
Alcohol	.727 (.447)	.696 (.460)
Nicotine	.841 (.367)	.632 (.483)
Masturbation	.227 (.421)	.072 (.259)
Cocaine	.773 (.421)	.532 (.499)
Cannabis	.629 (.485)	.300 (.459)
Sexual Activity with a Partner	.212 (.410)	.078 (.268)
Opioids	.758 (.430)	.694 (.461)
Pornography	.099 (.299)	.070 (.255)
Gambling	.121 (.328)	.057 (.233)
Playing Games	.083 (.277)	.043 (.203)
Exercise	.485 (.502)	.244 (.430)
Eating	.720 (.451)	.446 (.498)
Shopping	.083 (.277)	.045 (.208)
Smartphones	.258 (.439)	.080 (.272)
Technology	.174 (.381)	.055 (.229)
Social Media	.174 (.381)	.064 (.244)
Sugary Food	.409 (.494)	.285 (.452)
Food	.485 (.502)	-
Work	-	.049 (.217)
Television	.030 (.172)	.035 (.184)
Caffeine	.689 (.465)	.583 (.494)
Another Person or Relationship	.296 (.458)	.066 (.248)
Medications	.697 (.461)	.509 (.500)
Adrenaline	.189 (.393)	.107 (.309)
Collecting Objects	.061 (.240)	.029 (.167)

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001

Table 81.
Pairwise Comparisons for all Individuals Objects Regarding the Physical Dependence Indicator in the Both Samples

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.	25.
1. Alcohol	-		***	***	***	***		***	***	***	***	***	***	***	***	***	***	_	***	**	***	***	***	***	***
2. Nicotine		-	***	***	***	***		***	***	***	***	***	***	***	***	***	***	_	***		***	***	***	***	***
3. Masturbation	***	***	-	***	***		***				***	***					***	_		***		***			
4. Cocaine			***	-	***	***	***	***	***	***	***		***	***	***	***	***	_	***		***		***	***	***
5. Cannabis		***	***		-	***	***	***	***	***		***	***	***	***	***		_	***	***	***	***	***	***	***
6. Sexual Activity with a Partner	***	***		***	***	-	***				***	***					***	_		***		***		*	
7. Opioids			***			***	-	***	***	***	***	***	***	***	***	***	***	_	***	**	***	***	***	***	***
8. Pornography	***	***		***	***		***	-			***	***					***	_		***		***		*	
9. Gambling	***	***		***	***		***		-		***	***					***	_		***		***			
10. Playing Games	***	***		***	***		***			-	***	***					***	_		***		***	***		
11. Exercise	**	***	***	***		***	***	***	***	***	-	***	***	***	***	***		_	***	***	***	***	***	***	***
12. Eating			***			***		***	***	***	***	-	***	***	***	***	***	_	***	***	***		***	***	***
13. Shopping	***	***		***	***	*	***				***	***	-				***	_		***		***	**		
14. Smartphones	***	***		***	***		***	*		***	**	***	**	-			***	_		***		***		**	
15. Technology	***	***		***	***		***				***	***			-		***	_		***		***			
16. Social Media	***	***		***	***		***				***	***				-	***	_		***		***			
17. Sugary Food	***	***		***	*		***	***	***	***		***	***		**	**	-	_	***	***	***	***	***	***	***
18. Food	**	***	**	***		***	**	***	***	***		***	***	*	***	***		-	-	-	-	-	-	-	-
19. Television	***	***	***	***	***	***	***				***	***		***	**	**	***	***	-	***		***	***		
20. Caffeine			***			***		***	***	***	*		***	***	***	***	***		***	-	***		***	***	***
21. Another Person or Relationship	***	***		***	***		***	**		**	*	***	***						***	***	-	***			
22. Medications		*	***			***		***	***	***	*		***	***	***	***	***	*	***		***	-	***	***	***
23. Adrenaline	***	***		***	***		***				***	***					**	***	**	***		***	-	***	*
24. Collecting Objects	***	***	**	***	***	*	***				***	***		***			***	***		***	***	***		-	
25. Work	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; Below diagonal = Undergraduate Sample, Above Diagonal = National Sample

Table 82.
Means and Standard Deviations for all Individuals Objects Regarding the Psychological Dependence Indicator in Both Samples

	Undergraduate Mean (SD)	National Mean (SD)
Alcohol	.841 (.367)	.745 (.436)
Nicotine	.833 (.374)	.690 (.463)
Masturbation	.629 (.485)	.343 (.475)
Cocaine	.742 (.439)	.614 (.487)
Cannabis	.780 (.416)	.571 (.495)
Sexual Activity with a Partner	.652 (.478)	.324 (.469)
Opioids	.712 (.455)	.678 (.468)
Pornography	.591 (.494)	.366 (.482)
Gambling	.576 (.496)	.409 (.492)
Playing Games	.568 (.497)	.345 (.476)
Exercise	.720 (.451)	.378 (.485)
Eating	.697 (.461)	.444 (.497)
Shopping	.591 (.494)	.326 (.469)
Smartphones	.614 (.489)	.419 (.494)
Technology	.561 (.498)	.296 (.457)
Social Media	.629 (.485)	.452 (.498)
Sugary Food	.561 (.498)	.444 (.497)
Food	.583 (.495)	-
Work	-	.218 (.413)
Television	.470 (.501)	.234 (.424)
Caffeine	.568 (.497)	.577 (.495)
Another Person or Relationship	.667 (.473)	.322 (.468)
Medications	.712 (.455)	.540 (.499)
Adrenaline	.515 (.502)	.275 (.447)
Collecting Objects	.439 (.498)	.214 (.410)

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001

Table 83.
Pairwise Comparisons for all Individuals Objects Regarding the Psychological Dependence Indicator in the Both Samples

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.	25.
1. Alcohol	-		***	***	***	***	*	***	***	***	***	***	***	***	***	***	***	_	***	***	***	***	***	***	***
2. Nicotine		-	***	**	***	***		***	***	***	***	***	***	***	***	***	***	_	***	***	***	***	***	***	***
3. Masturbation	***	***	-	***	***		***					**				***	***	_	***	***		***		***	***
4. Cocaine		*		-		***	*	***	***	***	***	***	***	***	***	***	***	_	***		***		***	***	***
5. Cannabis					-	***	***	***	***	***	***	***	***	***	***	***	***	_	***		***		***	***	***
6. Sexual Activity with a Partner	**	**				-	***		*			***		*		***	***	_	**	***		***		***	***
7. Opioids		*					-	***	***	***	***	***	***	***	***	***	***	_	***	**	***	***	***	***	***
8. Pornography	***	***			*			-								*		_	***	***		***	**	***	***
9. Gambling	***	***			***				-				**		***			_	***	***		***	***	***	***
10. Playing Games	***	***			**					-		**				***	**	_	***	***		***		***	***
11. Exercise											-							_	***	***		***	***	***	***
12. Eating												-	***		***			_	***	***	***	*	***	***	***
13. Shopping	***	***			*								-	***		***	***	_	***	***		***		***	***
14. Smartphones	**	**												-	***			_	***	***	**	***	***	***	***
15. Technology	***	***			**										-	***	***	_		***		***		**	*
16. Social Media	**	**														-		_	***	***	***		***	***	***
17. Sugary Food	***	***			**												-	_	***	***	***	**	***	***	***
18. Food	***	***			*													-	-	-	-	-	-	-	-
19. Television	***	***		***	***		**				***	**				*			_	***	**	***			
20. Caffeine	***	***		**	**															_	***		***	***	***
21. Another Person or Relationship																			*		_	***		***	***
22. Medications																			**			_	***	***	***
23. Adrenaline	***	***		**	***		**				**											**	_	*	
24. Collecting Objects	***	***	*	***	***	*	***				***	***	*			*					***	***		_	
25. Work	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; Below diagonal = Undergraduate Sample, Above Diagonal = National Sample

Table 84.
Means and Standard Deviations for all Individuals Objects Regarding the Induces a Withdrawal Indicator in Both Samples

	Undergraduate Mean (SD)	National Mean (SD)
Alcohol	.780 (.416)	.774 (.419)
Nicotine	.886 (.319)	.741 (.438)
Masturbation	.250 (.435)	.150 (.357)
Cocaine	.849 (.360)	.692 (.462)
Cannabis	.682 (.468)	.435 (.496)
Sexual Activity with a Partner	.250 (.435)	.160 (.367)
Opioids	.833 (.374)	.745 (.436)
Pornography	.174 (.381)	.193 (.395)
Gambling	.212 (.410)	.251 (.434)
Playing Games	.144 (.352)	.199 (.400)
Exercise	.386 (.489)	.205 (.404)
Eating	.568 (.497)	.380 (.486)
Shopping	.152 (.360)	.133 (.340)
Smartphones	.424 (.496)	.314 (.465)
Technology	.349 (.478)	.193 (.395)
Social Media	.417 (.495)	.292 (.455)
Sugary Food	.386 (.489)	.388 (.488)
Food	.379 (.487)	-
Work	-	.094 (.293)
Television	.099 (.299)	.109 (.312)
Caffeine	.712 (.455)	.618 (.486)
Another Person or Relationship	.333 (.473)	.191 (.393)
Medications	.727 (.447)	.552 (.498)
Adrenaline	.205 (.405)	.127 (.334)
Collecting Objects	.083 (.277)	.088 (.284)

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001

Table 85.
Pairwise Comparisons for all Individuals Objects Regarding the Induces a Withdrawal Indicator in the Both Samples

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.	25.
1. Alcohol	-		***	**	***	***		***	***	***	***	***	***	***	***	***	***	_	***	***	***	***	***	***	***
2. Nicotine		-	***		***	***		***	***	***	***	***	***	***	***	***	***	_	***	***	***	***	***	***	***
3. Masturbation	***	***	-	***	***		***		***			***		***		***	***	_		***		***		**	
4. Cocaine			***	-	***	***		***	***	***	***	***	***	***	***	***	***	_	***		***	***	***	***	***
5. Cannabis		***	***	*	-	***	***	***	***	***	***		***	***	***	***		_	***	***	***	**	***	***	***
6. Sexual Activity with a Partner	***	***		***	***	-	***		**			***		***		***	***	_		***		***		***	*
7. Opioids			***			***	-	***	***	***	***	***	***	***	***	***	***	_	***	***	***	***	***	***	***
8. Pornography	***	***		***	***		***	-				***		***		***	***	_	***	***		***	*	***	***
9. Gambling	***	***		***	***		***		-			***	***				***	_	***	***		***	***	***	***
10. Playing Games	***	***		***	***		***			-		***	*	***		***	***	_	***	***		***	**	***	***
11. Exercise	***	***		***	***		***	**		***	-	***	**	***		*	***	_	***	***		***	**	***	***
12. Eating	*	***	***	***		***	***	***	***	***	*	-	***		***	*		_	***	***	***	***	***	***	***
13. Shopping	***	***		***	***		***				**	***	-	***		***	***	_		***		***		**	
14. Smartphones	***	***		***	**		***	***	**	***			***	-	***			_	***	***	***	***	***	***	***
15. Technology	***	***		***	***		***			**		**	**		-	***	***	_	***	***		***	*	***	***
16. Social Media	***	***		***	***		***	***	**	***			***			-	**	_	***	***	***	***	***	***	***
17. Sugary Food	***	***		***	***		***	**		***			***				-	_	***	***	***	***	***	***	***
18. Food	***	***		***	***		***	*		**		*	**					-	-	-	-	-	-	-	-
19. Television	***	***	*	***	***	*	***				***	***		***	***	***	***	***	-	***	***	***			
20. Caffeine		*	***			***		***	***	***	***		***	***	***	***	***	***	***	-	***		***	***	***
21. Another Person or Relationship	***	***		***	***		***			**		**							***	***	-	***		***	***
22. Medications		*	***			***		***	***	***	***		***	***	***	***	***	***	***		***	-	***	***	***
23. Adrenaline	***	***		***	***		***					***		**		*				***		***	-		
24. Collecting Objects	***	***	**	***	***	**	***		*		***	***		***	***	***	***	***		***	***	***		-	
25. Work	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; Below diagonal = Undergraduate Sample, Above Diagonal = National Sample

Table 86.
Means and Standard Deviations for all Individuals Objects Regarding the Creates Tolerance Indicator in Both Samples

	Undergraduate Mean (SD)	National Mean (SD)
Alcohol	.796 (.405)	.747 (.435)
Nicotine	.818 (.387)	.540 (.499)
Masturbation	.280 (.451)	.113 (.317)
Cocaine	.818 (.387)	.727 (.446)
Cannabis	.818 (.387)	.470 (.500)
Sexual Activity with a Partner	.258 (.439)	.111 (.314)
Opioids	.788 (.410)	.747 (.435)
Pornography	.250 (.435)	.222 (.416)
Gambling	.349 (.478)	.273 (.446)
Playing Games	.174 (.381)	.131 (.338)
Exercise	.364 (.483)	.152 (.359)
Eating	.386 (.489)	.207 (.406)
Shopping	.242 (.430)	.103 (.304)
Smartphones	.152 (.360)	.131 (.338)
Technology	.159 (.367)	.094 (.293)
Social Media	.250 (.435)	.154 (.361)
Sugary Food	.296 (.458)	.275 (.447)
Food	.288 (.455)	-
Work	-	.057 (.233)
Television	.106 (.309)	.062 (.241)
Caffeine	.705 (.458)	.480 (.500)
Another Person or Relationship	.129 (.336)	.070 (.255)
Medications	.674 (.470)	.450 (.498)
Adrenaline	.364 (.483)	.209 (.407)
Collecting Objects	.129 (.336)	.088 (.284)

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001

Table 87.
Pairwise Comparisons for all Individuals Objects Regarding the Creates Tolerance Indicator in the Both Samples

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.	25.
1. Alcohol	-	***	***		***	***		***	***	***	***	***	***	***	***	***	***	_	***	***	***	***	***	***	***
2. Nicotine		-	***	***		***	***	***	***	***	***	***	***	***	***	***	***	_	***		***		***	***	***
3. Masturbation	***	***	-	***	***		***	***	***			***					***	_		***		***	***		*
4. Cocaine			***	-	***	***		***	***	***	***	***	***	***	***	***	***	_	***	***	***	***	***	***	***
5. Cannabis			***		-	***	***	***	***	***	***	***	***	***	***	***	***	_	***		***		***	***	***
6. Sexual Activity with a Partner	***	***		***	***	-	***	***	***			***					***	_		***		***	***		**
7. Opioids			***			***	-	***	***	***	***	***	***	***	***	***	***	_	***	***	***	***	***	***	***
8. Pornography	***	***		***	***		***	-		***			***	**	***			_	***	***	***	***		***	***
9. Gambling	***	***		***	***		***		-	***	***		***	***	***	***		_	***	***	***	***		***	***
10. Playing Games	***	***		***	***		***		**	-		**					***	_	***	***	**	***	*		***
11. Exercise	***	***		***	***		***			*	-						***	_	***	***	***	***		*	***
12. Eating	***	***		***	***		***			**		-	***	*	***			_	***	***	***	***		***	***
13. Shopping	***	***		***	***		***						-				***	_		***		***	***		
14. Smartphones	***	***		***	***		***		**		**	***		-			***	_	***	***	**	***	*		***
15. Technology	***	***		***	***		***		**		***	***			-	**	***	_		***		***	***		
16. Social Media	***	***		***	***		***									-	***	_	***	***	***	***		*	***
17. Sugary Food	***	***		***	***		***										-	_	***	***	***	***		***	***
18. Food	***	***		***	***		***											-	-	-	-	-	-	-	-
19. Television	***	***	*	***	***	*	***		***		***	***					**	*	_	***		***	***		
20. Caffeine			***			***		***	***	***	***	***	***	***	***	***	***	***	***	_	***		***	***	***
21. Another Person or Relationship	***	***		***	***		***		***		***	***					*	*		***	_	***	***		
22. Medications			***			***		***	***	***	***	***	***	***	***	***	***	***	***		***	_	***	***	***
23. Adrenaline	***	***		***	***		***			*				**	**				***	***	***	***	_	***	***
24. Collecting Objects	***	***		***	***		***		***		***	***					*	***		***		***	***	_	
25. Work	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; Below diagonal = Undergraduate Sample, Above Diagonal = National Sample

Table 88.
Means and Standard Deviations for all Individuals Objects Regarding the Incites Cravings Indicator in Both Samples.

	Undergraduate Mean (SD)	National Mean (SD)
Alcohol	.818 (.387)	.762 (.426)
Nicotine	.894 (.309)	.764 (.425)
Masturbation	.697 (.461)	.441 (.497)
Cocaine	.826 (.381)	.745 (.436)
Cannabis	.780 (.416)	.544 (.499)
Sexual Activity with a Partner	.674 (.470)	.425 (.495)
Opioids	.826 (.381)	.743 (.437)
Pornography	.568 (.497)	.489 (.500)
Gambling	.599 (.492)	.561 (.497)
Playing Games	.477 (.501)	.429 (.495)
Exercise	.523 (.501)	.337 (.473)
Eating	.674 (.470)	.517 (.500)
Shopping	.508 (.502)	.394 (.489)
Smartphones	.591 (.494)	.456 (.499)
Technology	.561 (.498)	.326 (.469)
Social Media	.621 (.487)	.503 (.501)
Sugary Food	.667 (.473)	.614 (.487)
Food	.644 (.481)	-
Work	-	.226 (.419)
Television	.371 (.485)	.261 (.440)
Caffeine	.765 (.426)	.647 (.478)
Another Person or Relationship	.576 (.496)	.322 (.468)
Medications	.697 (.461)	.505 (.500)
Adrenaline	.546 (.500)	.386 (.487)
Collecting Objects	.333 (.473)	.279 (.449)

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001

Table 89.
Pairwise Comparisons for all Individuals Objects Regarding the Incites Cravings Indicator in the Both Samples

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.	25.
1. Alcohol	-		***		***	***		***	***	***	***	***	***	***	***	***	***	_	***	***	***	***	***	***	***
2. Nicotine		-	***		***	***		***	***	***	***	***	***	***	***	***	***	_	***	***	***	***	***	***	***
3. Masturbation		***	-	***	***		***		***		***				***		***	_	***	***	***			***	***
4. Cocaine				-	***	***		***	***	***	***	***	***	***	***	***	***	_	***	***	***	***	***	***	***
5. Cannabis					-	***	***			***	***		***	*	***			_	***	**	***		***	***	***
6. Sexual Activity with a Partner	*	***				-	***		***		*	**			**		***	_	***	***	***			***	***
7. Opioids							-	***	***	***	***	***	***	***	***	***	***	_	***	***	***	***	***	***	***
8. Pornography	***	***		***	**		***	-			***		**		***		***	_	***	***	***		***	***	***
9. Gambling	***	***		***	*		***		-	***	***		***	***	***			_	***	*	***		***	***	***
10. Playing Games	***	***	***	***	***	**	***			-	***	*			***		***	_	***	***	***			***	***
11. Exercise	***	***	**	***	***		***				-	***		***		***	***	_	*	***		***			***
12. Eating		***		*			*			**	*	-	***		***		***	_	***	***	***		***	***	***
13. Shopping	***	***	**	***	***		***					*	-			***	***	_	***	***	*	***		***	***
14. Smartphones	***	***		***	**		***							-	***		***	_	***	***	***			***	***
15. Technology	***	***		***	***		***								-	***	***	_	*	***		***			***
16. Social Media	***	***		***	*		***									-	***	_	***	***	***		***	***	***
17. Sugary Food		***								*							-	_	***		***	**	***	***	***
18. Food	*	***		*			**											-	-	-	-	-	-	-	-
19. Television	***	***	***	***	***	***	***	***	***		*	***		***	***	***	***	***	-	***		***	***		
20. Caffeine		*						**		***	***		***		**				***	-	***	***	***	***	***
21. Another Person or Relationship	***	***		***	**		***												***	*	-	***			***
22. Medications		***		*			*			**	*		**						***			-	***	***	***
23. Adrenaline	***	***		***	***		***												**	**			-	***	***
24. Collecting Objects	***	***	***	***	***	***	***	***	***		**	***	**	***	***	***	***	***		***	***	***	***	-	
25. Work	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; Below diagonal = Undergraduate Sample, Above Diagonal = National Sample

Table 90.
Means and Standard Deviations for all Individuals Objects Regarding the Feels Irresistible Indicator in Both Samples

	Undergraduate Mean (SD)	National Mean (SD)
Alcohol	.796 (.405)	.735 (.442)
Nicotine	.849 (.360)	.663 (.473)
Masturbation	.379 (.487)	.294 (.456)
Cocaine	.833 (.374)	.727 (.446)
Cannabis	.727 (.447)	.454 (.498)
Sexual Activity with a Partner	.417 (.495)	.314 (.465)
Opioids	.818 (.387)	.723 (.448)
Pornography	.447 (.499)	.382 (.486)
Gambling	.568 (.497)	.522 (.500)
Playing Games	.258 (.439)	.322 (.468)
Exercise	.296 (.458)	.209 (.407)
Eating	.477 (.501)	.351 (.478)
Shopping	.311 (.465)	.261 (.440)
Smartphones	.424 (.496)	.357 (.480)
Technology	.386 (.489)	.242 (.429)
Social Media	.470 (.501)	.376 (.485)
Sugary Food	.379 (.487)	.400 (.490)
Food	.364 (.483)	-
Work	-	.146 (.353)
Television	.174 (.381)	.179 (.383)
Caffeine	.492 (.502)	.419 (.494)
Another Person or Relationship	.402 (.492)	.242 (.429)
Medications	.636 (.483)	.454 (.498)
Adrenaline	.409 (.494)	.277 (.448)
Collecting Objects	.212 (.410)	.218 (.413)

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001

Table 91.
Pairwise Comparisons for all Individuals Objects Regarding the Feels Irresistible Indicator in the Both Samples

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.	25.
1. Alcohol	-	**	***		***	***		***	***	***	***	***	***	***	***	***	***	_	***	***	***	***	***	***	***
2. Nicotine		-	***		***	***		***	***	***	***	***	***	***	***	***	***	_	***	***	***	***	***	***	***
3. Masturbation	***	***	-	***	***		***	***	***		*						**	_	***	***		***			***
4. Cocaine			***	-	***	***		***	***	***	***	***	***	***	***	***	***	_	***	***	***	***	***	***	***
5. Cannabis		*	***		-	***	***			***	***	**	***	*	***			_	***		***		***	***	***
6. Sexual Activity with a Partner	***	***		***	***	-	***		***		***							***	***	**		***		**	***
7. Opioids			***			***	-	***	***	***	***	***	***	***	***	***	***	_	***	***	***	***	***	***	***
8. Pornography	***	***		***	***		***	-	***		***		***		***			_	***		***		***	***	***
9. Gambling	***	***		***			***		-	***	***	***	***	***	***	***	***	_	***	*	***		***	***	***
10. Playing Games	***	***		***	***		***	*	***	-	***				**		*	_	***	**		***		***	***
11. Exercise	***	***		***	***		***		***		-	***		***		***	***	_		***		***			*
12. Eating	***	***		***	***		***			*	**	-	**		***			_	***		***	**		***	***
13. Shopping	***	***		***	***		***		***				-	***		***	***	_	**	***		***			***
14. Smartphones	***	***		***	***		***							-	***			_	***		***	*		***	***
15. Technology	***	***		***	***		***								-	***	***	_		***		***			***
16. Social Media	***	***		***	***		***			**	*					-		_	***		***		**	***	***
17. Sugary Food	***	***		***	***		***		*								-	_	***		***		***	***	***
18. Food	***	***		***	***		***		*									-	-	-	-	-	-	-	-
19. Television	***	***	**	***	***	***	***	***	***			***		***	***	***	**	***	-	***		***	***		
20. Caffeine	***	***		***	**		***			**	**								***	-	***		***	***	***
21. Another Person or Relationship	***	***		***	***		***												***		-	***			***
22. Medications		***	***	***		*	**			***	***		***		**		***	***	***		**	-	***	***	***
23. Adrenaline	***	***		***	***		***												***			**	-		***
24. Collecting Objects	***	***		***	***	**	***	***	***			***		**	*	***	*			***	*	***	**	-	**
25. Work	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; Below diagonal = Undergraduate Sample, Above Diagonal = National Sample

Table 92.
Means and Standard Deviations for all Individuals Objects Regarding the Engaged in More Than Intended Indicator in Both Samples

	Undergraduate Mean (SD)	National Mean (SD)
Alcohol	.758 (.430)	.735(.442)
Nicotine	.811 (.393)	.608 (.489)
Masturbation	.636 (.483)	.409 (.492)
Cocaine	.720 (.451)	.686 (.465)
Cannabis	.697 (.461)	.517 (.500)
Sexual Activity with a Partner	.523 (.501)	.257 (.437)
Opioids	.705 (.458)	.676 (.469)
Pornography	.591 (.494)	.491 (.500)
Gambling	.636 (.483)	.585 (.493)
Playing Games	.523 (.501)	.464 (.499)
Exercise	.417 (.495)	.234 (.424)
Eating	.644 (.481)	.497 (.501)
Shopping	.576 (.496)	.437 (.497)
Smartphones	.561 (.498)	.466 (.499)
Technology	.500 (.502)	.312 (.464)
Social Media	.674 (.470)	.536 (.499)
Sugary Food	.576 (.496)	.561 (.497)
Food	.553 (.499)	-
Work	-	.232 (.423)
Television	.386 (.489)	.283 (.451)
Caffeine	.659 (.476)	.483 (.500)
Another Person or Relationship	.356 (.481)	.199 (.400)
Medications	.591 (.494)	.433 (.496)
Adrenaline	.379 (.487)	.261 (.440)
Collecting Objects	.364 (.483)	.263 (.441)

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001

Table 93.
Pairwise Comparisons for all Individuals Objects Regarding the Engaged in More Than Intended Indicator in the Both Samples

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.	25.
1. Alcohol	-	***	***		***	***		***	***	***	***	***	***	***	***	***	***	_	***	***	***	***	***	***	***
2. Nicotine		-	***	*	**	***		***		***	***	**	***	***	***			_	***	***	***	***	***	***	***
3. Masturbation		*	-	***	**	***	***	***	***		***				*	***	***	_	***		***		***	***	***
4. Cocaine				-	***	***		***	**	***	***	***	***	***	***	***	***	_	***	***	***	***	***	***	***
5. Cannabis					-	***	***				***				***			_	***		***		***	***	***
6. Sexual Activity with a Partner	**	***				-	***	***	***	***		***	***	***		***	***	_		***		***			
7. Opioids							-	***	*	***	***	***	***	***	***	***	***	_	***	***	***	***	***	***	***
8. Pornography		**						-	**		***				***			_	***		***		***	***	***
9. Gambling		*							-	***	***	*	***	***	***			_	***	***	***	***	***	***	***
10. Playing Games	***	***		*						-	***				***		**	_	***		***		***	***	***
11. Exercise	***	***	**	***	***		***		**		-	***	***	***		***	***	_		***		***			
12. Eating											***	-			***			_	***		***		***	***	***
13. Shopping	*	***											-		***	***	***	_	***		***		***	***	***
14. Smartphones	*	***												-	***		**	_	***		***		***	***	***
15. Technology	***	***		*											-	***	***	_		***	***	***			*
16. Social Media											***				**	-		_	***		***	*	***	***	***
17. Sugary Food		***															-	_	***	*	***	***	***	***	***
18. Food	*	***																-	-	-	-	-	-	-	-
19. Television	***	***	***	***	***		***	**	***			***	**	*		***	**	*	-	***	***	***			
20. Caffeine											**								***	-	***		***	***	***
21. Another Person or Relationship	***	***	***	***	***	*	***	***	***			***	**	**		***	**	*		***	-	***			
22. Medications	*	***																	*		***	-	***	***	***
23. Adrenaline	***	***	***	***	***		***	**	***			***	**	**		***	**			***		**	-		
24. Collecting Objects	***	***	***	***	***		***	***	***			***	***	**		***	**	*		***		***		-	
25. Work	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; Below diagonal = Undergraduate Sample, Above Diagonal = National Sample

Table 94.
Means and Standard Deviations for all Individuals Objects Regarding the Loss of Control Indicator in Both Samples

	Undergraduate Mean (SD)	National Mean (SD)
Alcohol	.803 (.399)	.766 (.424)
Nicotine	.879 (.328)	.713 (.453)
Masturbation	.553 (.499)	.355 (.479)
Cocaine	.833 (.374)	.731 (.444)
Cannabis	.621 (.487)	.466 (.499)
Sexual Activity with a Partner	.371 (.485)	.240 (.428)
Opioids	.803 (.399)	.749 (.434)
Pornography	.530 (.501)	.474 (.500)
Gambling	.614 (.489)	.606 (.489)
Playing Games	.364 (.483)	.392 (.420)
Exercise	.349 (.478)	.228 (.420)
Eating	.576 (.496)	.462 (.499)
Shopping	.394 (.490)	.368 (.483)
Smartphones	.492 (.502)	.458 (.499)
Technology	.417 (.495)	.298 (.458)
Social Media	.553 (.499)	.489 (.500)
Sugary Food	.470 (.501)	.528 (.500)
Food	.432 (.497)	-
Work	-	.199 (.400)
Television	.273 (.447)	.255 (.436)
Caffeine	.583 (.495)	.468 (.499)
Another Person or Relationship	.318 (.468)	.211 (.409)
Medications	.636 (.483)	.439 (.497)
Adrenaline	.364 (.483)	.259 (.438)
Collecting Objects	.288 (.455)	.271 (.445)

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001

Table 95.
Pairwise Comparisons for all Individuals Objects Regarding the Loss of Control Indicator in the Both Samples

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.	25.
1. Alcohol	-		***		***	***		***	***	***	***	***	***	***	***	***	***	_	***	***	***	***	***	***	***
2. Nicotine		-	***		***	***		***	***	***	***	***	***	***	***	***	***	_	***	***	***	***	***	***	***
3. Masturbation	***	***	-	***	**	***	***	***	***		***	**		***		***	***	_	***	***	***		**	*	***
4. Cocaine			***	-	***	***		***	***	***	***	***	***	***	***	***	***	_	***	***	***	***	***	***	***
5. Cannabis	**	***		**	-	***	***		***		***		*		***			_	***		***		***	***	***
6. Sexual Activity with a Partner	***	***	**	***	***	-	***	***	***	***		***	***	***		***	***	_		***		***			
7. Opioids			***		*	***	-	***	***	***	***	***	***	***	***	***	***	_	***	***	***	***	***	***	***
8. Pornography	***	***		***		*	***	-	***	*	***		***		***			_	***		***		***	***	***
9. Gambling	**	***		***		***	**		-	***	***	***	***	***	***	***		_	***	***	***	***	***	***	***
10. Playing Games	***	***	**	***	**		***	*	***	-	***				**	***	***	_	***		***		***	***	***
11. Exercise	***	***	*	***	***		***		***		-	***	***	***		***	***	_		***		***			
12. Eating	***	***		***		**	**			**	**	-	**		***			_	***		***		***	***	***
13. Shopping	***	***		***	**		***		***			*	-	**		***	***	_	***	**	***		***	***	***
14. Smartphones	***	***		***			***							-	***			_	***		***		***	***	***
15. Technology	***	***		***	*		***		**						-	***	***	_		***	**	***			***
16. Social Media	***	***		***			***			*	*					-		_	***		***		***	***	***
17. Sugary Food	***	***		***			***										-	_	***		***		***	***	***
18. Food	***	***		***			***											-	-	-	-	-	-	-	-
19. Television	***	***	***	***	***		***	***	***			***		***		***	**		-	***		***			
20. Caffeine	**	***		***		*	**			*	**		*						***	-	***		***	***	***
21. Another Person or Relationship	***	***	**	***	***		***	**	***			***		**		***				***	-	***			
22. Medications	**	***		**		***	*			***	***		***		*			*	***		***	-	***	***	***
23. Adrenaline	***	***	**	***	**		***		***			**				*				**		***	-		
24. Collecting Objects	***	***	***	***	***		***	***	***			***		**		***	*			***		***		-	**
25. Work	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; Below diagonal = Undergraduate Sample, Above Diagonal = National Sample

Table 96.
Means and Standard Deviations for all Individuals Objects Regarding the Negative Aspects Indicator in Both Samples

	Undergraduate Mean (SD)	National Mean (SD)
Alcohol	.812 (.393)	.735 (.442)
Nicotine	.750 (.435)	.567 (.496)
Masturbation	.394 (.490)	.259 (.438)
Cocaine	.788 (.410)	.723 (.448)
Cannabis	.621 (.487)	.437 (.497)
Sexual Activity with a Partner	.364 (.483)	.224 (.417)
Opioids	.758 (.430)	.713 (.453)
Pornography	.485 (.502)	.417 (.494)
Gambling	.697 (.461)	.622 (.485)
Playing Games	.258 (.439)	.238 (.426)
Exercise	.242 (.430)	.127 (.334)
Eating	.417 (.495)	.329 (.470)
Shopping	.402 (.492)	.322 (.468)
Smartphones	.371 (.485)	.281 (.450)
Technology	.356 (.481)	.226 (.419)
Social Media	.546 (.500)	.384 (.487)
Sugary Food	.477 (.501)	.456 (.499)
Food	.333 (.473)	-
Work	-	.154 (.361)
Television	.174 (.381)	.162 (.369)
Caffeine	.470 (.501)	.337 (.473)
Another Person or Relationship	.349 (.478)	.232 (.423)
Medications	.629 (.485)	.435 (.496)
Adrenaline	.356 (.481)	.304 (.460)
Collecting Objects	.174 (.381)	.201 (.401)

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001

Table 97.
Pairwise Comparisons for all Individuals Objects Regarding the Negative Aspects Indicator in the Both Samples

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.	25.
1. Alcohol	-	***	***		***	***		***	***	***	***	***	***	***	***	***	***	_	***	***	***	***	***	***	***
2. Nicotine		-	***	***	***	***	***	***		***	***	***	***	***	***	***	***	_	***	***	***	***	***	***	***
3. Masturbation	***	***	-	***	***		***	***	***		***					***	***	_	***			***			***
4. Cocaine			***	-	***	***		***	***	***	***	***	***	***	***	***	***	_	***	***	***	***	***	***	***
5. Cannabis	***	*	**	*	-	***	***		***	***	***	***	***	***	***			_	***	**	***		***	***	***
6. Sexual Activity with a Partner	***	***		***	***	-	***	***	***		***	***	***			***	***	_	*	***		***			
7. Opioids			***			***	-	***	**	***	***	***	***	***	***	***	***	_	***	***	***	***	***	***	***
8. Pornography	***	***		***			***	-	***	***	***	*	**	***	***			_	***		***		***	***	***
9. Gambling	*		***			***		**	-	***	***	***	***	***	***	***	***	_	***	***	***	***	***	***	***
10. Playing Games	***	***		***	***		***	***	***	-	***	**	**			***	***	_	***	***		***			**
11. Exercise	***	***		***	***		***	***	***		-	***	***	***	***	***	***	_		***	***	***	***	**	
12. Eating	***	***		***	*		***		***		**	-			***		***	_	***		**	**		***	***
13. Shopping	***	***		***	**		***		***		*		-		***		***	_	***		**	***		***	***
14. Smartphones	***	***		***	***		***		***					-	*	***	***	_	***			***		**	***
15. Technology	***	***		***	***		***		***						-	***	***	_	*	***		***	*		*
16. Social Media	***	**		***		*	*			***	***			**	***	-		_	***		***			***	***
17. Sugary Food	***	***		***			***		***	**	***						-	_	***	***	***		***	***	***
18. Food	***	***		***	***		***		***							**		-	-	-	-	-	-	-	-
19. Television	***	***	***	***	***	**	***	***	***			***	***	***	**	***	***		-	***	*	***	***		
20. Caffeine	***	***		***			***		***	**	***								***	-	***	**		***	***
21. Another Person or Relationship	***	***		***	***		***		***							**			**		-	***			*
22. Medications	***		***	**		***				***	***	**	**	***	***			***	***		***	-	***	***	***
23. Adrenaline	***	***		***	**		***		***										*			***	-	***	***
24. Collecting Objects	***	***	***	***	***	**	***	***	***			***	***	**	**	***	***	*		***	*	***	**	-	
25. Work	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; Below diagonal = Undergraduate Sample, Above Diagonal = National Sample

Table 98.
Means and Standard Deviations for all Individuals Objects Regarding the Negative Consequences Indicator in Both Samples

	Undergraduate Mean (SD)	National Mean (SD)
Alcohol	.864 (.344)	.795 (.404)
Nicotine	.750 (.435)	.505 (.500)
Masturbation	.462 (.500)	.298 (.458)
Cocaine	.879 (.328)	.772 (.420)
Cannabis	.735 (.443)	.503 (.501)
Sexual Activity with a Partner	.394 (.490)	.238 (.426)
Opioids	.833 (.374)	.770 (.421)
Pornography	.591 (.494)	.476 (.500)
Gambling	.803 (.399)	.684 (.465)
Playing Games	.470 (.501)	.405 (.491)
Exercise	.341 (.476)	.164 (.371)
Eating	.439 (.498)	.281 (.450)
Shopping	.515 (.502)	.380 (.486)
Smartphones	.561 (.498)	.421 (.494)
Technology	.523 (.501)	.308 (.462)
Social Media	.636 (.483)	.483 (.500)
Sugary Food	.386 (.489)	.329 (.470)
Food	.333 (.473)	-
Work	-	.296 (.457)
Television	.303 (.461)	.218 (.413)
Caffeine	.371 (.485)	.277 (.448)
Another Person or Relationship	.523 (.501)	.275 (.447)
Medications	.644 (.481)	.392 (.489)
Adrenaline	.356 (.481)	.248 (.433)
Collecting Objects	.326 (.470)	.209 (.407)

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001

Table 99.
Pairwise Comparisons for all Individuals Objects Regarding the Negative Consequences Indicator in the Both Samples

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.	25.
1. Alcohol	-	***	***		***	***		***	***	***	***	***	***	***	***	***	***	_	***	***	***	***	***	***	***
2. Nicotine		-	***	***		***	***		***	*	***	***	***		***		***	_	***	***	***	**	***	***	***
3. Masturbation	***	***	-	***	***		***	***	***	***	***			***		***		_	*			*		**	
4. Cocaine			***	-	***	***		***	***	***	***	***	***	***	***	***	***	_	***	***	***	***	***	***	***
5. Cannabis			***	**	-	***	***		***	**	***	***	***		***		***	_	***	***	***	**	***	***	***
6. Sexual Activity with a Partner	***	***		***	***	-	***	***	***	***	*		***	***		***	**	_				***			
7. Opioids			***			***	-	***	***	***	***	***	***	***	***	***	***	_	***	***	***	***	***	***	***
8. Pornography	***			***		**	***	-	***		***	***	**		***		***	_	***	***	***		***	***	***
9. Gambling			***			***		***	-	***	***	***	***	***	***	***	***	_	***	***	***	***	***	***	***
10. Playing Games	***	***		***	***		***		***	-	***	***			***	*		_	***	***	***		***	***	***
11. Exercise	***	***		***	***		***	***	***		-	***	***	***	***	***	***	_		***	***	***	***		***
12. Eating	***	***		***	***		***		***			-	***	***		***		_				**			
13. Shopping	***	**		***	**		***		***		*		-			***		_	***	**	**		***	***	
14. Smartphones	***			***			***		***		**			-	***		*	_	***	***	***		***	***	***
15. Technology	***	**		***	*		***		***		*				-	***		_	**					**	
16. Social Media	***		*	***		**	**		*	*	***	*				-	***	_	***	***	***	*	***	***	***
17. Sugary Food	***	***		***	***		***	**	***							***	-	_	***				*	***	
18. Food	***	***		***	***		***	***	***				**	**	*	***		-	-	-	-	-	-	-	-
19. Television	***	***		***	***		***	***	***	*			**	***	**	***			-			***			
20. Caffeine	***	***		***	***		***	**	***							***				-		***			
21. Another Person or Relationship	***	**		***	*		***		***		*							**	***		-	***			
22. Medications	***			***		***	***				***	*					***	***	***	***		-	***	***	
23. Adrenaline	***	***		***	***		***	**	***					*		***						***	-		
24. Collecting Objects	***	***		***	***		***	***	***				**	***	*	***					**	***		-	*
25. Work	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; Below diagonal = Undergraduate Sample, Above Diagonal = National Sample

Table 100.
Means and Standard Deviations for all Individuals Objects Regarding the Good Aspects Indicator in Both Samples

	Undergraduate Mean (SD)	National Mean (SD)
Alcohol	.296 (.458)	.187 (.390)
Nicotine	.212 (.410)	.140 (.347)
Masturbation	.439 (.498)	.265 (.442)
Cocaine	.144 (.352)	.129 (.336)
Cannabis	.341 (.476)	.220 (.414)
Sexual Activity with a Partner	.591 (.494)	.357 (.480)
Opioids	.159 (.367)	.150 (.357)
Pornography	.250 (.435)	.160 (.367)
Gambling	.250 (.435)	.156 (.363)
Playing Games	.508 (.502)	.310 (.463)
Exercise	.636 (.483)	.392 (.489)
Eating	.546 (.500)	.341 (.474)
Shopping	.402 (.492)	.255 (.436)
Smartphones	.386 (.489)	.220 (.414)
Technology	.447 (.499)	.261 (.440)
Social Media	.394 (.490)	.246 (.431)
Sugary Food	.318 (.468)	.172 (.378)
Food	.447 (.499)	-
Work	-	.265 (.442)
Television	.477 (.501)	.271 (.445)
Caffeine	.364 (.483)	.209 (.407)
Another Person or Relationship	.599 (.492)	.281 (.450)
Medications	.394 (.490)	.216 (.412)
Adrenaline	.477 (.501)	.230 (.421)
Collecting Objects	.447 (.499)	.228 (.420)

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001

Table 101.
Pairwise Comparisons for all Individuals Objects Regarding the Good Aspects Indicator in the Both Samples

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.	25.
1. Alcohol	-	*	*	**		***				***	***	***						-	*		**				
2. Nicotine		-	***		***	***				***	***	***	***	**	***	***		-	***	**	***	**	***	**	***
3. Masturbation		***	-	***		***	***	***	***		***						***	-							
4. Cocaine	**		***	-	***	***				***	***	***	***	***	***	***		-	***	***	***	***	***	***	***
5. Cannabis				***	-	***	*			**	***	***						-							
6. Sexual Activity with a Partner	***	***	*	***	***	-	***	***	***				**	***	**	***	***	-	*	***	*	***	***	***	**
7. Opioids	*		***		**	***	-			***	***	***	***		***	***		-	***		***		**	*	***
8. Pornography			**			***		-		***	***	***	***		***	***		-	***		***		*		***
9. Gambling			**			***			-	***	***	***	***		***	***		-	***		***		**		***
10. Playing Games	**	***		***			***	***	***	-	*			***			***	-		***		**	***	**	
11. Exercise	***	***	*	***	***		***	***	***		-		***	***	***	***	***	-	***	***	***	***	***	***	***
12. Eating	***	***		***	**		***	***	***			-	**	***	*	***	***	-		***		***	***	***	
13. Shopping		*		***		*	***				***		-				**	-							
14. Smartphones		*		***		**	***				***			-				-							
15. Technology		**		***			***	**	**		*				-		***	-							
16. Social Media		*		***		*	***				**					-	**	-							
17. Sugary Food				**		***	*			**	***	***					-	-	***		***				**
18. Food		***		***			***	**	*		*							-	-	-	-	-	-	-	-
19. Television	*	***		***			***	**	**										-						
20. Caffeine				***		**	***				***	*								-					
21. Another Person or Relationship	***	***		***	***		***	***	***				**	***		**	***	**		***	-				
22. Medications		*		***		*	***				***										**	-			
23. Adrenaline	*	***		***			***	**	**		*											**	-		
24. Collecting Objects		**		***			***	*			**													-	
25. Work	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; Below diagonal = Undergraduate Sample, Above Diagonal = National Sample

Table 102.
Means and Standard Deviations for all Individuals Objects Regarding the Causes Biological Changes Indicator in Both Samples

	Undergraduate Mean (SD)	National Mean (SD)
Alcohol	.796 (.405)	.795 (.404)
Nicotine	.879 (.328)	.737 (.441)
Masturbation	.432 (.498)	.251 (.434)
Cocaine	.864 (.344)	.793 (.406)
Cannabis	.720 (.451)	.517 (.500)
Sexual Activity with a Partner	.371 (.485)	.175 (.380)
Opioids	.811 (.393)	.789 (.409)
Pornography	.394 (.490)	.279 (.449)
Gambling	.341 (.476)	.273 (.446)
Playing Games	.242 (.430)	.183 (.387)
Exercise	.371 (.485)	.218 (.413)
Eating	.349 (.478)	.285 (.452)
Shopping	.227 (.421)	.160 (.367)
Smartphones	.296 (.458)	.197 (.398)
Technology	.296 (.458)	.150 (.357)
Social Media	.349 (.478)	.257 (.437)
Sugary Food	.371 (.485)	.429 (.495)
Food	.258 (.439)	-
Work	-	.082 (.275)
Television	.152 (.360)	.115 (.319)
Caffeine	.621 (.487)	.542 (.499)
Another Person or Relationship	.250 (.435)	.138 (.345)
Medications	.735 (.443)	.563 (.497)
Adrenaline	.394 (.490)	.267 (.443)
Collecting Objects	.167 (.374)	.101 (.301)

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001

Table 103.
Pairwise Comparisons for all Individuals Objects Regarding the Causes Biological Changes Indicator in the Both Samples

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.	25.
1. Alcohol	-	*	***		***	***		***	***	***	***	***	***	***	***	***	***	_	***	***	***	***	***	***	***
2. Nicotine		-	***		***	***		***	***	***	***	***	***	***	***	***	***	_	***	***	***	***	***	***	***
3. Masturbation	***	***	-	***	***	**	***						***		***		***	_	***	***	***	***		***	***
4. Cocaine			***	-	***	***		***	***	***	***	***	***	***	***	***	***	_	***	***	***	***	***	***	***
5. Cannabis		**	***	*	-	***	***	***	***	***	***	***	***	***	***	***		_	***		***		***	***	***
6. Sexual Activity with a Partner	***	***		***	***	-	***	***	***			***				*	***	_		***		***	***	***	***
7. Opioids			***			***	-	***	***	***	***	***	***	***	***	***	***	_	***	***	***	***	***	***	***
8. Pornography	***	***		***	***		***	-		***			***	**	***		***	_	***	***	***	***		***	***
9. Gambling	***	***		***	***		***		-	***			***	*	***		***	_	***	***	***	***		***	***
10. Playing Games	***	***	**	***	***		***	*		-		***				**	***	_	**	***		***	**	***	***
11. Exercise	***	***		***	***		***				-				*		***	_	***	***	***	***		***	***
12. Eating	***	***		***	***		***					-	***	***	***		***	_	***	***	***	***		***	***
13. Shopping	***	***	**	***	***		***	*					-			***	***	_		***		***	***	**	***
14. Smartphones	***	***		***	***		***							-		**	***	_	***	***		***		***	***
15. Technology	***	***		***	***		***								-	***	***	_		***		***	***		***
16. Social Media	***	***		***	***		***									-	***	_	***	***	***	***		***	***
17. Sugary Food	***	***		***	***		***										-	_	***	***	***	***	***	***	***
18. Food	***	***		***	***		***											-	-	-	-	-	-	-	-
19. Television	***	***	***	***	***	***	***	***	**		***	***		**	*	***	**		-	***		***	***		
20. Caffeine	*	***	*	***		***	**	**	***	***	***	***	***	***	***	***	***	***	***	-	***		***	***	***
21. Another Person or Relationship	***	***	**	***	***		***													***	-	***	***		***
22. Medications		*	***	**		***		***	***	***	***	***	***	***	***	***	***	***	***		***	-	***	***	***
23. Adrenaline	***	***		***	***		***						*						***	***	*	***	-	***	***
24. Collecting Objects	***	***	***	***	***	**	***	***	**		***	**		*		**	**			***		***	***	-	
25. Work	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; Below diagonal = Undergraduate Sample, Above Diagonal = National Sample

Table 104.
Means and Standard Deviations for all Individuals Objects Regarding the Timeline Dependent Indicator in Both Samples

	Undergraduate Mean (SD)	National Mean (SD)
Alcohol	.705 (.458)	.532 (.499)
Nicotine	.667 (.473)	.458 (.499)
Masturbation	.439 (.498)	.164 (.371)
Cocaine	.538 (.500)	.433 (.496)
Cannabis	.621 (.487)	.339 (.474)
Sexual Activity with a Partner	.364 (.483)	.121 (.327)
Opioids	.508 (.502)	.458 (.499)
Pornography	.447 (.499)	.199 (.400)
Gambling	.538 (.500)	.238 (.426)
Playing Games	.455 (.500)	.207 (.406)
Exercise	.439 (.498)	.164 (.371)
Eating	.424 (.496)	.158 (.365)
Shopping	.432 (.497)	.148 (.355)
Smartphones	.439 (.498)	.207 (.406)
Technology	.424 (.496)	.164 (.371)
Social Media	.439 (.498)	.226 (.419)
Sugary Food	.402 (.492)	.240 (.428)
Food	.386 (.489)	-
Work	-	.117 (.322)
Television	.341 (.476)	.150 (.357)
Caffeine	.530 (.501)	.370 (.483)
Another Person or Relationship	.341 (.476)	.136 (.343)
Medications	.568 (.497)	.370(.483)
Adrenaline	.402 (.492)	.160 (.367)
Collecting Objects	.333 (.473)	.142 (.349)

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001

Table 105.
Pairwise Comparisons for all Individuals Objects Regarding the Timeline Dependent Indicator in the Both Samples

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.	25.
1. Alcohol	-	*	***	***	***	***		***	***	***	***	***	***	***	***	***	***	_	***	***	***	***	***	***	***
2. Nicotine		-	***		***	***		***	***	***	***	***	***	***	***	***	***	_	***	*	***		***	***	***
3. Masturbation	***	**	-	***	***		***		*								*	_		***		***			
4. Cocaine	*			-	**	***		***	***	***	***	***	***	***	***	***	***	_	***		***		***	***	***
5. Cannabis					-	***	***	***	**	***	***	***	***	***	***	**	*	_	***		***		***	***	***
6. Sexual Activity with a Partner	***	***			***	-	***	***	***	***				***		***	***	_		***		***			
7. Opioids	**	*					-	***	***	***	***	***	***	***	***	***	***	_	***	*	***	*	***	***	***
8. Pornography	***	*						-										_		***		***			***
9. Gambling						*			-		*	**	***		*			_	**	***	***	***	**	***	***
10. Playing Games	**									-			*					_		***	*	***		*	***
11. Exercise	***	**									-						*	_		***		***			
12. Eating	***	**			**							-				*	**	_		***		***			
13. Shopping	***	*											-			***	***	_		***		***			
14. Smartphones	***	*												-				_		***	*	***		*	***
15. Technology	***	**			*										-	**	*	_		***		***			
16. Social Media	***	**			*											-		_	***	***	***	***	*	***	***
17. Sugary Food	***	**			**												-	_	***	***	***	***	**	***	***
18. Food	***	***			**													-	-	-	-	-	-	-	-
19. Television	***	***			***				*										-	***		***			
20. Caffeine																			*	-	***		***	***	***
21. Another Person or Relationship	***	***			***				**											**	-	***			
22. Medications						*													**		**	-	***	***	***
23. Adrenaline	***	**			*																		-		
24. Collecting Objects	***	***			**				**											*		**		-	
25. Work	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; Below diagonal = Undergraduate Sample, Above Diagonal = National Sample

Table 106.
Means and Standard Deviations for all Individuals Objects Regarding the Treatment Needed Indicator in Both Samples

	Undergraduate Mean (SD)	National Mean (SD)
Alcohol	.879 (.328)	.819 (.385)
Nicotine	.773 (.421)	.688 (.464)
Masturbation	.515 (.502)	.398 (.490)
Cocaine	.871 (.336)	.793 (.406)
Cannabis	.705 (.458)	.528 (.500)
Sexual Activity with a Partner	.447 (.499)	.308 (.462)
Opioids	.849 (.360)	.803 (.398)
Pornography	.606 (.490)	.524 (.500)
Gambling	.742 (.439)	.671 (.470)
Playing Games	.318 (.468)	.333 (.472)
Exercise	.371 (.485)	.230 (.421)
Eating	.712 (.455)	.441 (497)
Shopping	.462 (.500)	.378 (.485)
Smartphones	.326 (.470)	.306 (.461)
Technology	.296 (.458)	.281 (.450)
Social Media	.402 (.492)	.363 (.481)
Sugary Food	.515 (.502)	.450 (.498)
Food	.470 (.501)	-
Work	-	.211 (.409)
Television	.220 (.416)	.197 (.398)
Caffeine	.417 (.495)	.339 (.474)
Another Person or Relationship	.424 (.496)	.273 (.446)
Medications	.765 (.426)	.587 (.493)
Adrenaline	.341 (.476)	.269 (.444)
Collecting Objects	.296 (.458)	.251 (.434)

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001

Table 107.
Pairwise Comparisons for all Individuals Objects Regarding the Treatment Needed Indicator in the Both Samples

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.	25.
1. Alcohol	-	***	***		***	***		***	***	***	***	***	***	***	***	***	***	_	***	***	***	***	***	***	***
2. Nicotine	*	-	***	***	***	***	***	***		***	***	***	***	***	***	***	***	_	***	***	***	**	***	***	***
3. Masturbation	***	***	-	***	***	***	***	***	***		***			***	***			_	***		***	***	***	***	***
4. Cocaine			***	-	***	***		***	***	***	***	***	***	***	***	***	***	_	***	***	***	***	***	***	***
5. Cannabis	**		*	**	-	***	***		***	***	***		***	***	***	***		_	***	***	***		***	***	***
6. Sexual Activity with a Partner	***	***		***	***	-	***	***	***		*	***					***	_	***			***			***
7. Opioids			***		*	***	-	***	***	***	***	***	***	***	***	***	***	_	***	***	***	***	***	***	***
8. Pornography	***			***			***	-	***	***	***		***	***	***	***		_	***	***	***		***	***	***
9. Gambling	*		***	*		***			-	***	***	***	***	***	***	***	***	_	***	***	***		***	***	***
10. Playing Games	***	***	***	***	***		***	***	***	-	***	***					***	_	***			***		**	***
11. Exercise	***	***		***	***		***	***	***		-	***	***	**		***	***	_		***		***			
12. Eating	*		*			***				***	***	-		***	***			_	***	**	***	***	***	***	***
13. Shopping	***	***		***	***		***		***			***	-	*	***		*	_	***		***	***	***	***	***
14. Smartphones	***	***	**	***	***		***	***	***			***		-		*	***	_	***			***			***
15. Technology	***	***	***	***	***		***	***	***			***	*		-	***	***	_	***			***			*
16. Social Media	***	***		***	***		***	**	***			***				-	**	_	***		**	***	***	***	***
17. Sugary Food	***	***		***			***		***	**		***		**	***		-	_	***	***	***	***	***	***	***
18. Food	***	***		***	**		***		***			***			*			-	-	-	-	-	-	-	-
19. Television	***	***	***	***	***	***	***	***	***			***	***			***	***	***	-	***	**	***	***		
20. Caffeine	***	***		***	***		***	*	***			***							***	-		***		**	***
21. Another Person or Relationship	***	***		***	***		***		***			***							***		-	***			
22. Medications			***			***				***	***		***	***	***	***	***	***	***	***	***	-	***	***	***
23. Adrenaline	***	***	*	***	***		***	***	***			***										***	-		
24. Collecting Objects	***	***	**	***	***		***	***	***			***	*				***					***		-	
25. Work	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; Below diagonal = Undergraduate Sample, Above Diagonal = National Sample

When Object Categories are Entered.

Mauchly's W Test.

Table 108.
Results From the Test of Sphericity Using Mauchly's W For All Indicators with Factored Object Categories in Both Samples

	Mauchly's *W* in Undergraduates	Mauchly's *W* in National Sample
Feels Required	.834*	.993
Physical Dependence	.754***	.957***
Psychological Dependence	.749***	.994
Induces a Withdrawal	.809**	.879***
Creates Tolerance	.554***	.999
Incites Cravings	.567***	.995
Feels Irresistible	.789***	.982*
Engaged in More Than Intended	.448***	.995
Loss of Control	.755***	.985*
Negative Aspects	.790***	.970***
Negative Consequences	.635***	.995
Good Aspects	.534***	.954***
Causes Biological Changes	.659***	.992
Timeline Dependent	.679***	.851***
Treatment Needed	.763***	.963***

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001.

Greenhouse-Geiser Within-Subjects MANCOVA Results.

Table 109.
Greenhouse-Geiser Within-Subjects Results for the Feels Required Indicator with Factored Object Categories in Both Samples.

	Undergraduate Sample		National Sample	
	F	η_p^2	F	η_p^2
Object Categories	.179	.002	.185	.000
Object Categories * In a Relationship[1]	.816	.007	1.115	.002
Object Categories * Identify as Heterosexual[2]	.350	.003	2.559	.005
Object Categories * Education	1.345	.011	.806	.002
Object Categories * Identify as Cis-Gender[3]	.890	.007	2.068	.004
Object Categories * Personal Experience of Addiction[4]	.169	.001	.639	.001
Object Categories * Identify as White[5]	2.621*	.022	.525	.001
Object Categories * Religiousness	.886	.007	3.717*	.008
Object Categories * Political Ideology[6]	1.474	.012	.460	.001
Object Categories * Income	1.592	.013	.368	.001
Object Categories * Childhood Income	.848	.007	1.054	.002
Object Categories * Sex[7]	2.520*	.021	2.948	.006
Object Categories * Age	.241	.002	3.037*	.006

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; [1] In a relationship = 1, Not in a relationship = 0; [2]Identify as heterosexual = 1, Do not identify as heterosexual = 0; [3]Identify as cis-gender = 1, Do not identify as cis-gender = 0; [4] Reported some personal addiction experience with self, family, or friend = 1, Did not report personal addiction experience = 0; [5] Identify as white = 1, Do not identify as white = 0; [6]Higher value = more conservative; [7]Male = 1, Female = 0.

Table 110.
Greenhouse-Geiser Within-Subjects Results for the Physical Dependence Indicator with Factored Object Categories in Both Samples.

	Undergraduate Sample		National Sample	
	F	η_p^2	F	η_p^2
Object Categories	2.418	.020	12.395***	.025
Object Categories * In a Relationship[1]	.737	.006	3.195*	.007
Object Categories * Identify as Heterosexual[2]	.899	.007	1.899	.004
Object Categories * Education	.411	.003	7.478***	.016
Object Categories * Identify as Cis-Gender[3]	.479	.004	.200	.000
Object Categories * Personal Experience of Addiction[4]	2.060	.017	4.293*	.009
Object Categories * Identify as White[5]	.330	.003	2.063	.004
Object Categories * Religiousness	3.143*	.026	8.337***	.017
Object Categories * Political Ideology[6]	.401	.003	1.240	.003
Object Categories * Income	1.057	.009	1.029	.002
Object Categories * Childhood Income	1.144	.010	.172	.000
Object Categories * Sex[7]	2.046	.017	1.075	.002
Object Categories * Age	1.411	.012	.302	.001

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; [1] In a relationship = 1, Not in a relationship = 0; [2]Identify as heterosexual = 1, Do not identify as heterosexual = 0; [3]Identify as cis-gender = 1, Do not identify as cis-gender = 0; [4] Reported some personal addiction experience with self, family, or friend = 1, Did not report personal addiction experience = 0; [5] Identify as white = 1, Do not identify as white = 0; [6]Higher value = more conservative; [7]Male = 1, Female = 0.

Table 111.
Greenhouse-Geiser Within-Subjects Results for the Psychological Dependence Indicator with Factored Object Categories in Both Samples.

	Undergraduate Sample		National Sample	
	F	η_p^2	F	η_p^2
Object Categories	.482	.004	1.649	.003
Object Categories * In a Relationship[1]	.903	.008	2.546	.005
Object Categories * Identify as Heterosexual[2]	1.016	.008	.648	.001
Object Categories * Education	.955	.008	2.838	.006
Object Categories * Identify as Cis-Gender[3]	.679	.006	4.548*	.010
Object Categories * Personal Experience of Addiction[4]	.835	.007	1.705	.004
Object Categories * Identify as White[5]	.858	.007	2.648	.006
Object Categories * Religiousness	.544	.005	2.552	.005
Object Categories * Political Ideology[6]	.420	.004	.418	.001
Object Categories * Income	2.270	.019	2.673	.006
Object Categories * Childhood Income	1.590	.013	.909	.002
Object Categories * Sex[7]	1.376	.011	.096	.000
Object Categories * Age	1.085	.009	7.330***	.015

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; [1] In a relationship = 1, Not in a relationship = 0; [2]Identify as heterosexual = 1, Do not identify as heterosexual = 0; [3]Identify as cis-gender = 1, Do not identify as cis-gender = 0; [4] Reported some personal addiction experience with self, family, or friend = 1, Did not report personal addiction experience = 0; [5] Identify as white = 1, Do not identify as white = 0; [6]Higher value = more conservative; [7]Male = 1, Female = 0.

Table 112.
Greenhouse-Geiser Within-Subjects Results for the Induces a Withdrawal Indicator with Factored Object Categories in Both Samples.

	Undergraduate Sample		National Sample	
	F	η_p^2	F	η_p^2
Object Categories	1.128	.009	7.404***	.015
Object Categories * In a Relationship[1]	.560	.005	3.777*	.008
Object Categories * Identify as Heterosexual[2]	.702	.006	5.337**	.011
Object Categories * Education	2.051	.017	3.113*	.007
Object Categories * Identify as Cis-Gender[3]	.324	.003	1.299	.003
Object Categories * Personal Experience of Addiction[4]	1.256	.010	1.129	.002
Object Categories * Identify as White[5]	.400	.003	1.193	.003
Object Categories * Religiousness	1.811	.015	1.103	.002
Object Categories * Political Ideology[6]	.515	.004	2.170	.005
Object Categories * Income	.395	.003	.679	.001
Object Categories * Childhood Income	1.041	.009	.262	.001
Object Categories * Sex[7]	.339	.003	.103	.000
Object Categories * Age	1.428	.012	1.450	.003

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; [1] In a relationship = 1, Not in a relationship = 0; [2]Identify as heterosexual = 1, Do not identify as heterosexual = 0; [3]Identify as cis-gender = 1, Do not identify as cis-gender = 0; [4] Reported some personal addiction experience with self, family, or friend = 1, Did not report personal addiction experience = 0; [5] Identify as white = 1, Do not identify as white = 0; [6]Higher value = more conservative; [7]Male = 1, Female = 0.

Table 113.
Greenhouse-Geiser Within-Subjects Results for the Creates Tolerance Indicator with Factored Object Categories in Both Samples.

	Undergraduate Sample		National Sample	
	F	η_p^2	F	η_p^2
Object Categories	.204	.002	4.230*	.009
Object Categories * In a Relationship[1]	.772	.006	3.342*	.007
Object Categories * Identify as Heterosexual[2]	.334	.003	2.991	.006
Object Categories * Education	.417	.003	3.162*	.007
Object Categories * Identify as Cis-Gender[3]	.496	.004	.751	.002
Object Categories * Personal Experience of Addiction[4]	.530	.004	2.242	.005
Object Categories * Identify as White[5]	.313	.003	1.420	.003
Object Categories * Religiousness	.688	.006	7.935***	.016
Object Categories * Political Ideology[6]	.753	.006	.396	.001
Object Categories * Income	.675	.006	1.729	.004
Object Categories * Childhood Income	1.208	.010	.543	.001
Object Categories * Sex[7]	.247	.002	.329	.001
Object Categories * Age	.188	.002	2.275	.005

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; [1] In a relationship = 1, Not in a relationship = 0; [2]Identify as heterosexual = 1, Do not identify as heterosexual = 0; [3]Identify as cis-gender = 1, Do not identify as cis-gender = 0; [4] Reported some personal addiction experience with self, family, or friend = 1, Did not report personal addiction experience = 0; [5] Identify as white = 1, Do not identify as white = 0; [6]Higher value = more conservative; [7]Male = 1, Female = 0.

Table 114.
Greenhouse-Geiser Within-Subjects Results for the Incites Cravings Indicator with Factored Object Categories in Both Samples.

	Undergraduate Sample		National Sample	
	F	η_p^2	F	η_p^2
Object Categories	.757	.006	1.808	.004
Object Categories * In a Relationship[1]	1.363	.011	3.781*	.008
Object Categories * Identify as Heterosexual[2]	1.566	.013	2.874	.006
Object Categories * Education	2.179	.018	.398	.001
Object Categories * Identify as Cis-Gender[3]	.539	.005	2.948	.006
Object Categories * Personal Experience of Addiction[4]	.989	.008	1.753	.004
Object Categories * Identify as White[5]	.445	.004	.304	.001
Object Categories * Religiousness	1.982	.016	1.176	.002
Object Categories * Political Ideology[6]	2.108	.017	.229	.000
Object Categories * Income	.496	.004	.838	.002
Object Categories * Childhood Income	.165	.001	.168	.000
Object Categories * Sex[7]	1.535	.013	.733	.002
Object Categories * Age	1.072	.009	.591	.001

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; [1] In a relationship = 1, Not in a relationship = 0; [2]Identify as heterosexual = 1, Do not identify as heterosexual = 0; [3]Identify as cis-gender = 1, Do not identify as cis-gender = 0; [4] Reported some personal addiction experience with self, family, or friend = 1, Did not report personal addiction experience = 0; [5] Identify as white = 1, Do not identify as white = 0; [6]Higher value = more conservative; [7]Male = 1, Female = 0.

Table 115.
Greenhouse-Geiser Within-Subjects Results for the Feels Irresistible Indicator with Factored Object Categories in Both Samples.

	Undergraduate Sample		National Sample	
	F	η_p^2	F	η_p^2
Object Categories	1.957	.016	2.608	.005
Object Categories * In a Relationship[1]	1.351	.011	1.488	.003
Object Categories * Identify as Heterosexual[2]	2.598*	.021	2.106	.004
Object Categories * Education	.434	.004	4.872**	.010
Object Categories * Identify as Cis-Gender[3]	2.981*	.024	1.742	.004
Object Categories * Personal Experience of Addiction[4]	.998	.008	.222	.000
Object Categories * Identify as White[5]	.663	.006	1.232	.003
Object Categories * Religiousness	.249	.002	.749	.002
Object Categories * Political Ideology[6]	.547	.005	.257	.001
Object Categories * Income	1.323	.011	.678	.001
Object Categories * Childhood Income	.995	.008	.345	.001
Object Categories * Sex[7]	.452	.004	.377	.001
Object Categories * Age	1.241	.010	2.574	.005

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; [1] In a relationship = 1, Not in a relationship = 0; [2]Identify as heterosexual = 1, Do not identify as heterosexual = 0; [3]Identify as cis-gender = 1, Do not identify as cis-gender = 0; [4] Reported some personal addiction experience with self, family, or friend = 1, Did not report personal addiction experience = 0; [5] Identify as white = 1, Do not identify as white = 0; [6]Higher value = more conservative; [7]Male = 1, Female = 0.

Table 116.
Greenhouse-Geiser Within-Subjects Results for the Engaged in More Than Intended Indicator with Factored Object Categories in Both Samples.

	Undergraduate Sample		National Sample	
	F	η_p^2	F	η_p^2
Object Categories	.776	.006	2.932	.006
Object Categories * In a Relationship[1]	3.319*	.027	1.781	.004
Object Categories * Identify as Heterosexual[2]	1.954	.016	2.490	.005
Object Categories * Education	.650	.005	1.757	.004
Object Categories * Identify as Cis-Gender[3]	.309	.003	1.543	.003
Object Categories * Personal Experience of Addiction[4]	3.781*	.031	.468	.001
Object Categories * Identify as White[5]	.973	.008	.436	.001
Object Categories * Religiousness	1.362	.011	2.501	.005
Object Categories * Political Ideology[6]	.593	.005	.666	.001
Object Categories * Income	.342	.003	1.279	.003
Object Categories * Childhood Income	.896	.007	.160	.000
Object Categories * Sex[7]	.056	.000	.067	.000
Object Categories * Age	.814	.007	2.402	.005

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; [1] In a relationship = 1, Not in a relationship = 0; [2]Identify as heterosexual = 1, Do not identify as heterosexual = 0; [3]Identify as cis-gender = 1, Do not identify as cis-gender = 0; [4] Reported some personal addiction experience with self, family, or friend = 1, Did not report personal addiction experience = 0; [5] Identify as white = 1, Do not identify as white = 0; [6]Higher value = more conservative; [7]Male = 1, Female = 0.

Table 117.
Greenhouse-Geiser Within-Subjects Results for the Loss of Control Indicator with Factored Object Categories in Both Samples.

	Undergraduate Sample		National Sample	
	F	η_p^2	F	η_p^2
Object Categories	1.530	.013	.788	.002
Object Categories * In a Relationship[1]	2.663*	.022	.169	.000
Object Categories * Identify as Heterosexual[2]	1.397	.012	4.028*	.008
Object Categories * Education	.258	.002	.205	.000
Object Categories * Identify as Cis-Gender[3]	1.280	.011	2.116	.004
Object Categories * Personal Experience of Addiction[4]	.353	.003	.014	.000
Object Categories * Identify as White[5]	1.168	.010	1.492	.003
Object Categories * Religiousness	2.376	.020	5.522**	.012
Object Categories * Political Ideology[6]	1.540	.013	.174	.000
Object Categories * Income	2.127	.018	.628	.001
Object Categories * Childhood Income	1.485	.012	.140	.000
Object Categories * Sex[7]	.078	.001	.562	.001
Object Categories * Age	1.435	.012	3.103*	.007

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; [1] In a relationship = 1, Not in a relationship = 0; [2]Identify as heterosexual = 1, Do not identify as heterosexual = 0; [3]Identify as cis-gender = 1, Do not identify as cis-gender = 0; [4] Reported some personal addiction experience with self, family, or friend = 1, Did not report personal addiction experience = 0; [5] Identify as white = 1, Do not identify as white = 0; [6]Higher value = more conservative; [7]Male = 1, Female = 0.

Table 118.
Greenhouse-Geiser Within-Subjects Results for the Negative Aspects Indicator with Factored Object Categories in Both Samples.

	Undergraduate Sample		National Sample	
	F	η_p^2	F	η_p^2
Object Categories	.631	.005	.776	.002
Object Categories * In a Relationship[1]	.540	.005	.020	.000
Object Categories * Identify as Heterosexual[2]	1.114	.009	1.544	.003
Object Categories * Education	.911	.008	1.962	.004
Object Categories * Identify as Cis-Gender[3]	.537	.004	.460	.001
Object Categories * Personal Experience of Addiction[4]	1.375	.011	.008	.000
Object Categories * Identify as White[5]	.177	.001	1.397	.003
Object Categories * Religiousness	.652	.005	1.547	.003
Object Categories * Political Ideology[6]	.702	.006	.404	.001
Object Categories * Income	.509	.004	5.681**	.012
Object Categories * Childhood Income	1.164	.010	.157	.000
Object Categories * Sex[7]	.270	.002	3.776*	.008
Object Categories * Age	.923	.008	3.364*	.007

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; [1] In a relationship = 1, Not in a relationship = 0; [2]Identify as heterosexual = 1, Do not identify as heterosexual = 0; [3]Identify as cis-gender = 1, Do not identify as cis-gender = 0; [4] Reported some personal addiction experience with self, family, or friend = 1, Did not report personal addiction experience = 0; [5] Identify as white = 1, Do not identify as white = 0; [6]Higher value = more conservative; [7]Male = 1, Female = 0.

Table 119.
Greenhouse-Geiser Within-Subjects Results for the Negative Consequences Indicator with Factored Object Categories in Both Samples.

	Undergraduate Sample		National Sample	
	F	η_p^2	F	η_p^2
Object Categories	.210	.002	2.867	.006
Object Categories * In a Relationship[1]	1.082	.009	1.307	.003
Object Categories * Identify as Heterosexual[2]	1.767	.015	3.561*	.007
Object Categories * Education	1.236	.010	.118	.000
Object Categories * Identify as Cis-Gender[3]	1.070	.009	1.961	.004
Object Categories * Personal Experience of Addiction[4]	1.605	.013	.518	.001
Object Categories * Identify as White[5]	.027	.000	.147	.000
Object Categories * Religiousness	1.197	.010	4.270*	.009
Object Categories * Political Ideology[6]	.853	.007	.252	.001
Object Categories * Income	1.201	.010	3.984*	.008
Object Categories * Childhood Income	1.780	.015	.130	.000
Object Categories * Sex[7]	1.794	.015	.721	.002
Object Categories * Age	.996	.008	.533	.001

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; [1] In a relationship = 1, Not in a relationship = 0; [2]Identify as heterosexual = 1, Do not identify as heterosexual = 0; [3]Identify as cis-gender = 1, Do not identify as cis-gender = 0; [4] Reported some personal addiction experience with self, family, or friend = 1, Did not report personal addiction experience = 0; [5] Identify as white = 1, Do not identify as white = 0; [6]Higher value = more conservative; [7]Male = 1, Female = 0.

Table 120.
Greenhouse-Geiser Within-Subjects Results for the Good Aspects Indicator with Factored Object Categories in Both Samples.

	Undergraduate Sample		National Sample	
	F	η_p^2	F	η_p^2
Object Categories	1.253	.010	1.581	.003
Object Categories * In a Relationship[1]	.313	.003	2.352	.005
Object Categories * Identify as Heterosexual[2]	1.148	.010	.607	.001
Object Categories * Education	1.015	.008	4.501*	.009
Object Categories * Identify as Cis-Gender[3]	.939	.008	.161	.000
Object Categories * Personal Experience of Addiction[4]	2.122	.018	.229	.000
Object Categories * Identify as White[5]	.338	.003	1.067	.002
Object Categories * Religiousness	1.439	.012	.121	.000
Object Categories * Political Ideology[6]	1.049	.009	.009	.000
Object Categories * Income	.498	.004	.073	.000
Object Categories * Childhood Income	.872	.007	.128	.000
Object Categories * Sex[7]	3.488*	.028	.569	.001
Object Categories * Age	1.028	.009	1.286	.003

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; [1] In a relationship = 1, Not in a relationship = 0; [2]Identify as heterosexual = 1, Do not identify as heterosexual = 0; [3]Identify as cis-gender = 1, Do not identify as cis-gender = 0; [4] Reported some personal addiction experience with self, family, or friend = 1, Did not report personal addiction experience = 0; [5] Identify as white = 1, Do not identify as white = 0; [6]Higher value = more conservative; [7]Male = 1, Female = 0.

Table 121.
Greenhouse-Geiser Within-Subjects Results for the Causes Biological Changes Indicator with Factored Object Categories in Both Samples.

	Undergraduate Sample		National Sample	
	F	η_p^2	F	η_p^2
Object Categories	.392	.003	.868	.002
Object Categories * In a Relationship[1]	.554	.005	.425	.001
Object Categories * Identify as Heterosexual[2]	1.215	.010	2.198	.005
Object Categories * Education	2.858*	.023	1.003	.002
Object Categories * Identify as Cis-Gender[3]	.134	.001	.448	.001
Object Categories * Personal Experience of Addiction[4]	.486	.004	1.177	.002
Object Categories * Identify as White[5]	.464	.004	3.050*	.006
Object Categories * Religiousness	.775	.006	5.324**	.011
Object Categories * Political Ideology[6]	1.733	.014	.200	.000
Object Categories * Income	.354	.003	.634	.001
Object Categories * Childhood Income	.861	.007	.338	.001
Object Categories * Sex[7]	.746	.006	3.192*	.007
Object Categories * Age	.180	.002	6.727***	.014

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; [1] In a relationship = 1, Not in a relationship = 0; [2]Identify as heterosexual = 1, Do not identify as heterosexual = 0; [3]Identify as cis-gender = 1, Do not identify as cis-gender = 0; [4] Reported some personal addiction experience with self, family, or friend = 1, Did not report personal addiction experience = 0; [5] Identify as white = 1, Do not identify as white = 0; [6]Higher value = more conservative; [7]Male = 1, Female = 0.

Table 122.
Greenhouse-Geiser Within-Subjects Results for the Timeline Dependent Indicator with Factored Object Categories in Both Samples.

	Undergraduate Sample		National Sample	
	F	η_p^2	F	η_p^2
Object Categories	1.162	.010	11.168***	.023
Object Categories * In a Relationship[1]	2.349	.019	1.349	.003
Object Categories * Identify as Heterosexual[2]	2.075	.017	.373	.001
Object Categories * Education	.063	.001	1.615	.003
Object Categories * Identify as Cis-Gender[3]	1.039	.009	4.358*	.009
Object Categories * Personal Experience of Addiction[4]	.459	.004	3.002	.006
Object Categories * Identify as White[5]	1.757	.015	.167	.000
Object Categories * Religiousness	.417	.003	3.006	.006
Object Categories * Political Ideology[6]	.170	.001	.516	.001
Object Categories * Income	.780	.007	.160	.000
Object Categories * Childhood Income	.347	.003	.872	.002
Object Categories * Sex[7]	.519	.004	.565	.001
Object Categories * Age	1.718	.014	.701	.001

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; [1] In a relationship = 1, Not in a relationship = 0; [2]Identify as heterosexual = 1, Do not identify as heterosexual = 0; [3]Identify as cis-gender = 1, Do not identify as cis-gender = 0; [4] Reported some personal addiction experience with self, family, or friend = 1, Did not report personal addiction experience = 0; [5] Identify as white = 1, Do not identify as white = 0; [6]Higher value = more conservative; [7]Male = 1, Female = 0.

Table 123.
Greenhouse-Geiser Within-Subjects Results for the Treatment Needed Indicator with Factored Object Categories in Both Samples.

	Undergraduate Sample		National Sample	
	F	η_p^2	F	η_p^2
Object Categories	.537	.004	5.840**	.012
Object Categories * In a Relationship[1]	2.398	.020	1.251	.003
Object Categories * Identify as Heterosexual[2]	.403	.003	4.632*	.010
Object Categories * Education	2.314	.019	9.009***	.019
Object Categories * Identify as Cis-Gender[3]	.462	.004	4.004*	.008
Object Categories * Personal Experience of Addiction[4]	.712	.006	2.127	.004
Object Categories * Identify as White[5]	.907	.008	1.757	.004
Object Categories * Religiousness	3.385*	.028	.712	.001
Object Categories * Political Ideology[6]	.572	.005	3.946*	.008
Object Categories * Income	1.704	.014	4.860**	.010
Object Categories * Childhood Income	.691	.006	1.455	.003
Object Categories * Sex[7]	1.095	.009	5.275**	.011
Object Categories * Age	.778	.006	3.173*	.007

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; [1] In a relationship = 1, Not in a relationship = 0; [2]Identify as heterosexual = 1, Do not identify as heterosexual = 0; [3]Identify as cis-gender = 1, Do not identify as cis-gender = 0; [4] Reported some personal addiction experience with self, family, or friend = 1, Did not report personal addiction experience = 0; [5] Identify as white = 1, Do not identify as white = 0; [6]Higher value = more conservative; [7]Male = 1, Female = 0.

Between-Subjects MANCOVA Results.

Table 124.
Between-Subjects Results for the Feels Required Indicator with Factored Object Categories in Both Samples.

	Undergraduate Sample		National Sample	
	F	η_p^2	F	η_p^2
In a Relationship[1]	3.187	.026	.024	.000
Identify as Heterosexual[2]	.000	.000	.680	.001
Education	.055	.000	.080	.000
Identify as Cis-Gender[3]	.809	.007	.581	.001
Personal Experience of Addiction[4]	5.230*	.042	1.385	.003
Identify as White[5]	3.856	.031	.569	.001
Religiousness	4.065*	.033	.902	.002
Political Ideology[6]	.040	.000	3.505	.007
Income	1.063	.009	.126	.000
Childhood Income	.458	.004	.269	.001
Sex[7]	.652	.005	.242	.001
Age	.002	.000	.270	.001

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; [1] In a relationship = 1, Not in a relationship = 0; [2]Identify as heterosexual = 1, Do not identify as heterosexual = 0; [3]Identify as cis-gender = 1, Do not identify as cis-gender = 0; [4] Reported some personal addiction experience with self, family, or friend = 1, Did not report personal addiction experience = 0; [5] Identify as white = 1, Do not identify as white = 0; [6]Higher value = more conservative; [7]Male = 1, Female = 0.

Table 125.
Between-Subjects Results for the Physical Dependence Indicator with Factored Object Categories in Both Samples.

	Undergraduate Sample		National Sample	
	F	η_p^2	F	η_p^2
In a Relationship[1]	1.600	.013	.472	.001
Identify as Heterosexual[2]	.036	.000	5.255*	.011
Education	1.076	.009	.267	.001
Identify as Cis-Gender[3]	2.515	.021	.434	.001
Personal Experience of Addiction[4]	1.561	.013	.000	.000
Identify as White[5]	.050	.000	.123	.000
Religiousness	.062	.001	2.205	.005
Political Ideology[6]	2.599	.021	.531	.001
Income	.213	.002	.126	.000
Childhood Income	.421	.004	.552	.001
Sex[7]	7.596**	.060	3.150	.007
Age	1.408	.012	.370	.001

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; [1] In a relationship = 1, Not in a relationship = 0; [2]Identify as heterosexual = 1, Do not identify as heterosexual = 0; [3]Identify as cis-gender = 1, Do not identify as cis-gender = 0; [4] Reported some personal addiction experience with self, family, or friend = 1, Did not report personal addiction experience = 0; [5] Identify as white = 1, Do not identify as white = 0; [6]Higher value = more conservative; [7]Male = 1, Female = 0.

Table 126.
Between-Subjects Results for the Psychological Dependence Indicator with Factored Object Categories in Both Samples.

	Undergraduate Sample		National Sample	
	F	η_p^2	F	η_p^2
In a Relationship[1]	8.088**	.064	1.046	.002
Identify as Heterosexual[2]	5.218*	.042	.815	.002
Education	2.233	.018	.176	.000
Identify as Cis-Gender[3]	1.195	.010	.000	.000
Personal Experience of Addiction[4]	9.389**	.073	8.751**	.018
Identify as White[5]	3.094	.025	1.702	.004
Religiousness	6.344*	.051	7.798**	.016
Political Ideology[6]	.837	.007	.825	.002
Income	1.942	.016	.035	.000
Childhood Income	.113	.001	1.125	.002
Sex[7]	1.806	.015	1.709	.004
Age	1.273	.011	.673	.001

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; [1] In a relationship = 1, Not in a relationship = 0; [2]Identify as heterosexual = 1, Do not identify as heterosexual = 0; [3]Identify as cis-gender = 1, Do not identify as cis-gender = 0; [4] Reported some personal addiction experience with self, family, or friend = 1, Did not report personal addiction experience = 0; [5] Identify as white = 1, Do not identify as white = 0; [6]Higher value = more conservative; [7]Male = 1, Female = 0.

Table 127.
Between-Subjects Results for the Induces a Withdrawal Indicator with Factored Object Categories in Both Samples.

	Undergraduate Sample		National Sample	
	F	η_p^2	F	η_p^2
In a Relationship[1]	2.035	.017	.925	.002
Identify as Heterosexual[2]	.674	.006	.218	.000
Education	.008	.000	.332	.001
Identify as Cis-Gender[3]	.496	.004	1.083	.002
Personal Experience of Addiction[4]	3.803	.031	6.979**	.015
Identify as White[5]	3.151	.026	1.147	.002
Religiousness	2.017	.017	7.892**	.016
Political Ideology[6]	.288	.002	.193	.000
Income	.002	.000	.610	.001
Childhood Income	1.866	.015	4.755*	.010
Sex[7]	.039	.000	.401	.001
Age	.303	.003	.252	.001

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; [1] In a relationship = 1, Not in a relationship = 0; [2]Identify as heterosexual = 1, Do not identify as heterosexual = 0; [3]Identify as cis-gender = 1, Do not identify as cis-gender = 0; [4] Reported some personal addiction experience with self, family, or friend = 1, Did not report personal addiction experience = 0; [5] Identify as white = 1, Do not identify as white = 0; [6]Higher value = more conservative; [7]Male = 1, Female = 0.

Table 128.
Between-Subjects Results for the Creates Tolerance Indicator with Factored Object Categories in Both Samples.

	Undergraduate Sample		National Sample	
	F	η_p^2	F	η_p^2
In a Relationship[1]	.219	.002	.808	.002
Identify as Heterosexual[2]	1.606	.013	.114	.000
Education	.322	.003	.303	.001
Identify as Cis-Gender[3]	.007	.000	.107	.000
Personal Experience of Addiction[4]	.062	.001	9.877***	.020
Identify as White[5]	.013	.000	.226	.000
Religiousness	1.488	.012	2.033	.004
Political Ideology[6]	.004	.000	.034	.000
Income	2.340	.019	.374	.001
Childhood Income	.061	.001	1.589	.003
Sex[7]	.243	.002	.000	.000
Age	.144	.001	.017	.000

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; [1] In a relationship = 1, Not in a relationship = 0; [2]Identify as heterosexual = 1, Do not identify as heterosexual = 0; [3]Identify as cis-gender = 1, Do not identify as cis-gender = 0; [4] Reported some personal addiction experience with self, family, or friend = 1, Did not report personal addiction experience = 0; [5] Identify as white = 1, Do not identify as white = 0; [6]Higher value = more conservative; [7]Male = 1, Female = 0.

Table 129.
Between-Subjects Results for the Incites Cravings Indicator with Factored Object Categories in Both Samples.

	Undergraduate Sample		National Sample	
	F	η_p^2	F	η_p^2
In a Relationship[1]	.272	.002	1.034	.002
Identify as Heterosexual[2]	6.098*	.049	.973	.002
Education	.101	.001	4.828*	.010
Identify as Cis-Gender[3]	.879	.007	.021	.000
Personal Experience of Addiction[4]	2.175	.018	6.454*	.013
Identify as White[5]	.188	.002	.463	.001
Religiousness	7.517**	.059	9.424**	.019
Political Ideology[6]	.003	.000	.535	.001
Income	.079	.001	2.660	.006
Childhood Income	.602	.005	.662	.001
Sex[7]	.051	.000	2.763	.006
Age	.759	.006	.054	.000

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; [1] In a relationship = 1, Not in a relationship = 0; [2]Identify as heterosexual = 1, Do not identify as heterosexual = 0; [3]Identify as cis-gender = 1, Do not identify as cis-gender = 0; [4] Reported some personal addiction experience with self, family, or friend = 1, Did not report personal addiction experience = 0; [5] Identify as white = 1, Do not identify as white = 0; [6]Higher value = more conservative; [7]Male = 1, Female = 0.

Table 130.
Between-Subjects Results for the Feels Irresistible Indicator with Factored Object Categories in Both Samples.

	Undergraduate Sample		National Sample	
	F	η_p^2	F	η_p^2
In a Relationship[1]	1.115	.009	2.094	.004
Identify as Heterosexual[2]	.326	.003	.578	.001
Education	.073	.001	.041	.000
Identify as Cis-Gender[3]	.065	.001	.000	.000
Personal Experience of Addiction[4]	1.381	.011	7.391**	.015
Identify as White[5]	3.033	.025	.397	.001
Religiousness	3.491	.028	7.511**	.016
Political Ideology[6]	.061	.001	2.279	.005
Income	.134	.001	.327	.001
Childhood Income	.671	.006	1.217	.003
Sex[7]	.037	.000	.560	.001
Age	.505	.004	1.147	.002

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; [1] In a relationship = 1, Not in a relationship = 0; [2]Identify as heterosexual = 1, Do not identify as heterosexual = 0; [3]Identify as cis-gender = 1, Do not identify as cis-gender = 0; [4] Reported some personal addiction experience with self, family, or friend = 1, Did not report personal addiction experience = 0; [5] Identify as white = 1, Do not identify as white = 0; [6]Higher value = more conservative; [7]Male = 1, Female = 0.

Table 131.
Between-Subjects Results for the Engaged in More Than Intended Indicator with Factored Object Categories in Both Samples.

	Undergraduate Sample		National Sample	
	F	η_p^2	F	η_p^2
In a Relationship[1]	1.837	.015	2.493	.005
Identify as Heterosexual[2]	1.016	.008	2.091	.004
Education	.047	.000	3.243	.007
Identify as Cis-Gender[3]	.046	.000	1.472	.003
Personal Experience of Addiction[4]	4.773*	.039	6.051*	.013
Identify as White[5]	.265	.002	1.438	.003
Religiousness	4.178*	.034	14.849***	.030
Political Ideology[6]	.187	.002	1.629	.003
Income	.525	.004	3.102	.007
Childhood Income	1.221	.010	1.265	.003
Sex[7]	.875	.007	3.094	.006
Age	.095	.001	.001	.000

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; [1] In a relationship = 1, Not in a relationship = 0; [2]Identify as heterosexual = 1, Do not identify as heterosexual = 0; [3]Identify as cis-gender = 1, Do not identify as cis-gender = 0; [4] Reported some personal addiction experience with self, family, or friend = 1, Did not report personal addiction experience = 0; [5] Identify as white = 1, Do not identify as white = 0; [6]Higher value = more conservative; [7]Male = 1, Female = 0.

Table 132.
Between-Subjects Results for the Loss of Control Indicator with Factored Object Categories in Both Samples.

	Undergraduate Sample		National Sample	
	F	η_p^2	F	η_p^2
In a Relationship[1]	.014	.000	3.820	.008
Identify as Heterosexual[2]	1.343	.011	1.424	.003
Education	.147	.001	2.912	.006
Identify as Cis-Gender[3]	.362	.003	1.258	.003
Personal Experience of Addiction[4]	.080	.001	4.238*	.009
Identify as White[5]	.045	.000	1.433	.003
Religiousness	4.189*	.034	4.451*	.009
Political Ideology[6]	.830	.007	2.776	.006
Income	.099	.001	1.656	.003
Childhood Income	.221	.002	1.878	.004
Sex[7]	.199	.002	3.695	.008
Age	.123	.001	.183	.000

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; [1] In a relationship = 1, Not in a relationship = 0; [2]Identify as heterosexual = 1, Do not identify as heterosexual = 0; [3]Identify as cis-gender = 1, Do not identify as cis-gender = 0; [4] Reported some personal addiction experience with self, family, or friend = 1, Did not report personal addiction experience = 0; [5] Identify as white = 1, Do not identify as white = 0; [6]Higher value = more conservative; [7]Male = 1, Female = 0.

Table 133.
Between-Subjects Results for the Negative Aspects Indicator with Factored Object Categories in Both Samples.

	Undergraduate Sample		National Sample	
	F	η_p^2	F	η_p^2
In a Relationship[1]	.172	.001	1.565	.003
Identify as Heterosexual[2]	.111	.001	3.820	.008
Education	2.299	.019	3.790	.008
Identify as Cis-Gender[3]	4.862*	.039	1.965	.004
Personal Experience of Addiction[4]	.481	.004	4.833*	.010
Identify as White[5]	.801	.007	1.480	.003
Religiousness	4.122*	.033	7.494**	.016
Political Ideology[6]	.586	.005	.266	.001
Income	.473	.004	2.553	.005
Childhood Income	.450	.004	4.026*	.008
Sex[7]	3.351	.027	4.185*	.009
Age	.821	.007	.086	.000

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; [1] In a relationship = 1, Not in a relationship = 0; [2]Identify as heterosexual = 1, Do not identify as heterosexual = 0; [3]Identify as cis-gender = 1, Do not identify as cis-gender = 0; [4] Reported some personal addiction experience with self, family, or friend = 1, Did not report personal addiction experience = 0; [5] Identify as white = 1, Do not identify as white = 0; [6]Higher value = more conservative; [7]Male = 1, Female = 0.

Table 134

Between-Subjects Results for the Negative Consequences Indicator with Factored Object Categories in Both Samples.

	Undergraduate Sample		National Sample	
	F	η_p^2	F	η_p^2
In a Relationship[1]	.062	.001	.551	.001
Identify as Heterosexual[2]	.052	.000	6.261*	.013
Education	.057	.000	4.945*	.010
Identify as Cis-Gender[3]	3.292	.027	1.012	.002
Personal Experience of Addiction[4]	2.822	.023	18.117***	.037
Identify as White[5]	.046	.000	.449	.001
Religiousness	1.356	.011	5.936*	.012
Political Ideology[6]	.326	.003	.143	.000
Income	.010	.000	1.417	.003
Childhood Income	2.247	.019	1.262	.003
Sex[7]	4.472*	.036	5.248*	.011
Age	.036	.000	1.733	.004

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; [1] In a relationship = 1, Not in a relationship = 0; [2]Identify as heterosexual = 1, Do not identify as heterosexual = 0; [3]Identify as cis-gender = 1, Do not identify as cis-gender = 0; [4] Reported some personal addiction experience with self, family, or friend = 1, Did not report personal addiction experience = 0; [5] Identify as white = 1, Do not identify as white = 0; [6]Higher value = more conservative; [7]Male = 1, Female = 0.

Table 135.
Between-Subjects Results for the Good Aspects Indicator with Factored Object Categories in Both Samples.

	Undergraduate Sample		National Sample	
	F	η_p^2	F	η_p^2
In a Relationship[1]	.408	.003	3.169	.007
Identify as Heterosexual[2]	3.242	.027	1.923	.004
Education	.868	.007	.138	.000
Identify as Cis-Gender[3]	.052	.000	.017	.000
Personal Experience of Addiction[4]	.297	.002	1.233	.003
Identify as White[5]	.018	.000	2.072	.004
Religiousness	.050	.000	.507	.001
Political Ideology[6]	.909	.008	.218	.000
Income	.016	.000	3.280	.007
Childhood Income	.002	.000	.001	.000
Sex[7]	12.572***	.096	2.512	.005
Age	.208	.002	.537	.001

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; [1] In a relationship = 1, Not in a relationship = 0; [2]Identify as heterosexual = 1, Do not identify as heterosexual = 0; [3]Identify as cis-gender = 1, Do not identify as cis-gender = 0; [4] Reported some personal addiction experience with self, family, or friend = 1, Did not report personal addiction experience = 0; [5] Identify as white = 1, Do not identify as white = 0; [6]Higher value = more conservative; [7]Male = 1, Female = 0.

Table 136.
Between-Subjects Results for the Causes Biological Changes Indicator with Factored Object Categories in Both Samples.

	Undergraduate Sample		National Sample	
	F	η_p^2	F	η_p^2
In a Relationship[1]	.618	.005	2.881	.006
Identify as Heterosexual[2]	1.965	.016	1.721	.004
Education	.748	.006	3.047	.006
Identify as Cis-Gender[3]	.078	.001	.260	.001
Personal Experience of Addiction[4]	.234	.002	7.218**	.015
Identify as White[5]	.076	.001	1.633	.003
Religiousness	1.202	.010	2.026	.004
Political Ideology[6]	.008	.000	.367	.001
Income	.215	.002	.571	.001
Childhood Income	2.925	.024	4.787*	.010
Sex[7]	.505	.004	.964	.002
Age	.574	.005	5.024*	.010

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; [1] In a relationship = 1, Not in a relationship = 0; [2]Identify as heterosexual = 1, Do not identify as heterosexual = 0; [3]Identify as cis-gender = 1, Do not identify as cis-gender = 0; [4] Reported some personal addiction experience with self, family, or friend = 1, Did not report personal addiction experience = 0; [5] Identify as white = 1, Do not identify as white = 0; [6]Higher value = more conservative; [7]Male = 1, Female = 0.

Table 137.
Between-Subjects Results for the Timeline Dependent Indicator with Factored Object Categories in Both Samples.

	Undergraduate Sample		National Sample	
	F	η_p^2	F	η_p^2
In a Relationship[1]	1.418	.012	.145	.000
Identify as Heterosexual[2]	1.041	.009	2.582	.005
Education	1.072	.009	1.300	.003
Identify as Cis-Gender[3]	1.006	.008	.211	.000
Personal Experience of Addiction[4]	1.479	.012	.000	.000
Identify as White[5]	1.025	.009	.020	.000
Religiousness	.108	.001	2.416	.005
Political Ideology[6]	.001	.000	.943	.002
Income	1.073	.009	1.297	.003
Childhood Income	1.072	.009	.306	.001
Sex[7]	.314	.003	.232	.000
Age	.152	.001	.004	.000

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; [1] In a relationship = 1, Not in a relationship = 0; [2]Identify as heterosexual = 1, Do not identify as heterosexual = 0; [3]Identify as cis-gender = 1, Do not identify as cis-gender = 0; [4] Reported some personal addiction experience with self, family, or friend = 1, Did not report personal addiction experience = 0; [5] Identify as white = 1, Do not identify as white = 0; [6]Higher value = more conservative; [7]Male = 1, Female = 0.

Table 138.
Between-Subjects Results for the Treatment Needed Indicator with Factored Object Categories in Both Samples.

	Undergraduate Sample		National Sample	
	F	η_p^2	F	η_p^2
In a Relationship[1]	1.612	.013	3.910*	.008
Identify as Heterosexual[2]	.336	.003	3.475	.007
Education	.394	.003	1.648	.003
Identify as Cis-Gender[3]	.219	.002	.700	.001
Personal Experience of Addiction[4]	2.057	.017	5.333*	.011
Identify as White[5]	.422	.004	1.325	.003
Religiousness	.002	.000	3.944*	.008
Political Ideology[6]	1.978	.016	.994	.002
Income	.426	.004	.985	.002
Childhood Income	1.647	.014	4.068*	.009
Sex[7]	5.265*	.042	.712	.001
Age	.023	.000	.196	.000

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; [1] In a relationship = 1, Not in a relationship = 0; [2]Identify as heterosexual = 1, Do not identify as heterosexual = 0; [3]Identify as cis-gender = 1, Do not identify as cis-gender = 0; [4] Reported some personal addiction experience with self, family, or friend = 1, Did not report personal addiction experience = 0; [5] Identify as white = 1, Do not identify as white = 0; [6]Higher value = more conservative; [7]Male = 1, Female = 0.

Post-hoc Test MANCOVA Results.

Table 139.
Pairwise Comparisons for all Factored Object Categories Regarding the Feels Required Indicator in the Both Samples

	Undergraduate Mean (SD)	1.	2.	3.	4.	5.
National Mean (SD)		.943 (.233)	.557 (.497)	.392 (.489)	-	-
1. Recognized Addictions Category	.917 (.277)	-	***	***	-	-
2. Technological Category	.697 (.461)	***	-	***	-	-
3. Compulsive/ Sexual Category	.409 (.494)	***	***	-	-	-
4. Controversial Category	.508 (.502)	***	**		-	-
5. Other Category	.780 (.416)	*		***	***	-

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; Below diagonal = Undergraduate Sample, Above Diagonal = National Sample

Table 140.
Pairwise Comparisons for all Factored Object Categories Regarding the Physical Dependence Indicator in the Both Samples

	Undergraduate Mean (SD)	1.	2.	3.	4.	5.
National Mean (SD)		.850 (.357)	.127 (.334)	.189 (.392)	-	-
1. Recognized Addictions Category	.902 (.229)	-	***	***	-	-
2. Technological Category	.318 (.468)	***	-	**	-	-
3. Compulsive/ Sexual Category	.348 (.478)	***		-	-	-
4. Controversial Category	.629 (.485)	***	***	***	-	-
5. Other Category	.773 (.421)	*	***	***		-

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; Below diagonal = Undergraduate Sample, Above Diagonal = National Sample

Table 141.
Pairwise Comparisons for all Factored Object Categories Regarding the Psychological Dependence Indicator in the Both Samples

	Undergraduate Mean (SD)	1.	2.	3.	4.	5.
National Mean (SD)		.852 (.355)	.546 (.498)	.518 (.500)	-	-
1. Recognized Addictions Category	.902 (.299)	-	***	***	-	-
2. Technological Category	.765 (.426)	**	-		-	-
3. Compulsive/ Sexual Category	.826 (.381)			-	-	-
4. Controversial Category	.780 (.416)	***			-	-
5. Other Category	.848 (.360)					-

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; Below diagonal = Undergraduate Sample, Above Diagonal = National Sample

Table 142.
Pairwise Comparisons for all Factored Object Categories Regarding the Withdrawal Indicator in the Both Samples

	Undergraduate Mean (SD)	1.	2.	3.	4.	5.
National Mean (SD)		.871 (.336)	.400 (.490)	.290 (.454)	-	-
1. Recognized Addictions Category	.924 (.266)	-	***	***	-	-
2. Technological Category	.553 (.499)	***	-	***	-	-
3. Compulsive/ Sexual Category	.424 (.496)	***		-	-	-
4. Controversial Category	.682 (.468)	***		***	-	-
5. Other Category	.697 (.461)	***	*	***		-

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; Below diagonal = Undergraduate Sample, Above Diagonal = National Sample

Table 143.
Pairwise Comparisons for all Factored Object Categories Regarding the Creates Tolerance Indicator in the Both Samples

	Undergraduate Mean (SD)	1.	2.	3.	4.	5.
National Mean (SD)		.862 (.345)	.234 (.424)	.368 (.483)	-	-
1. Recognized Addictions Category	.909 (.289)	-	***	***	-	-
2. Technological Category	.341 (.476)	***	-	***	-	-
3. Compulsive/ Sexual Category	.568 (.497)	***	***	-	-	-
4. Controversial Category	.818 (.386)	*	***	***	-	-
5. Other Category	.598 (.492)	***	***		***	-

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; Below diagonal = Undergraduate Sample, Above Diagonal = National Sample

Table 144.
Pairwise Comparisons for all Factored Object Categories Regarding the Incites Cravings Indicator in the Both Samples

	Undergraduate Mean (SD)	1.	2.	3.	4.	5.
National Mean (SD)		.865 (.343)	.593 (.492)	.624 (.485)	-	-
1. Recognized Addictions Category	.909 (.289)	-	***	***	-	-
2. Technological Category	.720 (.451)	***	-		-	-
3. Compulsive/ Sexual Category	.803 (.399)	**		-	-	-
4. Controversial Category	.780 (.416)	***			-	-
5. Other Category	.803 (.399)	**				-

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; Below diagonal = Undergraduate Sample, Above Diagonal = National Sample

Table 145.
Pairwise Comparisons for all Factored Object Categories Regarding the Feels Irresistible Indicator in the Both Samples

	Undergraduate Mean (SD)	1.	2.	3.	4.	5.
National Mean (SD)		.858 (.349)	.485 (.500)	.577 (.495)	-	-
1. Recognized Addictions Category	.917 (.277)	-	***	***	-	-
2. Technological Category	.606 (.490)	***	-	***	-	-
3. Compulsive/ Sexual Category	.705 (.458)	***		-	-	-
4. Controversial Category	.727 (.447)	***			-	-
5. Other Category	.614 (.489)	***				-

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; Below diagonal = Undergraduate Sample, Above Diagonal = National Sample

Table 146.
Pairwise Comparisons for all Factored Object Categories Regarding the Engaged in More Than Intended Indicator in the Both Samples

	Undergraduate Mean (SD)	1.	2.	3.	4.	5.
National Mean (SD)		.834 (.373)	.647 (.478)	.550 (.498)	-	-
1. Recognized Addictions Category	.894 (.309)	-	***	***	-	-
2. Technological Category	.765 (.436)	**	-	***	-	-
3. Compulsive/ Sexual Category	.788 (.410)	*		-	-	-
4. Controversial Category	.697 (.461)	***			-	-
5. Other Category	.818 (.387)					-

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; Below diagonal = Undergraduate Sample, Above Diagonal = National Sample

Table 147.
Pairwise Comparisons for all Factored Object Categories Regarding the Loss of Control Indicator in the Both Samples

	Undergraduate Mean (SD)	1.	2.	3.	4.	5.
National Mean (SD)		.860 (.347)	.591 (.492)	.591 (.492)	-	-
1. Recognized Addictions Category	.932 (.253)	-	***	***	-	-
2. Technological Category	.674 (.470)	***	-		-	-
3. Compulsive/ Sexual Category	.705 (.458)	***		-	-	-
4. Controversial Category	.621 (.487)	***			-	-
5. Other Category	.705 (.458)	***				-

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; Below diagonal = Undergraduate Sample, Above Diagonal = National Sample

Table 148.
Pairwise Comparisons for all Factored Object Categories Regarding the Negative Aspects Indicator in the Both Samples

	Undergraduate Mean (SD)	1.	2.	3.	4.	5.
National Mean (SD)		.805 (.397)	.442 (.497)	.557 (.497)	-	-
1. Recognized Addictions Category	.856 (.352)	-	***	***	-	-
2. Technological Category	.598 (.492)	***	-	***	-	-
3. Compulsive/ Sexual Category	.644 (.481)	***		-	-	-
4. Controversial Category	.621 (487)	***			-	-
5. Other Category	.538 (.500)	***				-

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; Below diagonal = Undergraduate Sample, Above Diagonal = National Sample

Table 149.
Pairwise Comparisons for all Factored Object Categories Regarding the Negative Consequences Indicator in the Both Samples

	Undergraduate Mean (SD)	1.	2.	3.	4.	5.
National Mean (SD)		.856 (.351)	.591 (.492)	.571 (.495)	-	-
1. Recognized Addictions Category	.917 (.277)	-	***	***	-	-
2. Technological Category	.720 (.451)	***	-		-	-
3. Compulsive/ Sexual Category	.750 (.435)	***		-	-	-
4. Controversial Category	.735 (.443)	***			-	-
5. Other Category	.606 (.490)	***	**	**		-

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; Below diagonal = Undergraduate Sample, Above Diagonal = National Sample

Table 150.
Pairwise Comparisons for all Factored Object Categories Regarding the Good Aspects Indicator in the Both Samples

	Undergraduate Mean (SD)	1.	2.	3.	4.	5.
National Mean (SD)		.331 (.471)	.411 (.492)	.474 (.500)	-	-
1. Recognized Addictions Category	.538 (.500)	-	***	***	-	-
2. Technological Category	.636 (.483)		-	**	-	-
3. Compulsive/ Sexual Category	.720 (.451)	***		-	-	-
4. Controversial Category	.341 (.476)	***	***	***	-	-
5. Other Category	.727 (.447)	***			***	-

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; Below diagonal = Undergraduate Sample, Above Diagonal = National Sample

Table 151.

Pairwise Comparisons for all Factored Object Categories Regarding the Causes Biological Changes Indicator in the Both Samples

	Undergraduate Mean (SD)	1.	2.	3.	4.	5.
National Mean (SD)		.877 (.329)	.316 (.465)	.429 (.495)	-	-
1. Recognized Addictions Category	.909 (.289)	-	***	***	-	-
2. Technological Category	.477 (.501)	***	-	***	-	-
3. Compulsive/ Sexual Category	.598 (.492)	***	*	-	-	-
4. Controversial Category	.720 (.451)	***	***		-	-
5. Other Category	.477 (.501)	***			***	-

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; Below diagonal = Undergraduate Sample, Above Diagonal = National Sample

Table 152.

Pairwise Comparisons for all Factored Object Categories Regarding the Timeline Dependent Indicator in the Both Samples

	Undergraduate Mean (SD)	1.	2.	3.	4.	5.
National Mean (SD)		.690 (.463)	.318 (.466)	.300 (.459)	-	-
1. Recognized Addictions Category	.856 (.352)	-	***	***	-	-
2. Technological Category	.591 (.494)	***	-		-	-
3. Compulsive/ Sexual Category	.606 (.490)	***		-	-	-
4. Controversial Category	.621 (.487)	***			-	-
5. Other Category	.568 (.497)	***				-

Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; Below diagonal = Undergraduate Sample, Above Diagonal = National Sample

Table 153.
Pairwise Comparisons for all Factored Object Categories Regarding the Treatment Needed Indicator in the Both Samples

	Undergraduate Mean (SD)	1.	2.	3.	4.	5.
National Mean (SD)		.873 (.334)	.450 (.498)	.614 (.487)	-	-
1. Recognized Addictions Category	.924 (.266)	-	***	***	-	-
2. Technological Category	.485 (.502)	***	-	***	-	-
3. Compulsive/ Sexual Category	.750 (.435)	***	***	-	-	-
4. Controversial Category	.705 (.458)	***	***		-	-
5. Other Category	.773 (.421)	**	***			-

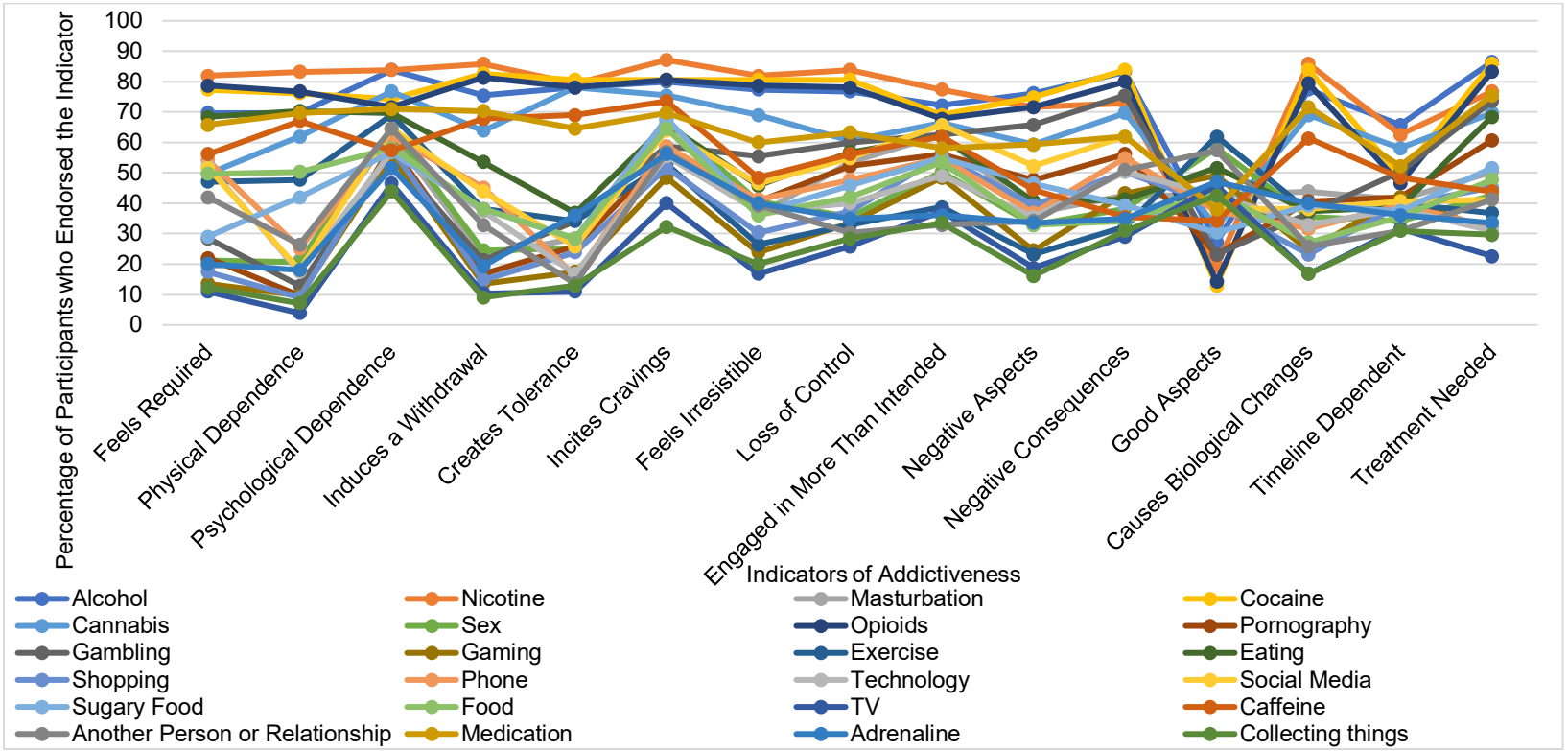
Note: Undergraduate Sample: $N = 132$; National Sample: $N = 487$; * ≤ .05; ** ≤ .01; *** ≤ .001; Below diagonal = Undergraduate Sample, Above Diagonal = National Sample

Graphic Profiles of Endorsement of Indicators of Addictiveness for Various Objects and Object Categories

Undergraduate Sample

Figure 1.

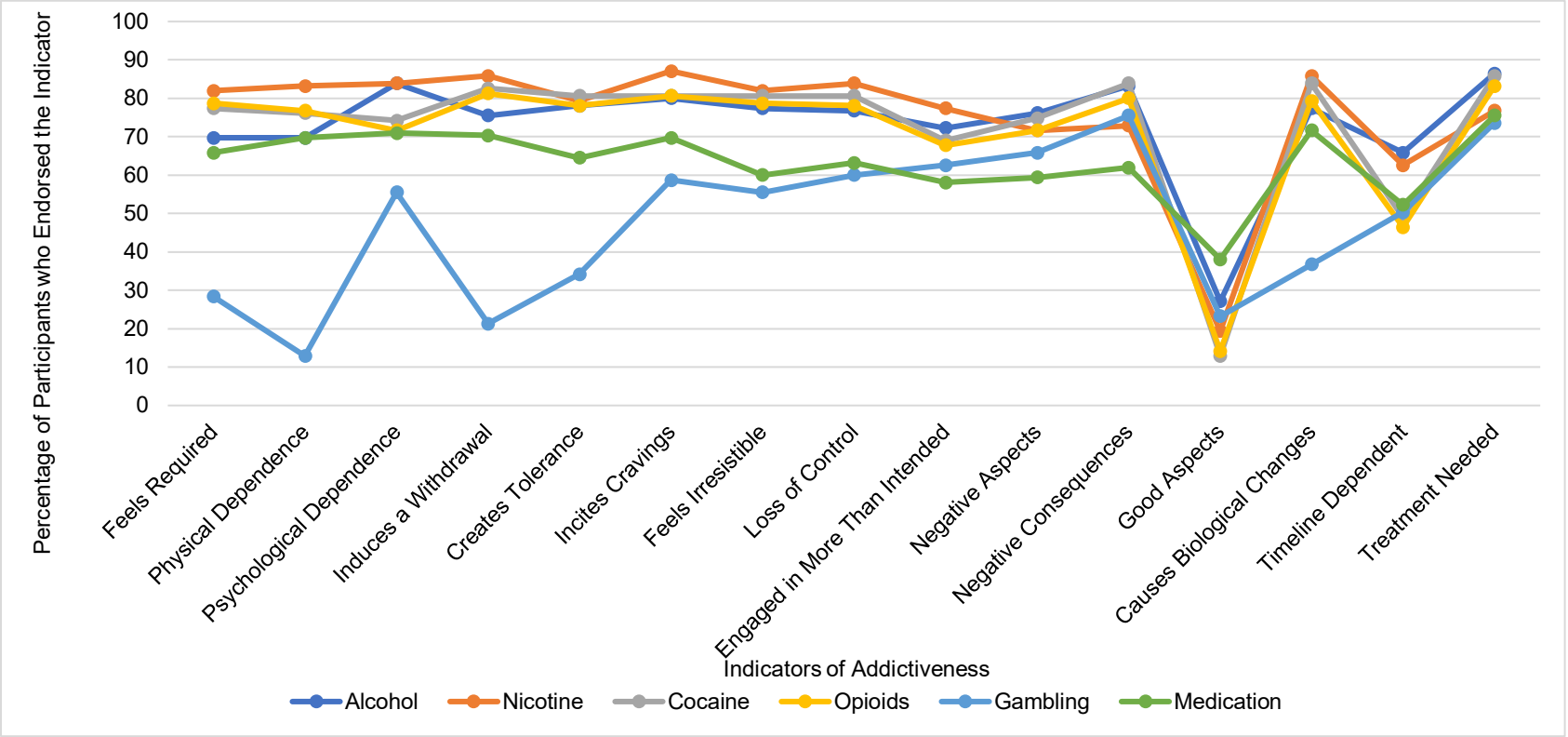
Profile of the Percentage of Endorsement of Each Indicator of Addictiveness for All Objects in the Undergraduate Sample.



Note: $N = 132$; There were significant differences between objects for the Physical Dependence ($F = 2.31$, $\eta_p^2 = 0.02$) and Causes Biological Changes ($F = 2.05$, $\eta_p^2 = 0.02$) Indicators of Addictiveness only in MANCOVA results.

Figure 2.

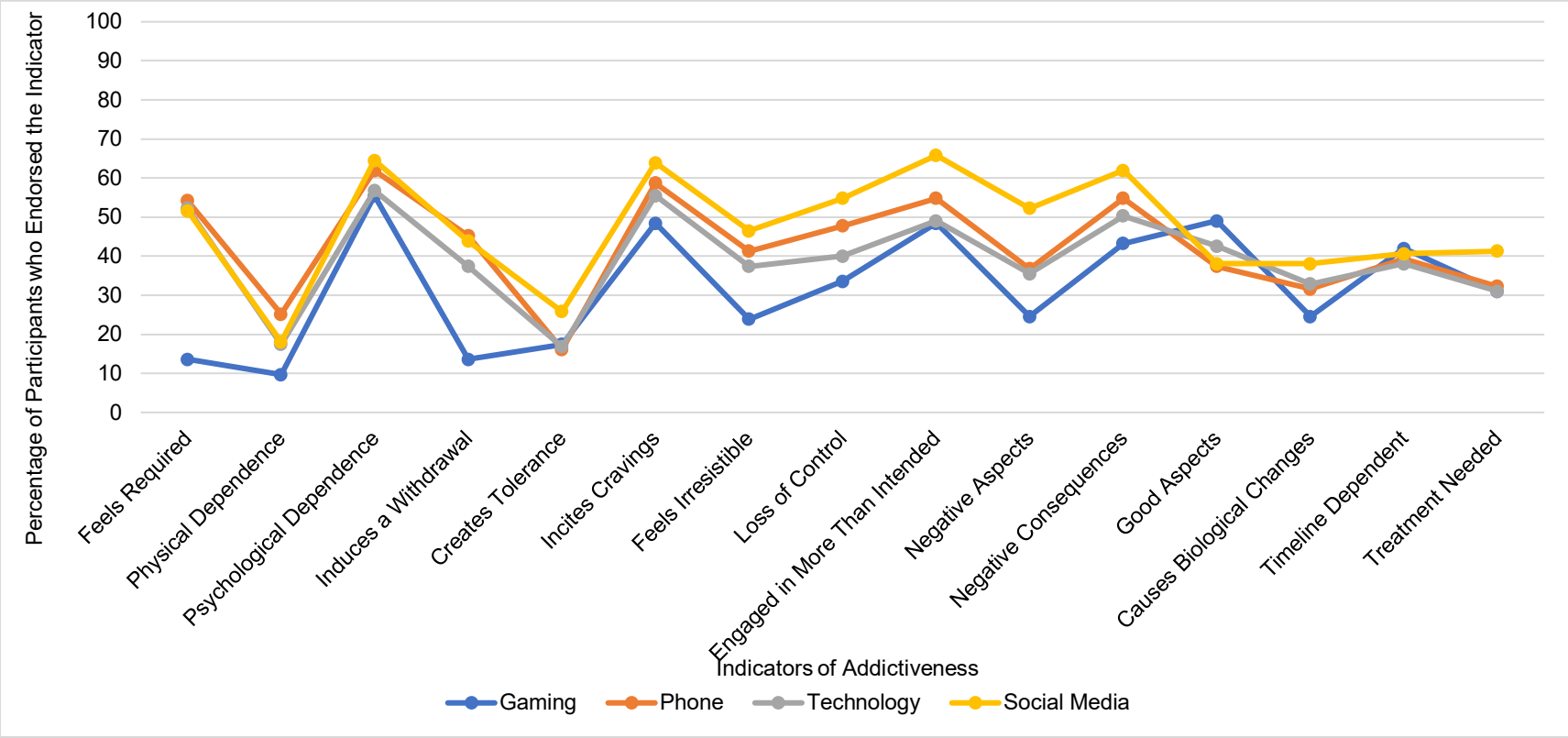
Profile of the Percentage of Endorsement of Each Indicator of Addictiveness for Objects in the Recognized Addictions Object Categories in the Undergraduate Sample.



Note: $N = 132$; There were significant differences between objects for the Physical Dependence ($F = 2.31$, $\eta_p^2 = 0.02$) and Causes Biological Changes ($F = 2.05$, $\eta_p^2 = 0.02$) Indicators of Addictiveness only, but there were no significant differences between object categories in MANCOVA results.

Figure 3.

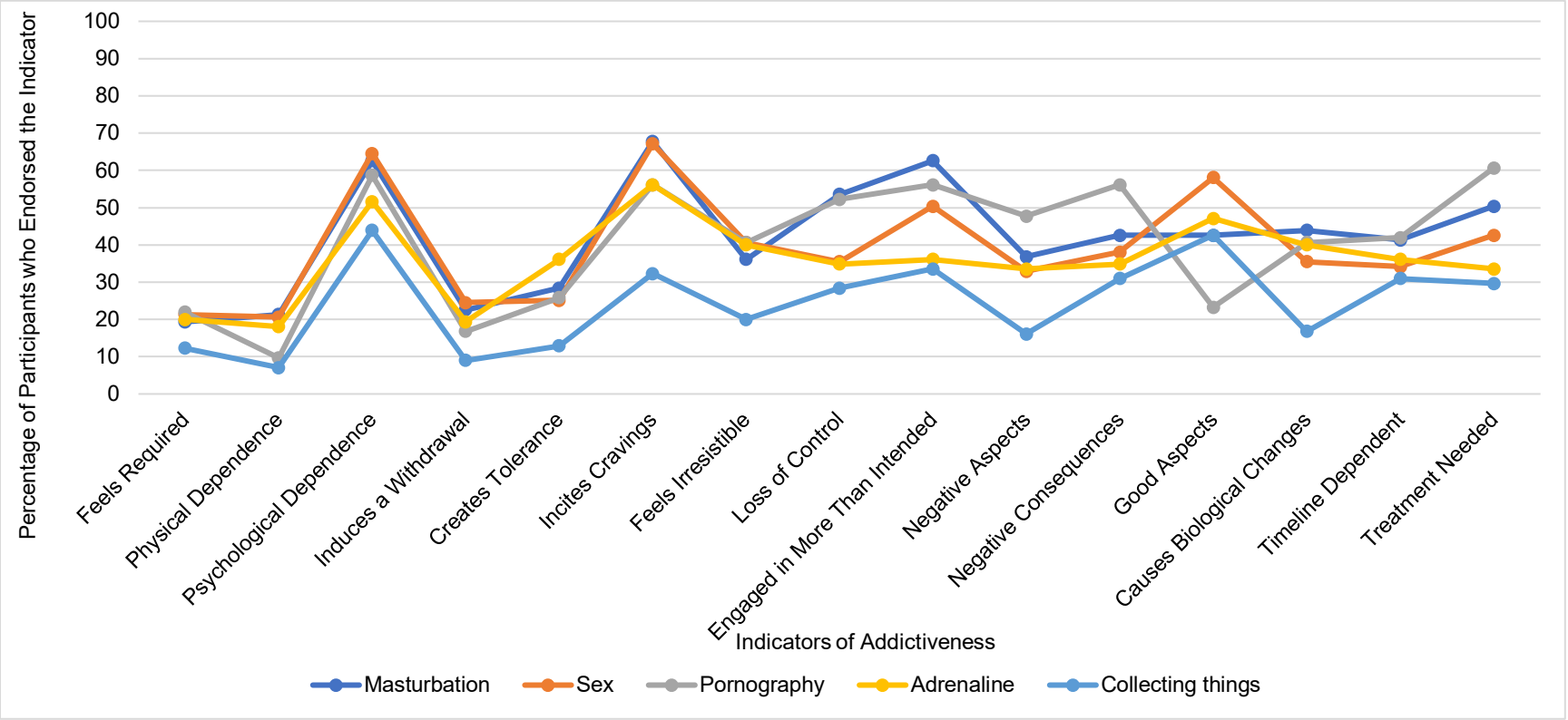
Profile of the Percentage of Endorsement of Each Indicator of Addictiveness for Objects in the Technological Object Categories in the Undergraduate Sample.



Note: $N = 132$; There were significant differences between objects for the Physical Dependence ($F = 2.31$, $\eta_p^2 = 0.02$) and Causes Biological Changes ($F = 2.05$, $\eta_p^2 = 0.02$) Indicators of Addictiveness only, but there were no significant differences between object categories in MANCOVA results.

Figure 4.

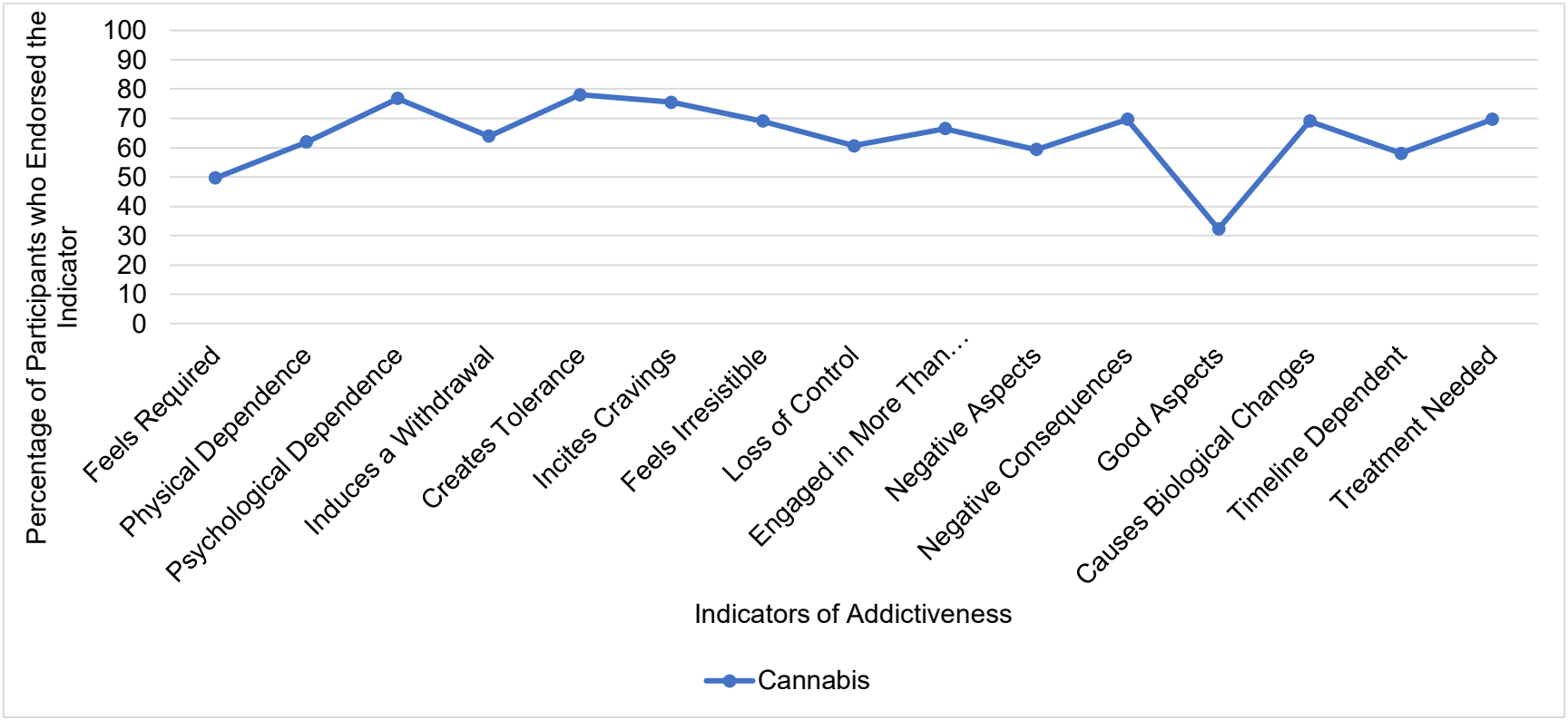
Profile of the Percentage of Endorsement of Each Indicator of Addictiveness for Objects in the Compulsive/Sexual Object Categories in the Undergraduate Sample.



Note: $N = 132$; There were significant differences between objects for the Physical Dependence ($F = 2.31$, $\eta_p^2 = 0.02$) and Causes Biological Changes ($F = 2.05$, $\eta_p^2 = 0.02$) Indicators of Addictiveness only, but there were no significant differences between object categories in MANCOVA results.

Figure 5.

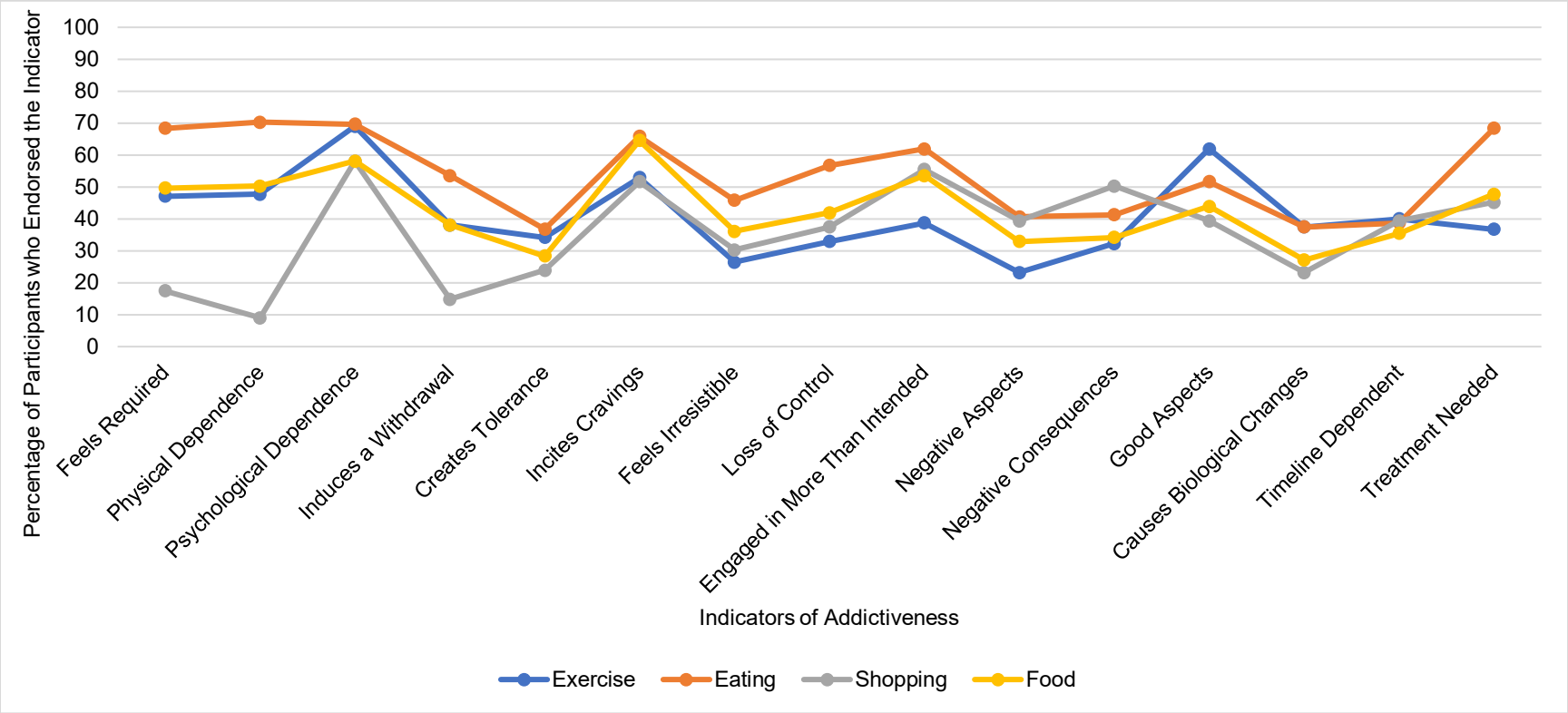
Profile of the Percentage of Endorsement of Each Indicator of Addictiveness for Objects in the Controversial Object Categories in the Undergraduate Sample.



Note: $N = 132$; There were significant differences between objects for the Physical Dependence ($F = 2.31$, $\eta_p^2 = 0.02$) and Causes Biological Changes ($F = 2.05$, $\eta_p^2 = 0.02$) Indicators of Addictiveness only, but there were no significant differences between object categories in MANCOVA results.

Figure 6.

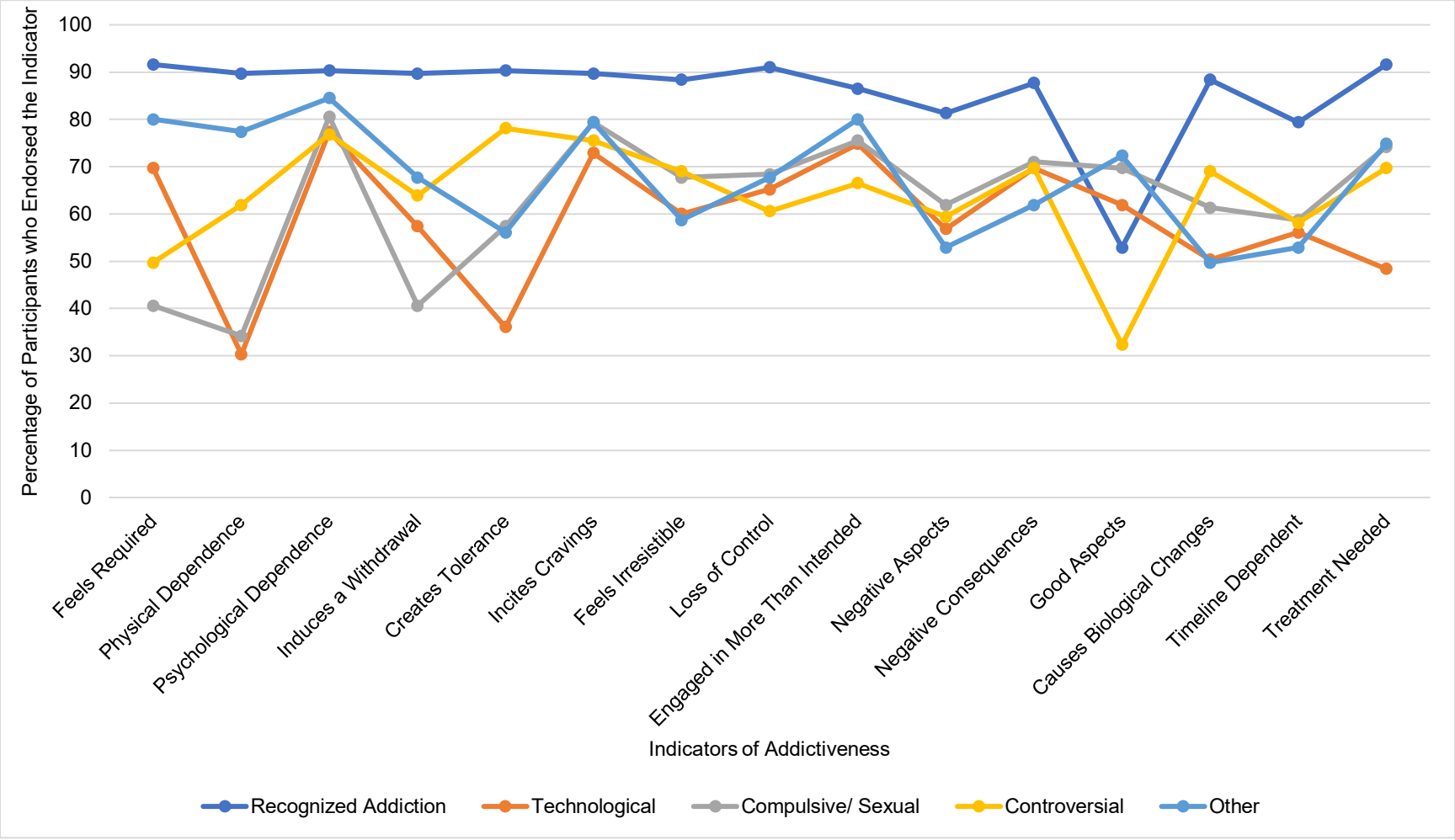
Profile of the Percentage of Endorsement of Each Indicator of Addictiveness for Objects in the Other Object Categories in the Undergraduate Sample.



Note: $N = 132$; There were significant differences between objects for the Physical Dependence ($F = 2.31$, $\eta_p^2 = 0.02$) and Causes Biological Changes ($F = 2.05$, $\eta_p^2 = 0.02$) Indicators of Addictiveness only, but there were no significant differences between object categories in MANCOVA results.

Figure 7.

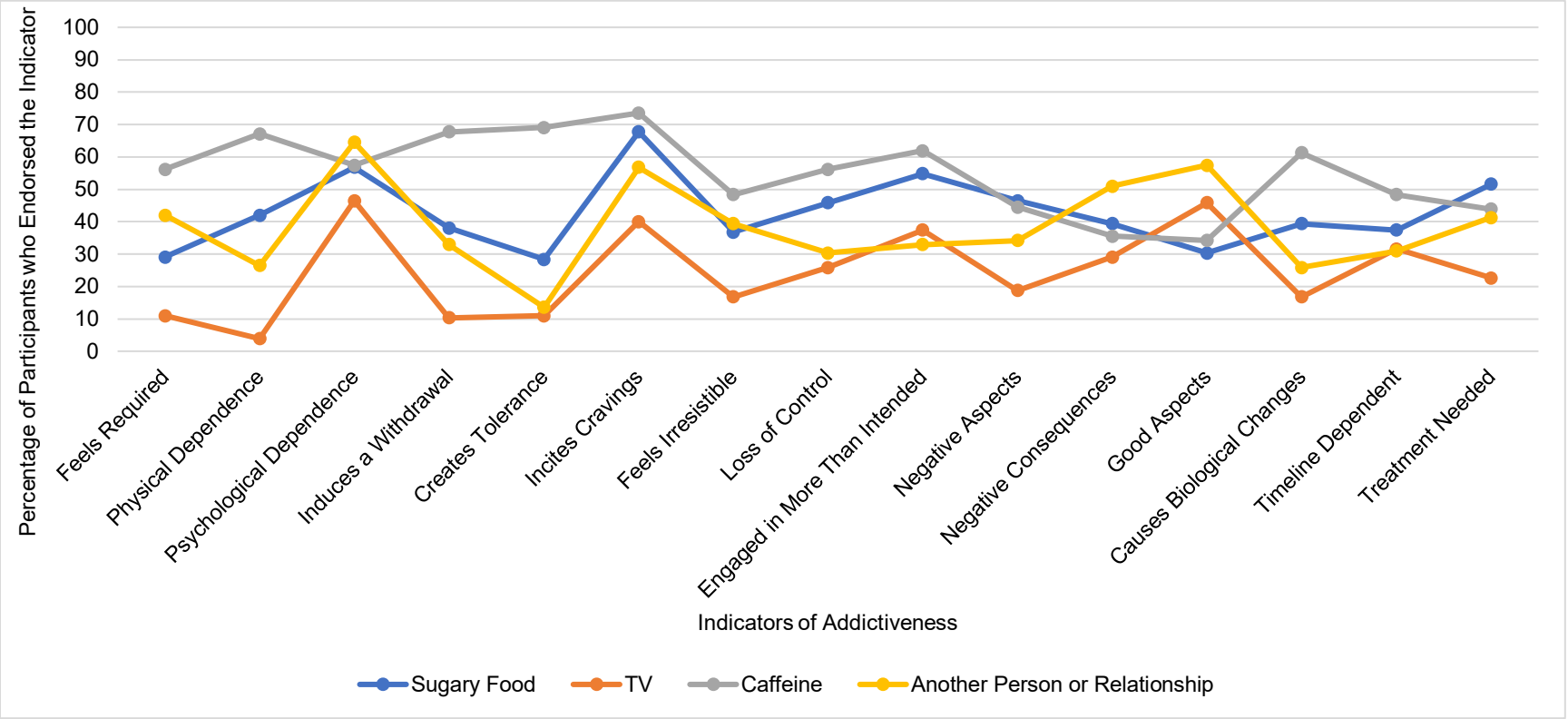
Profile of the Percentage of Endorsement of Each Indicator of Addictiveness for the Object Categories in the Undergraduate Sample.



Note: $N = 132$; There were no significant differences between object categories in MANCOVA results.

Figure 8.

Profile of the Percentage of Endorsement of Each Indicator of Addictiveness for Objects Which Were Not in Any Object Categories in the Undergraduate Sample.

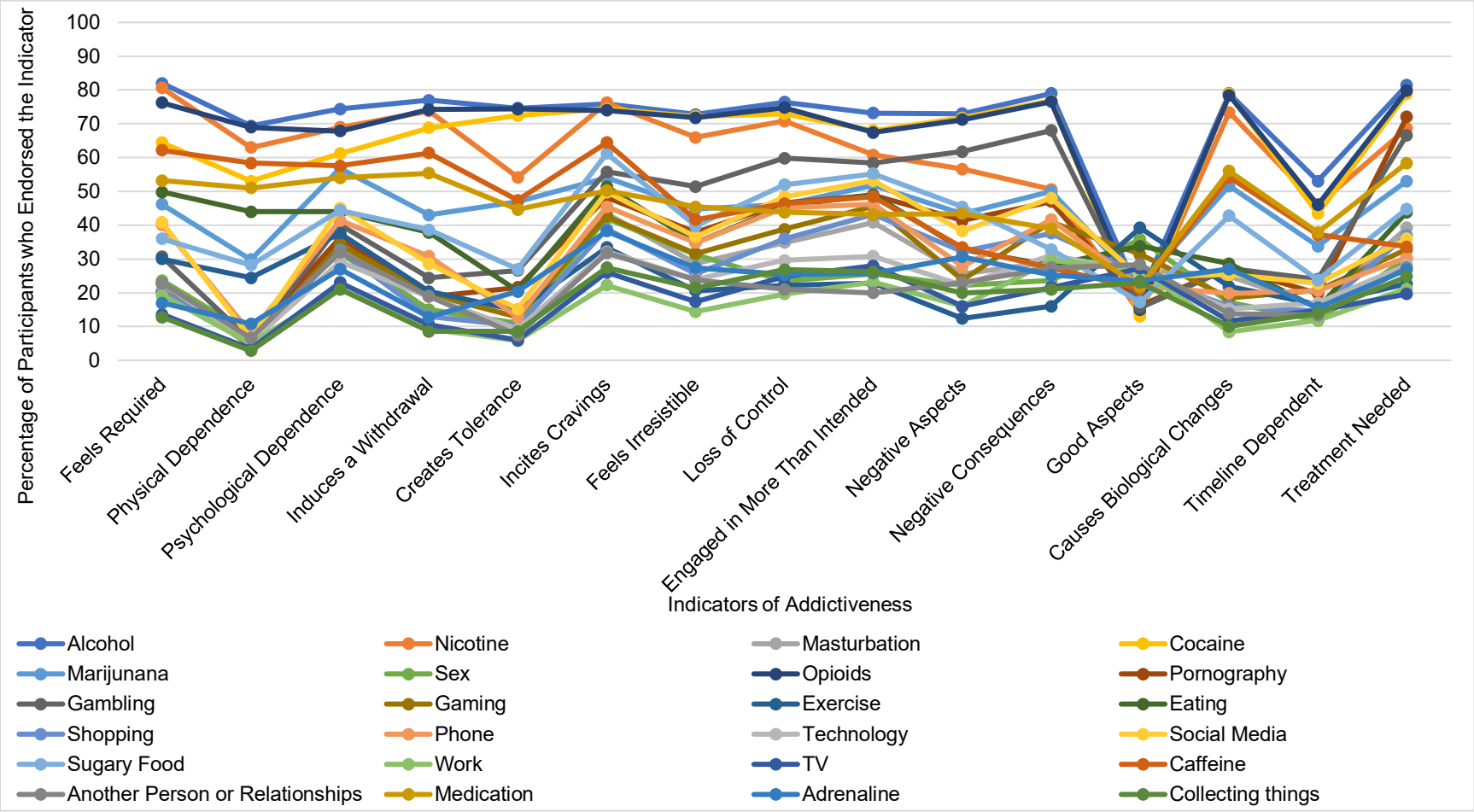


Note: $N = 132$; There were significant differences between objects for the Physical Dependence ($F = 2.31$, $\eta_p^2 = 0.02$) and Causes Biological Changes ($F = 2.05$, $\eta_p^2 = 0.02$) Indicators of Addictiveness only, but there were no significant differences between object categories in MANCOVA results.

National Sample

Figure 9.

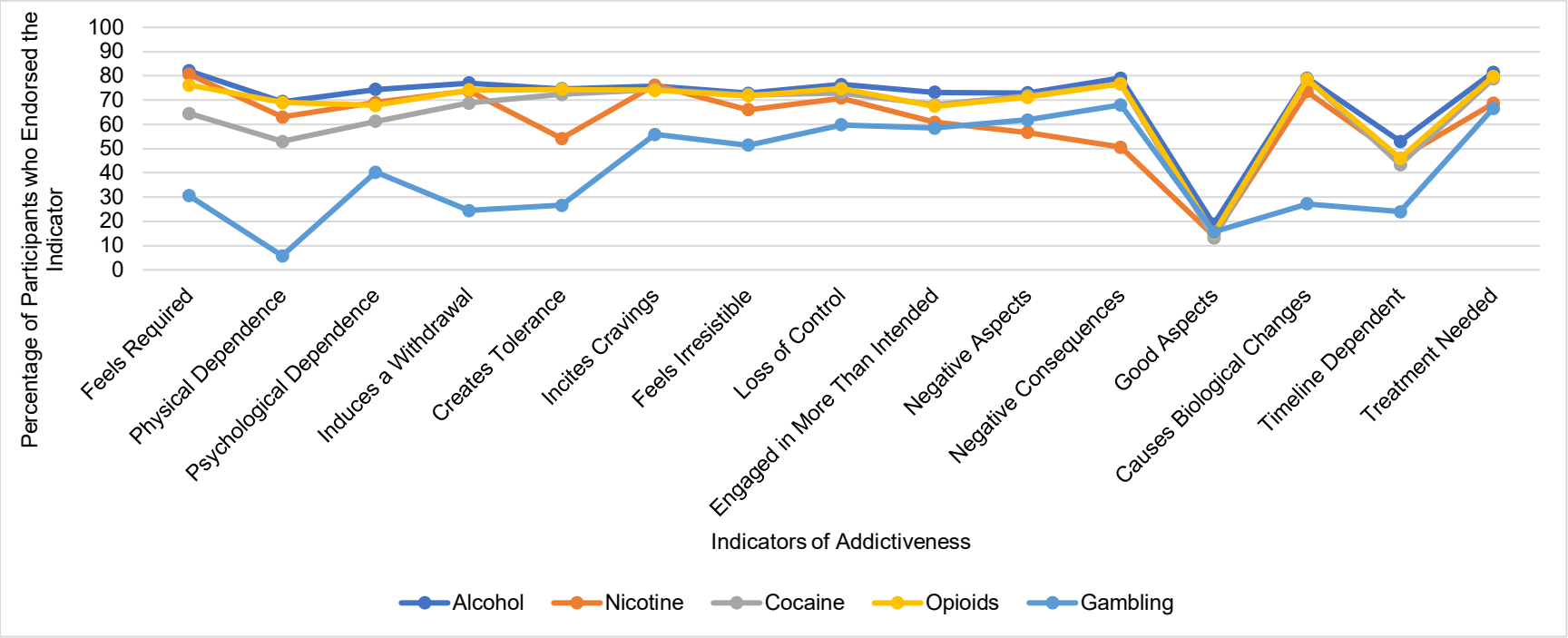
Profile of the Percentage of Endorsement of Each Indicator of Addictiveness for All Objects in the National Sample



Note: $N = 487$; There were significant differences between objects for all Indicators of Addictiveness in MANCOVA results.

Figure 10.

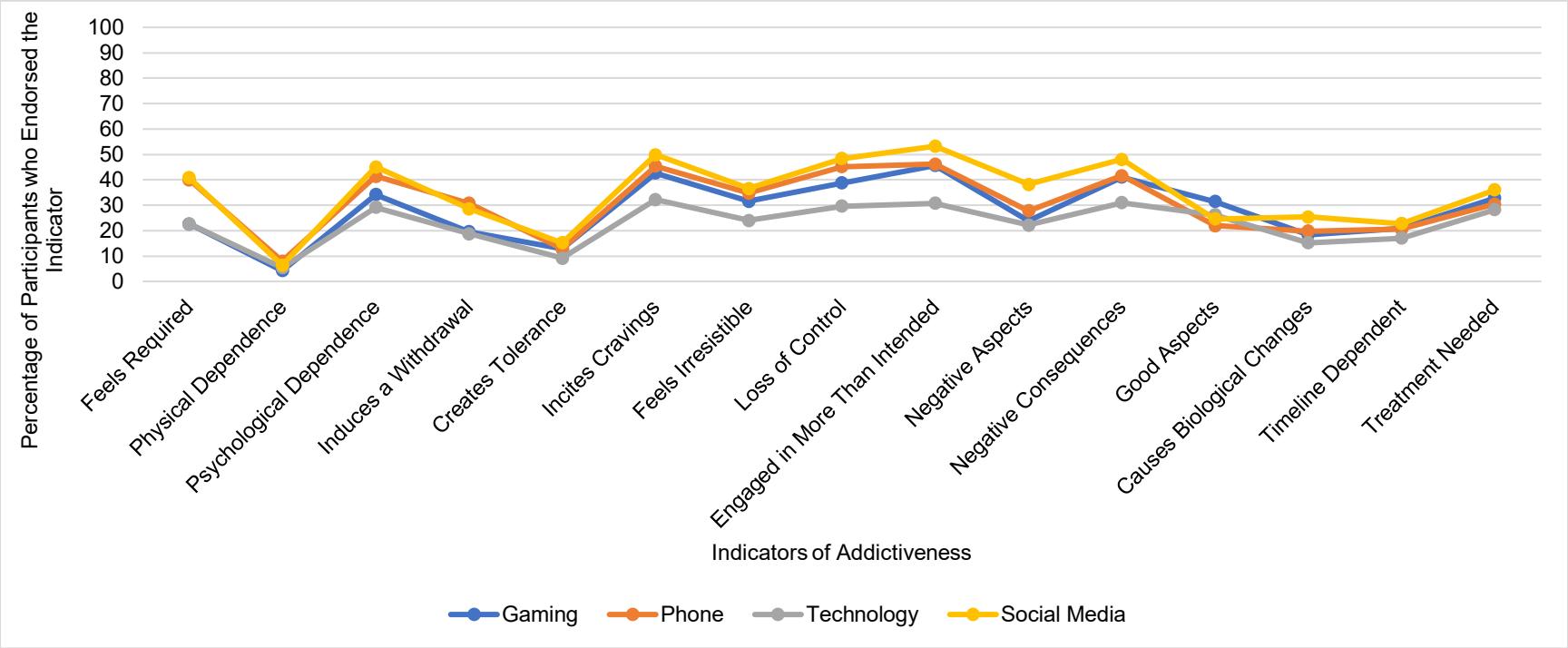
Profile of the Percentage of Endorsement of Each Indicator of Addictiveness for Objects in the Recognized Addictions Object Categories in the National Sample.



Note: $N = 487$; There were significant differences between objects for all Indicators of Addictiveness, but there were significant differences between object categories for the Physical Dependence ($F = 12.40$, $\eta_p^2 = 0.03$), Induces a Withdrawal ($F = 7.40$, $\eta_p^2 = 0.02$), Creates Tolerance ($F = 4.23$, $\eta_p^2 = 0.01$), Incites Cravings ($F = 1.81$, $\eta_p^2 = 0.00$), Timeline Dependent ($F = 11.17$, $\eta_p^2 = 0.02$), and Treatment Needed ($F = 5.84$, $\eta_p^2 = 0.01$) Indicators of Addictiveness only in MANCOVA results.

Figure 11.

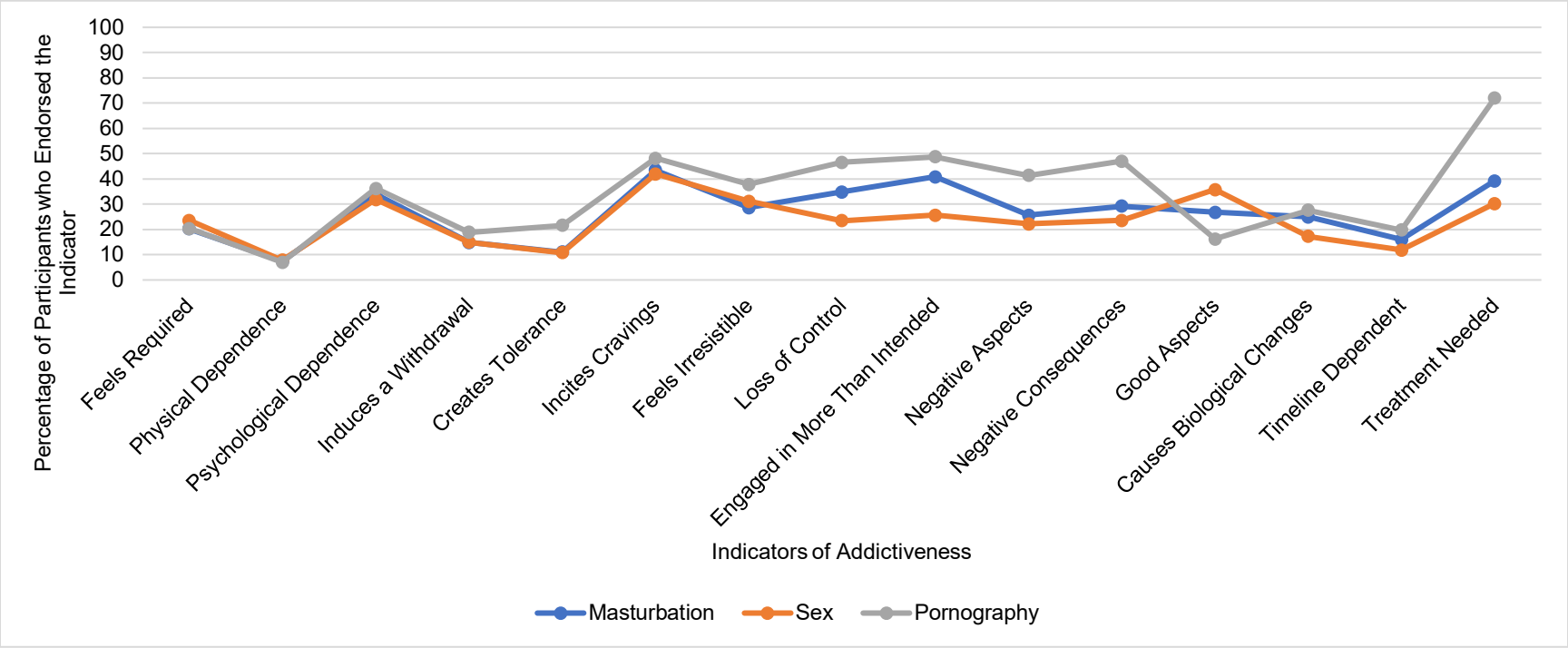
Profile of the Percentage of Endorsement of Each Indicator of Addictiveness for Objects in the Technological Object Categories in the National Sample.



Note: $N = 487$; There were significant differences between objects for all Indicators of Addictiveness, but there were significant differences between object categories for the Physical Dependence ($F = 12.40$, $\eta_p^2 = 0.03$), Induces a Withdrawal ($F = 7.40$, $\eta_p^2 = 0.02$), Creates Tolerance ($F = 4.23$, $\eta_p^2 = 0.01$), Incites Cravings ($F = 1.81$, $\eta_p^2 = 0.00$), Timeline Dependent ($F = 11.17$, $\eta_p^2 = 0.02$), and Treatment Needed ($F = 5.84$, $\eta_p^2 = 0.01$) Indicators of Addictiveness only in MANCOVA results.

Figure 12.

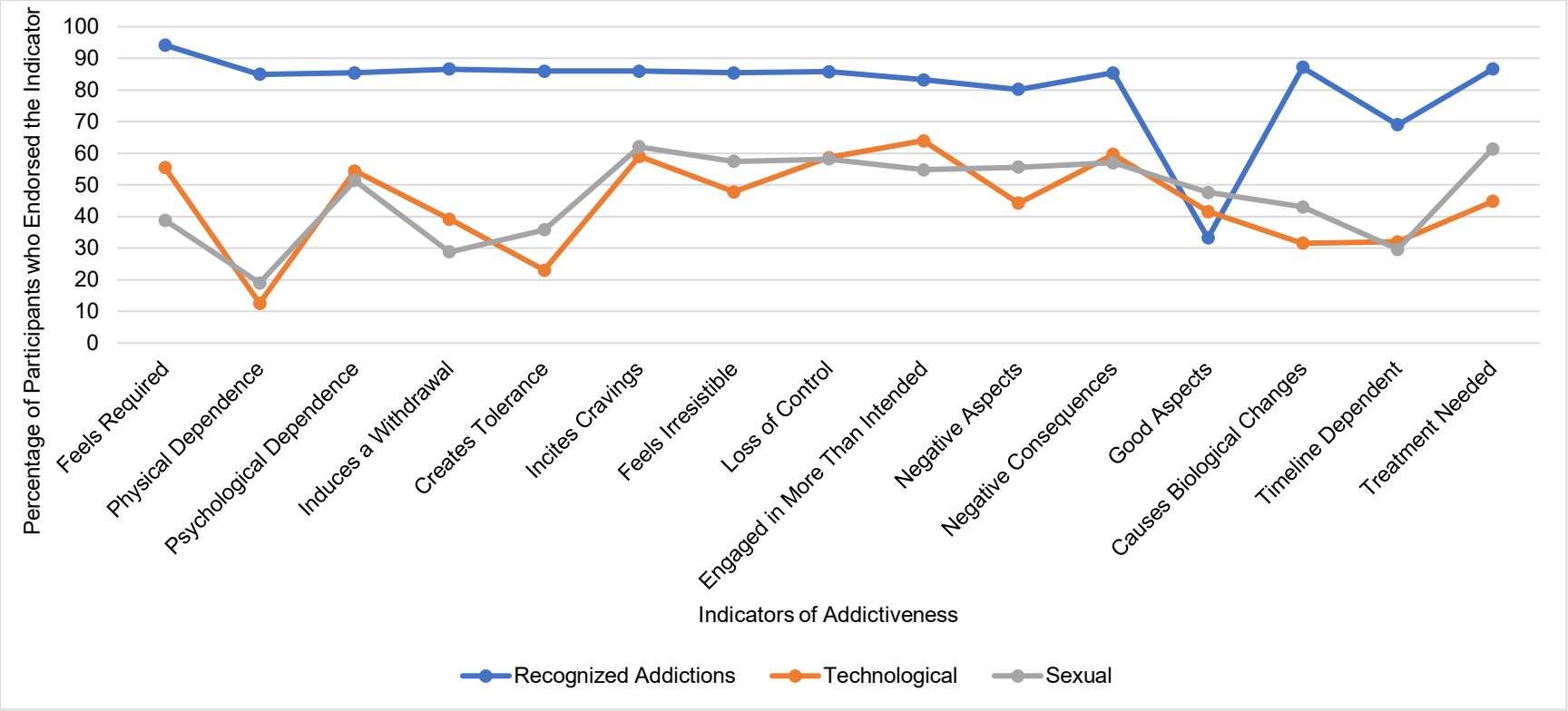
Profile of the Percentage of Endorsement of Each Indicator of Addictiveness for Objects in the Sexual Object Categories in the National Sample.



Note: $N = 487$; There were significant differences between objects for all Indicators of Addictiveness, but there were significant differences between object categories for the Physical Dependence ($F = 12.40$, $\eta_p^2 = 0.03$), Induces a Withdrawal ($F = 7.40$, $\eta_p^2 = 0.02$), Creates Tolerance ($F = 4.23$, $\eta_p^2 = 0.01$), Incites Cravings ($F = 1.81$, $\eta_p^2 = 0.00$), Timeline Dependent ($F = 11.17$, $\eta_p^2 = 0.02$), and Treatment Needed ($F = 5.84$, $\eta_p^2 = 0.01$) Indicators of Addictiveness only in MANCOVA results.

Figure 13.

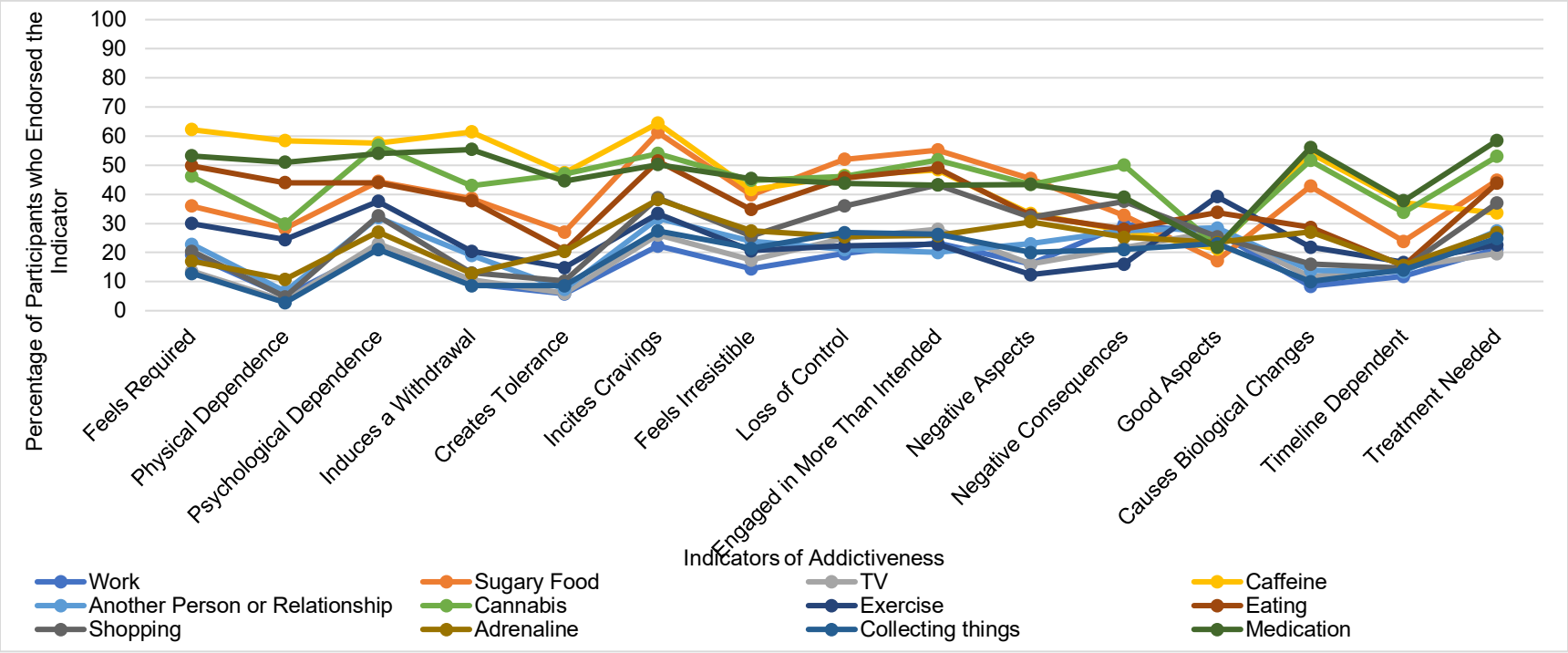
Profile of the Percentage of Endorsement of Each Indicator of Addictiveness for the Object Categories in the National Sample.



Note: $N = 487$; There were significant differences between object categories for the Physical Dependence ($F = 12.40$, $\eta_p^2 = 0.03$), Induces a Withdrawal ($F = 7.40$, $\eta_p^2 = 0.02$), Creates Tolerance ($F = 4.23$, $\eta_p^2 = 0.01$), Incites Cravings ($F = 1.81$, $\eta_p^2 = 0.00$), Timeline Dependent ($F = 11.17$, $\eta_p^2 = 0.02$), and Treatment Needed ($F = 5.84$, $\eta_p^2 = 0.01$) Indicators of Addictiveness only in MANCOVA results.

Figure 14.

Profile of the Percentage of Endorsement of Each Indicator of Addictiveness for Objects Which Were Not in Any Object Categories in the National Sample.



Note: $N = 487$; There were significant differences between objects for all Indicators of Addictiveness, but there were significant differences between object categories for the Physical Dependence ($F = 12.40$, $\eta_p^2 = 0.03$), Induces a Withdrawal ($F = 7.40$, $\eta_p^2 = 0.02$), Creates Tolerance ($F = 4.23$, $\eta_p^2 = 0.01$), Incites Cravings ($F = 1.81$, $\eta_p^2 = 0.00$), Timeline Dependent ($F = 11.17$, $\eta_p^2 = 0.02$), and Treatment Needed ($F = 5.84$, $\eta_p^2 = 0.01$) Indicators of Addictiveness only in MANCOVA results.

APPENDIX B: PERCEIVED ADDICTIVENESS MEASURE

Perceived Indicators of Addictiveness of General Addictiveness

*This section is designed to be given first to identify all indicators of addictiveness which a participant believes may suggest that something is addictive as measure of general perceptions of addictiveness. *The Domain column is provided as a reference only and will not be presented to participants.*

Take a moment to think about what you think an addiction is. Please reflect on what you think causes some behaviors and substances to be addictive for some people. What makes a substance or behavior addictive?

The following are several indicators of addictiveness that some people suggest are a way to tell if an object is addictive.

Next to each statement, please check the box rating how much you believe that this statement may be an indicator of addictiveness that something is addictive.

Domain *		Not at all indicative that something is addictive	Slightly indicative that something is addictive	Moderately indicative that something is addictive	Very indicative that something is addictive	Extremely indicative that something is addictive
Required	Causes a person to feel like they need or require it, often to live or survive					
Required	A person's body can depend on it to function (i.e., physical dependence)					
Required	A person depends on it to function psychologically/					

	emotionally/ mentally, or depends on it to cope with psychological struggles					
Required	A person experiences noticeable physical or psychological effects when it is not available					
Required	A person needs more of it over time to get same effect					
Required	A person experiences a strong urge or desire (craving) for it					
Feels irresistible	A person will compulsively and irresistibly engage with it (e.g., a habit or going to great lengths to have it)					
Feels irresistible	A person engages/does/has it more than they want, intend, or feel they should					
Feels irresistible	A person feels unable to control their engagement or stop it					
Quality of Object	It is bad, problematic, or negative, or can be a negative experience					
Quality of Object	It has negative or bad					

	consequences or can interfere with other areas of life (e.g., occupation, family, valued actions)					
Quality of Object	It is good, positive, pleasurable, or beneficial in some way, or can be a positive experience or have positive consequences					
Causation	It causes brain chemistry changes or has a biological effect which makes it addictive					
Variability	There are a certain number of times or length of time which it must be used for it to be addictive					
Treatment	A person may need treatment to help them cope with it					

Addictiveness of Objects

Please rate how addictive you believe each of the following objects are. (Presented with a scale of 1: *Not at all* to 5: *Very addictive*.)

1. Alcohol
2. Nicotine
3. Masturbation

4. Cocaine
5. Cannabis
6. Sexual activity with a partner
7. Opioids
8. Pornography
9. Gambling
10. Playing games (e.g., video games)
11. Exercise
12. Eating
13. Shopping
14. Smartphones
15. Technology
16. Social media
17. Sugary food
18. Food in general (*removed in Study 3*)
19. Television shows or movies
20. Caffeinated drinks
21. Another person or a relationship
22. Medications
23. Adrenalin heightening activities (e.g., rollercoasters, skydiving, etc.)
24. Collecting objects
25. Work *(added in Study 3)*

Perceived Indicators of Addictiveness of the Addictiveness of Objects

This section is designed to be given whereby only objects and indicators of addictiveness which were rated as at least somewhat addictive (rated 2 or higher) are presented. This gives a measure of which indicators of addictiveness suggest addictiveness of each object.

The following table contains the various substances and behaviors that you indicated could be somewhat addictive. These substances and behaviors are listed across the top as columns. In each row, there are several statements which you also previously rated as at least somewhat indicative that an object is addictive.

Next to each statement, please check the box if you believe that the activity or substance at the top of the column has these qualities. That is, for each row, please select each substance/behavior that you think can have that quality.

Please check all the boxes which apply.

	Alcohol	Gambling	Sex
Causes a person to feel like they need or require it, often to live or survive			
A person's body can depend on it to function (i.e., physical dependence)			
A person depends on it to function psychologically/ emotionally/ mentally, or depends on it to cope with psychological struggles			
A person experiences noticeable physical or psychological effects when it is not available			
A person needs more of it over time to get same effect			
A person experiences a strong urge or desire (craving) for it			
A person will compulsively and irresistibly engage with it (e.g., a habit or going to great lengths to have it)			
A person engages/does/has it more than they want, intend, or feel they should			
A person feels unable to control their engagement or stop it			
It is bad, problematic, or negative, or can be a negative experience			
It has negative or bad consequences or can interfere with other areas of life (e.g., occupation, family, valued actions)			
It is good, positive, pleasurable, or beneficial in some way, or can be a positive experience or have positive consequences			
It causes brain chemistry changes or has a biological effect which makes it addictive			
There are a certain number of times or length of time which it must be used for it to be addictive			
A person may need treatment to help them cope with it			

APPENDIX C: STUDY OUTLINES

Study 1 Addictiveness Questions

1. What does it mean to say that something is "addictive"? If something (a drug, a behavior, or an experience) is called "addictive," what does that mean to you?

   Please elaborate on what you think that term means without using the same or similar words (I.e., please don't describe what "addictive" means using words like "addiction" or "addicted."

2. Thinking about the definition you just provided, to what extent do you think the following things can be addictive? (1: *not at all addictive*; 3: *extremely addictive*)

   1. Alcohol
   2. Nicotine (cigarettes; e-cigarettes, vaping, etc)
   3. Masturbation
   4. Cocaine
   5. Cannabis
   6. Sexual Activity with a Partner
   7. Opioids
   8. Pornography
   9. Gambling
   10. Video Games
   11. Exercise
   12. Eating
   13. Shopping
   14. Smartphones

15. Technology

16. Social Media

Study 2 Outline

Failed Attention Checks

This message will be shown if an individual incorrectly responds to any attention checks during the initial section of the survey.

Thank you so much for your time today. Unfortunately, based on your responses, you are not eligible to complete the full study at this time. Please do not attempt to complete this study again.

Please email *study gmail* with any questions or concerns. Thank you again for your time!

Participant Demographic and Background Questions

We would like to start by asking you to tell us some information about yourself. Please answer the following questions as accurately as possible.

1. What is your current age (in years): _____
2. Do you currently reside in the United States?
    1. Yes
    2. No
3. What State or Territory in the USA did you mostly grow up in? (drop down options):
    1. American Samoa
    2. Alabama
    3. Alaska
    4. Arizona

5. Arkansas
6. California
7. Colorado
8. Connecticut
9. Delaware
10. Florida
11. Georgia
12. Guam
13. Hawaii
14. Idaho
15. Illinois
16. Indiana
17. Iowa
18. Kansas
19. Kentucky
20. Louisiana
21. Maine
22. Maryland
23. Massachusetts
24. Michigan
25. Minnesota
26. Mississippi
27. Missouri

28. Montana
29. Nebraska
30. Nevada
31. New Hampshire
32. New Jersey
33. New Mexico
34. New York
35. North Carolina
36. North Dakota
37. Northern Mariana Islands
38. Ohio
39. Oklahoma
40. Oregon
41. Pennsylvania
42. Puerto Rico
43. Rhode Island
44. South Carolina
45. South Dakota
46. Tennessee
47. Texas
48. Utah
49. U.S.A. Virgin Islands
50. Vermont

51. Virginia
52. Washington
53. West Virginia
54. Wisconsin
55. Wyoming
56. Other (Non-U.S.), please specify: _____

4. In what city do you currently live? (allow option to not complete)
5. What is your biological sex?
    1. Female
    2. Male
    3. Other, please specify: _____
6. What gender do you identify as?
    1. Female
    2. Male
    3. Non-Binary
    4. Another gender, please specify: _____
7. Please select yes.
    1. Yes
    2. No*
    3. Maybe*
8. What is your sexual orientation?
    1. Heterosexual
    2. Homosexual

3. Bisexual
4. Pansexual
5. Asexual
6. Other, please specify: _____

9. Which of these groups best describes you?
    1. White
    2. Arab/Middle Eastern/Indian
    3. African American or Black
    4. Native American/Alaska Native
    5. Asian/Pacific Islander
    6. Hispanic/Latino
    7. Another group or Multiracial (please specify): _____
10. What is your current year?
    1. Freshman
    2. Sophomore
    3. Junior
    4. Senior
    5. Graduate Student
    6. Other (please specify): _____
11. Do you currently have a job?
    1. Yes, I work on campus
    2. Yes, I work off campus
    3. No

12. What is your **individual** approximate annual income, before taxes in numeric form only:
13. What is your **family or supporting individual's** approximate annual income, before taxes (i.e., the person or people who financially support you at this time) in numeric form only:
14. **Growing up**, what was your approximate family annual income, before taxes in numeric form only:
15. Please select the response below that is first in the following list.* *(attention check item)*
    1. Good Aspects
    2. Better*
    3. Best*
16. Do you have any personal experience of an addictive disorder? Please note, "diagnosed" refers to an official diagnosis from a trained and licensed health professional (Check all that apply):
    1. Yes, I have previously been diagnosed with an addictive disorder
    2. Yes, an immediate family member has been previously diagnosed with an addictive disorder
    3. Yes, a friend has been previously diagnosed with an addictive disorder
    4. Yes, I believe I have an addictive disorder which is not diagnosed
    5. Yes, I believe someone I know has an addictive disorder which is not diagnosed
    6. No
17. Please specify what addictive disorder or disorders were diagnosed? (*Present if selected responses 1-3 in question 16.*)
18. Please specify what addictive disorder or disorders you suspect are present but have not

been diagnosed? (*Present if selected responses 4-5 in question 16.*)

19. Have you ever been treated for the addictive disorder which you were diagnosed with or suspected? (*Present if selected responses 1 or 4 in question 16*.)
20. What is your current relationship status?
    1. Single, not in a relationship
    2. In a committed relationship
    3. Married
    4. Divorced
    5. Widowed
    6. Domestic/Civil Partnership
21. What is your highest level of education?
    1. Some school
    2. High school graduate
    3. Some college
    4. Associates Degree
    5. Bachelor's Degree
    6. Master's Degree
    7. Doctoral Degree
    8. Other, please specify: _____
22. What religion/spirituality do you identify with?
    1. Roman Catholic
    2. Eastern or Greek Orthodox
    3. Evangelical Protestant

4. Non-evangelical Protestant
5. Mormon
6. Jewish
7. Hindu
8. Muslim
9. Buddhist
10. Agnostic
11. Atheist
12. No particular affiliation
13. Spiritual but not religious
14. Other, please specify: _____

23. What political ideology do you identify with?

1. Republican
2. Democrat
3. Independent
4. None
5. Other, please specify_____

24. Please select the response indicating the highest level of agreement.* *(attention check item)*

1. Strongly disagree*
2. Disagree*
3. Neither agree nor disagree*
4. Agree*

5. Strongly agree

Religious Belief Salience. Please rate your agreement with the following items. (Presented with a Likert Scale of 1 = *does not apply*/*I have no religious/spiritual belief*; 2 = *strongly disagree*; 12 = *strongly agree*)

1. My religious/spiritual beliefs lie behind my whole approach to life
2. I allow my religious/spiritual beliefs to influence other areas of my life
3. My religious/spiritual beliefs provide meaning and purpose to life
4. Being a religious/spiritual person is important to me

Religious Participation. Please rank your participation in the following activities. (Presented with a 6-point scale: *not at all, once, a few times, on most days, daily,* and *more than once per day*)

1. Pray or meditate
2. Think about religious/spiritual issues
3. Read religious/spiritual things
4. Watch religious/spiritual media programs
5. Attend a religious/spiritual service
6. Have religious/spiritual conversations

Political Affiliation Scale. Political views are often expressed in terms of right (conservative or traditional) vs. left (liberal or progressive). Using the slider below, please indicate where you believe your political views best align.

-10 ..... +10

Left ..... Right

Past Use of Potentially Addictive Objects. Which of the following have you personally used or done in the past 12 months?

1. Alcohol
2. Nicotine
3. Masturbation
4. Cocaine
5. Cannabis
6. Sexual activity with a partner
7. Opioids
8. Pornography
9. Gambling
10. Playing games (e.g., video games)
11. Exercise
12. Eating
13. Shopping
14. Smartphones
15. Technology
16. Social media
17. Sugary food
18. Television shows or movies
19. Caffeinated drinks
20. Medications
21. Adrenalin heightening activities (e.g., rollercoasters, skydiving, etc.)

22. Collecting objects

*Food is not presented because it is assumed that everyone will have eaten in the past 12 months. Another person or a relationship is not presented because relationship status will be used as a proxy for this item.

Perceived Addictiveness

Perceived Indicators of Addictiveness of General Addictiveness. Take a moment to think about what you think an addiction is. Please reflect on what you think causes some behaviors and substances to be addictive for some people. What makes a substance or behavior addictive?

The following are several indicators of addictiveness that some people suggest are a way to tell if an object is addictive.

Next to each statement, please check the box rating how much you believe that this statement may be an indicator of addictiveness that something is addictive.

	Not at all indicative that something is addictive	Slightly indicative that something is addictive	Moderately indicative that something is addictive	Very indicative that something is addictive	Extremely indicative that something is addictive
Causes a person to feel like they need or require it, often to live or survive					
A person's body can depend on it to function (i.e., physical dependence)					
A person depends on it to function psychologically/ emotionally/ mentally, or depends on it to cope with psychological struggles					
A person experiences noticeable physical or psychological effects when it is not available					
A person needs more of it over time to get same effect					
A person experiences a strong urge or desire (craving) for it					
A person will compulsively and irresistibly engage with it (e.g., a habit or going to great lengths to have it)					
A person engages/does/has it more than they want, intend, or feel they should					
A person feels unable to control their engagement or stop it					
It is bad, problematic, or negative, or can be a negative experience					
It has negative or bad consequences or can interfere with other areas of life (e.g., occupation, family, valued actions)					
It is good, positive, pleasurable, or beneficial in some way, or can be a positive experience or have positive consequences					
It causes brain chemistry changes or has a biological effect which makes it addictive					
There are a certain number of times or length of time which it must be used for it to be addictive					
A person may need treatment to help them cope with it					

Addictiveness of Objects. Please rate how addictive you believe each of the following objects are. (Presented with a scale of 1: *Not at all* to 5: *Very addictive*.)

1. Alcohol
2. Nicotine
3. Masturbation
4. Cocaine
5. Cannabis
6. Sexual activity with a partner
7. Opioids
8. Pornography
9. Gambling
10. Playing games (e.g., video games)
11. Exercise
12. Eating
13. Shopping
14. Smartphones
15. Technology
16. Social media
17. Sugary food
18. Food in general
19. Television shows or movies
20. Caffeinated drinks
21. Another person or a relationship

22. Medications

23. Adrenalin heightening activities (e.g., rollercoasters, skydiving, etc.)

24. Collecting objects

Perceived Indicators of Addictiveness of the Addictiveness of Objects. *This section is designed to be given whereby only objects and indicators of addictiveness which were rated as at least somewhat addictive (rated 2 or higher) are presented. This gives a measure of which indicators of addictiveness suggest addictiveness of each object.*

The following table contains the various substances and behaviors that you indicated could be somewhat addictive. These substances and behaviors are listed across the top as columns. In each row, there are several statements which you also previously rated as at least somewhat indicative that an object is addictive.

Next to each statement, please check the box if you believe that the activity or substance at the top of the column has these qualities. That is, for each row, please select each substance/behavior that you think can have that quality.

Please check all the boxes which apply.

	Alcohol	Gambling	Sex
Causes a person to feel like they need or require it, often to live or survive			
A person's body can depend on it to function (i.e., physical dependence)			
A person depends on it to function psychologically/ emotionally/ mentally, or depends on it to cope with psychological struggles			
A person experiences noticeable physical or psychological effects when it is not available			
A person needs more of it over time to get same effect			
A person experiences a strong urge or desire (craving) for it			
A person will compulsively and irresistibly engage with it (e.g., a habit or going to great lengths to have it)			
A person engages/does/has it more than they want, intend, or feel they should			
A person feels unable to control their engagement or stop it			
It is bad, problematic, or negative, or can be a negative experience			
It has negative or bad consequences or can interfere with other areas of life (e.g., occupation, family, valued actions)			
It is good, positive, pleasurable, or beneficial in some way, or can be a positive experience or have positive consequences			
It causes brain chemistry changes or has a biological effect which makes it addictive			
There are a certain number of times or length of time which it must be used for it to be addictive			
A person may need treatment to help them cope with it			

The following objects will be presented as different columns in the above section (*only objects rated as 2 or higher in terms of addictiveness on the Addictiveness of Objects section will be presented*):

1. Alcohol
2. Nicotine
3. Masturbation
4. Cocaine
5. Cannabis
6. Sexual activity with a partner
7. Opioids
8. Pornography
9. Gambling
10. Playing games (e.g., video games)
11. Exercise
12. Eating
13. Shopping
14. Smartphones
15. Technology
16. Social media
17. Sugary food
18. Food in general
19. Television shows or movies
20. Caffeinated drinks

21. Another person or a relationship
22. Medications
23. Adrenalin heightening activities (e.g., rollercoasters, skydiving, etc.)
24. Collecting objects

Face/Content Validity of Perceived Addictiveness Scale

On the previous pages, you answered questions about your perceptions of the addictiveness of various objects. Below, you can see an image of this inventory again (*Image of indicators of addictiveness and list of objects will be visible*). Please respond to the following questions about the inventory.

1. Are there any specific things which you think are addictive that we ought to include?
    1. No
    2. Yes, please specify: _____
2. Are there any ways in which you believe things are addictive which were not suggested by this measure? (i.e., are there more indicators of addictiveness/symptoms you think should be included?)
    1. No
    2. Yes, please specify: _____
3. Did you find any of the items to be redundant or repetitive?
    1. Yes, please specify the item numbers: _____
    2. No
4. Did you have any problems with the language used or understanding this measure?
    1. No
    2. Yes, please specify: _____

5. What other suggestions do you have for ways to improve this measure?

Definitions of Addiction Scale (Chassin et al., 2007)

How much would the following indicate to you that someone was addicted? (Presented as a matrix with a scale of 1: *not at all* to 5: *very much*.)

Appetitive items:

1. Liking the behavior a lot
2. Doing the behavior first thing in the morning
3. Doing the behavior when their friends do not approve
4. Doing the behavior even if they could get in trouble for it

Compulsive items

5. Not being able to stop doing the behavior anytime they want
6. Needing to do the behavior more and more to feel OK
7. Not being able to control the behavior
8. Thinking about the behavior almost all the time
9. Feeling bad when they cannot do the behavior
10. Giving up things they like so they can do the behavior
11. Feeling like they need the behavior
12. Trying to stop doing the behavior but they cannot

Harmfulness of Objects Scale (Pedersen & Von Soest, 2015)

We are interested in your opinion on how harmful the following objects can be in different areas of life. Please answer on a scale from 1 to 6, from “Not harmful” to “Very harmful.” (Each area is presented separately with a list of the objects and a Likert scale to rate their harmfulness in terms of this area.)

Areas of harmfulness

1. Physical harm (e.g. Cancer, cardiovascular disease, lung disease, liver disease)
2. Mental health conditions (e.g. Learning disabilities, apathy, anxiety, depression, psychosis)
3. Dependence (e.g. Problems with quitting use despite serious consequences)
4. Injuries (e.g. Drowning, falls or traffic accidents, quarrels, violence)
5. Social consequences (e.g. Break-up of family relations, educational problems, problems with the police)

Objects

1. Alcohol
2. Nicotine
3. Masturbation
4. Cocaine
5. Cannabis
6. Sexual activity with a partner
7. Opioids
8. Pornography
9. Gambling
10. Playing games (e.g., video games)
11. Exercise
12. Eating
13. Shopping
14. Smartphones

15. Technology
16. Social media
17. Sugary food
18. Food in general
19. Television shows or movies
20. Caffeinated drinks
21. Another person or a relationship
22. Medications
23. Adrenalin heightening activities (e.g., rollercoasters, skydiving, etc.)
24. Collecting objects

Addiction Belief Inventory (Luke et al., 2002)

Please rate your agreement to the following statements. (Presented as a matrix with a scale of 1: *strongly disagree* to 5: *strongly agree*.)

Inability to control items

1. An addicted person can control their use.
2. A person with an addiction can learn to control their addictive behavior.
3. Addicted persons are capable of engaging with the addictive behavior/substance socially.
4. Treatment can allow addicted individuals to engage with a behavior/substance socially.

Chronic disease items

5. An addiction problem can only get worse.
6. Recovery is a continuous process that never ends.
7. To be healed addicted persons have to stop using all addictive substances/behaviors.
8. Substance abuse/abuse of a behavior is a disease.

Reliance on experts items

9. Addicted individuals are not capable of solving their problem on their own.
10. An addicted individual must seek professional help.
11. A recovering addict should rely on other experts for help and guidance.

Responsibility for actions items

12. An addicted individual should not be held accountable for things they do while engaging with the behavior/substance.
13. It is not an addicted individual's fault they use/do the addictive substance/behavior.
14. Addicted individuals are not responsible for things they did before they learned about their addiction.

Responsibility for recovery items

15. Addicted individuals are responsible for their recovery.
16. Only the addicted individual themselves can decide when to stop doing/using the addictive behavior/substance.
17. Ultimately, the addict is responsible to fix themselves.

Genetic basis items

18. Some people are addicts from birth.
19. Addiction is inherited.
20. Children of addicts who engage with addictive behaviors/substances will become addicts.

Coping items

21. An addicted person uses addictive behaviors/substances to avoid personal problems.
22. People use addictive behaviors/substances to feel better about themselves.
23. People use addictive behaviors/substances to lessen their depression.

24. Addicts use addictive substances/behaviors because they cannot cope with life.

25. Addicts use addictive substances/behaviors to escape from bad family situations.

Moral Weakness items

26. Abuse of substances behaviors is a sign of personal weakness.

27. Addicts are personally responsible for their addiction.

28. Relapse is a personal failure.

29. Addicts start doing/using an addictive behavior/substance because they want to.

30. It is their fault if an addict relapses.

End of survey message

Thank you so much for your time and participation in this study! Please email *study gmail* if you have any questions or concerns.

Resources

Some of the topics covered in this survey may have been difficult for you to share and think about. If you are in need of help today, please consider using any of the following free resources.

On campus resources for mental health support:

- BGSU Counselling Center: 419-372-2081; College Park Building Room 104
- BGSU Psychological Services Center: 419-372-2540; Psychology Building Suite 300
- Falcon Health Center: 419-372-2271; 838 E. Wooster Street *not necessarily free

If you are experiencing thoughts about harming yourself:

- If you’re thinking about suicide, are worried about a friend or loved one, or would just like emotional support, the Lifeline network is available 24/7 across the United States. https://suicidepreventionlifeline.org/talk-to-someone-now/

- If you feeling suicidal, homicidal, or experiencing another psychological crisis and you are located in Wood County, you can call the Wood County Crisis Line is 419-502-4673.

If you are in search of other mental health referrals or options:

- SAMHSA's National Helpline, 1-800-662-HELP (4357), (also known as the Treatment Referral Routing Service) or TTY: 1-800-487-4889 is a confidential, free, 24-hour-a-day, 365-day-a-year, information service, in English and Spanish, for individuals and family members facing mental and/or substance use disorders. This service provides referrals to local treatment facilities, support groups, and community-based organizations. Callers can also order free publications and other information. You can also visit the online treatment locators.

Study 3 Outline

Failed Attention Checks

This message will be shown if an individual incorrectly responds to two attention checks during the initial section of the survey.

Thank you so much for your time today. Unfortunately, based on your responses, you are not eligible to complete the full study at this time. Please do not attempt to complete this study again.

Please email *study gmail* with any questions or concerns. Thank you again for your time!

Participant Demographic and Background Questions

We would like to start by asking you to tell us some information about yourself. Please answer the following questions as accurately as possible.

1. What is your MTurk worker ID number (*or other ID number needed for the data*

collection site being used): _____

2. What is your current age (in years)?: _____
3. Do you currently reside in the United States?
    1. Yes
    2. No
4. What State or Territory in the USA do you reside in? (drop down):
    1. American Samoa
    2. Alabama
    3. Alaska
    4. Arizona
    5. Arkansas
    6. California
    7. Colorado
    8. Connecticut
    9. Delaware
    10. Florida
    11. Georgia
    12. Guam
    13. Hawaii
    14. Idaho
    15. Illinois
    16. Indiana
    17. Iowa

18. Kansas
19. Kentucky
20. Louisiana
21. Maine
22. Maryland
23. Massachusetts
24. Michigan
25. Minnesota
26. Mississippi
27. Missouri
28. Montana
29. Nebraska
30. Nevada
31. New Hampshire
32. New Jersey
33. New Mexico
34. New York
35. North Carolina
36. North Dakota
37. Northern Mariana Islands
38. Ohio
39. Oklahoma
40. Oregon

41. Pennsylvania
42. Puerto Rico
43. Rhode Island
44. South Carolina
45. South Dakota
46. Tennessee
47. Texas
48. Utah
49. U.S.A. Virgin Islands
50. Vermont
51. Virginia
52. Washington
53. West Virginia
54. Wisconsin
55. Wyoming

5. In what city do you currently live? (allow option to not complete that question)
6. What is your biological sex?
    1. Female
    2. Male
    3. Other, please specify: _____
7. What gender do you identify as?
    1. Female
    2. Male

3. Non-Binary
4. Another gender, please specify: _____

8. Please select yes.
    1. Yes
    2. No*
    3. Maybe*
9. What is your sexual orientation?
    1. Heterosexual
    2. Homosexual
    3. Bisexual
    4. Pansexual
    5. Asexual
    6. Other, please specify: _____
10. Which of these groups best describes you?
    1. White
    2. Arab/Middle Eastern/Indian
    3. African American or Black
    4. Native American/Alaska Native
    5. Asian/Pacific Islander
    6. Hispanic/Latino
    7. Another group or Multiracial (please specify): _____
11. What is your **individual** approximate annual income, before taxes in numeric form only:
12. What is your **family's** approximate annual income, before taxes in numeric form only:

13. What is your current employment status?
    1. Part-time
    2. Full-time
    3. Currently not employed
    4. Student
    5. Retired
    6. Other (please specify):_____

Job Title (if employed): _____

14. Please select the response below that is first in the following list.* *(attention check item)*
    1. Good Aspects
    2. Better*
    3. Best*
15. Do you have any personal experience of an addictive disorder? Please note, "diagnosed" refers to an official diagnosis from a trained and licensed health professional (Check all that apply):
    1. Yes, I have previously been diagnosed with an addictive disorder
    2. Yes, an immediate family member has been previously diagnosed with an addictive disorder
    3. Yes, a friend has been previously diagnosed with an addictive disorder
    4. Yes, I believe I have an addictive disorder which is not diagnosed
    5. Yes, I believe someone I know has an addictive disorder which is not diagnosed
    6. No
16. Please specify what addictive disorder or disorders were diagnosed? (*Present if selected*

responses 1-3 in question 15.)

17. Please specify what addictive disorder or disorders you suspect are present but have not been diagnosed? (*Present if selected responses 4-5 in question 15.*)
18. Have you ever been treated for the addictive disorder which you were diagnosed with or suspected? (*Present if selected responses 1 or 4 in question 15*.)
19. What is your current relationship status?
    1. Single, not in a relationship
    2. In a committed relationship
    3. Married
    4. Divorced
    5. Widowed
    6. Domestic/Civil Partnership
25. What is your highest level of education?
    1. Some school
    2. High School Graduate
    3. Some college
    4. Associates Degree
    5. Bachelor's Degree
    6. Master's Degree
    7. Doctoral Degree
    8. Other, please specify: _____
20. What religion/spirituality do you identify with?
    1. Roman Catholic

2. Eastern or Greek Orthodox
3. Evangelical Protestant
4. Non-evangelical Protestant
5. Mormon
6. Jewish
7. Hindu
8. Muslim
9. Buddhist
10. Agnostic
11. Atheist
12. No particular affiliation
13. Spiritual but not religious
14. Other, please specify: _____

21. What political ideology do you identify with?

1. Republican
2. Democrat
3. Independent
4. None
5. Other, please specify_____

22. Please select the response indicating the highest level of agreement.* *(attention check item)*

1. Strongly disagree*
2. Disagree*

3. Neither agree nor disagree*
4. Agree*
5. Strongly agree

Religious Belief Salience. Please rate your agreement with the following items. (Presented with a Likert Scale of 1 = *does not apply*/*I have no religious/spiritual belief*; 2 = *strongly disagree*; 12 = *strongly agree*)

1. My religious/spiritual beliefs lie behind my whole approach to life
2. I allow my religious/spiritual beliefs to influence other areas of my life
3. My religious/spiritual beliefs provide meaning and purpose to life
4. Being a religious/spiritual person is important to me

Religious Participation. Please rank your participation in the following activities. (Presented with a 6-point scale (*not at all, once, a few times, on most days, daily,* and *more than once per day*)

1. Pray or meditate
2. Think about religious/spiritual issues
3. Read religious/spiritual things
4. Watch religious/spiritual media programs
5. Attend a religious/spiritual service
6. Have religious/spiritual conversations

Political Affiliation Scale. Political views are often expressed in terms of right (conservative or traditional) vs. left (liberal or progressive). Using the slider below, please indicate where you believe your political views align.

-10 ..... +10

Left ..... Right

Past Use of Potentially Addictive Objects. Which of the following have you personally used or done in the past 12 months?

1. Alcohol
2. Nicotine
3. Masturbation
4. Cocaine
5. Cannabis
6. Sexual activity with a partner
7. Opioids
8. Pornography
9. Gambling
10. Playing games (e.g., video games)
11. Exercise
12. Eating
13. Shopping
14. Smartphones
15. Technology
16. Social media
17. Sugary food
18. Television shows or movies

19. Caffeinated drinks

20. Medications

21. Adrenalin heightening activities (e.g., rollercoasters, skydiving, etc.)

22. Collecting objects

*Food is not presented because it is assumed that everyone will have eaten in the past 12 months. Another person or a relationship is not presented because relationship status will be used as a proxy for this item.

Perceived Addictiveness

Perceived Indicators of Addictiveness of General Addictiveness. Take a moment to think about what you think an addiction is. Please reflect on what you think causes some behaviors and substances to be addictive for some people. What makes a substance or behavior addictive?

The following are several indicators of addictiveness that some people suggest are a way to tell if an object is addictive.

Next to each statement, please check the box rating how much you believe that this statement may be an indicator of addictiveness that something is addictive.

	Not at all indicative that something is addictive	Slightly indicative that something is addictive	Moderately indicative that something is addictive	Very indicative that something is addictive	Extremely indicative that something is addictive
Causes a person to feel like they need or require it, often to live or survive					
A person's body can depend on it to function (i.e., physical dependence)					
A person depends on it to function psychologically/ emotionally/ mentally, or depends on it to cope with psychological struggles					
A person experiences noticeable physical or psychological effects when it is not available					
A person needs more of it over time to get same effect					
A person experiences a strong urge or desire (craving) for it					
A person will compulsively and irresistibly engage with it (e.g., a habit or going to great lengths to have it)					
A person engages/does/has it more than they want, intend, or feel they should					
A person feels unable to control their engagement or stop it					
It is bad, problematic, or negative, or can be a negative experience					
It has negative or bad consequences or can interfere with other areas of life (e.g., occupation, family, valued actions)					
It is good, positive, pleasurable, or beneficial in some way, or can be a positive experience or have positive consequences					
It causes brain chemistry changes or has a biological effect which makes it addictive					
There are a certain number of times or length of time which it must be used for it to be addictive					
A person may need treatment to help them cope with it					

Addictiveness of Objects. Please rate how addictive you believe each of the following objects are. (Presented with a scale of 1: *Not at all* to 5: *Very addictive*.)

1. Alcohol
2. Nicotine
3. Masturbation
4. Cocaine
5. Cannabis
6. Sexual activity with a partner
7. Opioids
8. Pornography
9. Gambling
10. Playing games (e.g., video games)
11. Exercise
12. Eating
13. Shopping
14. Smartphones
15. Technology
16. Social media
17. Sugary food
18. Work
19. Television shows or movies
20. Caffeinated drinks
21. Another person or a relationship

22. Medications

23. Adrenalin heightening activities (e.g., rollercoasters, skydiving, etc.)

24. Collecting objects

Perceived Indicators of Addictiveness of the Addictiveness of Objects. *This section is designed to be given whereby only objects and indicators of addictiveness which were rated as at least somewhat addictive (rated 2 or higher) are presented. This gives a measure of which indicators of addictiveness suggest addictiveness of each object.*

The following table contains the various substances and behaviors that you indicated could be somewhat addictive. These substances and behaviors are listed across the top as columns. In each row, there are several statements which you also previously rated as at least somewhat indicative that an object is addictive.

Next to each statement, please check the box if you believe that the activity or substance at the top of the column has these qualities. That is, for each row, please select each substance/behavior that you think can have that quality.

Please check all the boxes which apply.

	Alcohol	Gambling	Sex
Causes a person to feel like they need or require it, often to live or survive			
A person's body can depend on it to function (i.e., physical dependence)			
A person depends on it to function psychologically/ emotionally/ mentally, or depends on it to cope with psychological struggles			
A person experiences noticeable physical or psychological effects when it is not available			
A person needs more of it over time to get same effect			
A person experiences a strong urge or desire (craving) for it			
A person will compulsively and irresistibly engage with it (e.g., a habit or going to great lengths to have it)			
A person engages/does/has it more than they want, intend, or feel they should			
A person feels unable to control their engagement or stop it			
It is bad, problematic, or negative, or can be a negative experience			
It has negative or bad consequences or can interfere with other areas of life (e.g., occupation, family, valued actions)			
It is good, positive, pleasurable, or beneficial in some way, or can be a positive experience or have positive consequences			
It causes brain chemistry changes or has a biological effect which makes it addictive			
There are a certain number of times or length of time which it must be used for it to be addictive			
A person may need treatment to help them cope with it			

The following objects will be presented as different columns in the above section (*only objects rated as 2 or higher in terms of addictiveness on the Addictiveness of Objects section will be presented*):

1. Alcohol
2. Nicotine
3. Masturbation
4. Cocaine
5. Cannabis
6. Sexual activity with a partner
7. Opioids
8. Pornography
9. Gambling
10. Playing games (e.g., video games)
11. Exercise
12. Eating
13. Shopping
14. Smartphones
15. Technology
16. Social media
17. Sugary food
18. Work
19. Television shows or movies
20. Caffeinated drinks

21. Another person or a relationship
22. Medications
23. Adrenalin heightening activities (e.g., rollercoasters, skydiving, etc.)
24. Collecting objects

Face/Content Validity of Perceived Addictiveness Scale

On the previous pages, you answered questions about your perceptions of the addictiveness of various objects. Below, you can see an image of this inventory again (*Image of indicators of addictiveness and list of objects will be visible*). Please respond to the following questions about the inventory.

1. Are there any specific things which you think are addictive that we ought to include?
    1. No
    2. Yes, please specify: _____
2. Are there any ways in which you believe things are addictive which were not suggested by this measure? (i.e., are there more indicators of addictiveness/symptoms you think should be included?)
    1. No
    2. Yes, please specify: _____
3. Did you find any of the items to be redundant or repetitive?
    1. Yes, please specify the item numbers: _____
    2. No
4. Did you have any problems with the language used or understanding this measure?
    1. No
    2. Yes, please specify: _____

5. What other suggestions do you have for ways to improve this measure?

Definitions of Addiction Scale (Chassin et al., 2007)

How much would the following indicate to you that someone was addicted? (Presented as a matrix with a scale of 1: *not at all* to 5: *very much*.)

Appetitive items:

1. Liking the behavior a lot
2. Doing the behavior first thing in the morning
3. Doing the behavior when their friends do not approve
4. Doing the behavior even if they could get in trouble for it

Compulsive items

5. Not being able to stop doing the behavior anytime they want
6. Needing to do the behavior more and more to feel OK
7. Not being able to control the behavior
8. Thinking about the behavior almost all the time
9. Feeling bad when they cannot do the behavior
10. Giving up things they like so they can do the behavior
11. Feeling like they need the behavior
12. Trying to stop doing the behavior but they cannot

Harmfulness of Objects Scale (Pedersen & Von Soest, 2015)

We are interested in your opinion on how harmful the following objects can be in different areas of life. Please answer on a scale from 1 to 6, from “Not harmful” to “Very harmful.” (Each area is presented separately with a list of the objects and a Likert scale to rate their harmfulness in terms of this area.)

Areas of harmfulness

1. Physical harm (e.g. Cancer, cardiovascular disease, lung disease, liver disease)
2. Mental health conditions (e.g. Learning disabilities, apathy, anxiety, depression, psychosis)
3. Dependence (e.g. Problems with quitting use despite serious consequences)
4. Injuries (e.g. Drowning, falls or traffic accidents, quarrels, violence)
5. Social consequences (e.g. Break-up of family relations, educational problems, problems with the police)

Objects

1. Alcohol
2. Nicotine
3. Masturbation
4. Cocaine
5. Cannabis
6. Sexual activity with a partner
7. Opioids
8. Pornography
9. Gambling
10. Playing games (e.g., video games)
11. Exercise
12. Eating
13. Shopping
14. Smartphones

15. Technology
16. Social media
17. Sugary food
18. Food in general
19. Television shows or movies
20. Caffeinated drinks
21. Another person or a relationship
22. Medications
23. Adrenalin heightening activities (e.g., rollercoasters, skydiving, etc.)
24. Collecting objects

Addiction Belief Inventory (Luke et al., 2002)

Please rate your agreement to the following statements. (Presented as a matrix with a scale of 1: *strongly disagree* to 5: *strongly agree*.)

Inability to control items

1. An addicted person can control their use.
2. A person with an addiction can learn to control their addictive behavior.
3. Addicted persons are capable of engaging with the addictive behavior/substance socially.
4. Treatment can allow addicted individuals to engage with a behavior/substance socially.

Chronic disease items

5. An addiction problem can only get worse.
6. Recovery is a continuous process that never ends.
7. To be healed addicted persons have to stop using all addictive substances/behaviors.
8. Substance abuse/abuse of a behavior is a disease.

Reliance on experts items

9. Addicted individuals are not capable of solving their problem on their own.
10. An addicted individual must seek professional help.
11. A recovering addict should rely on other experts for help and guidance.

Responsibility for actions items

12. An addicted individual should not be held accountable for things they do while engaging with the behavior/substance.
13. It is not an addicted individual's fault they use/do the addictive substance/behavior.
14. Addicted individuals are not responsible for things they did before they learned about their addiction.

Responsibility for recovery items

15. Addicted individuals are responsible for their recovery.
16. Only the addicted individual themselves can decide when to stop doing/using the addictive behavior/substance.
17. Ultimately, the addict is responsible to fix themselves.

Genetic basis items

18. Some people are addicts from birth.
19. Addiction is inherited.
20. Children of addicts who engage with addictive behaviors/substances will become addicts.

Coping items

21. An addicted person uses addictive behaviors/substances to avoid personal problems.
22. People use addictive behaviors/substances to feel better about themselves.
23. People use addictive behaviors/substances to lessen their depression.

24. Addicts use addictive substances/behaviors because they cannot cope with life.

25. Addicts use addictive substances/behaviors to escape from bad family situations.

Moral Weakness items

26. Abuse of substances behaviors is a sign of personal weakness.

27. Addicts are personally responsible for their addiction.

28. Relapse is a personal failure.

29. Addicts start doing/using an addictive behavior/substance because they want to.

30. It is their fault if an addict relapses.

End of survey message

Thank you so much for your time and participation in this study! Please email *study gmail* if you have any questions or concerns.

Your MTurk completion code is: [*Randomized Code*] Please return to the MTurk page and enter this code to ensure that you will receive payment for completing this survey. You can expect to receive payment within seven days.

Resources. Some of the topics covered in this survey may have been difficult for you to share and think about. If you are in need of help today, please consider using any of the following free resources.

If you are experiencing thoughts about harming yourself:

- If you're thinking about suicide, are worried about a friend or loved one, or would just like emotional support, the Lifeline network is available 24/7 across the United States. https://suicidepreventionlifeline.org/talk-to-someone-now/

If you are in search of other mental health referrals or options:

- SAMHSA's National Helpline, 1-800-662-HELP (4357), (also known as the Treatment

Referral Routing Service) or TTY: 1-800-487-4889 is a confidential, free, 24-hour-a-day, 365-day-a-year, information service, in English and Spanish, for individuals and family members facing mental and/or substance use disorders. This service provides referrals to local treatment facilities, support groups, and community-based organizations. Callers can also order free publications and other information. You can also visit the online treatment locators.

APPENDIX D: IRB APPROVALS

BGSU
BOWLING GREEN STATE UNIVERSITY

Office of Research Compliance

Institutional Review Board

DATE:	September 26, 2022
TO:	Joshua Grubbs, PhD
FROM:	Bowling Green State University Institutional Review Board
PROJECT TITLE:	[1343971-10] College Students and Addiction
SUBMISSION TYPE:	Revision
ACTION:	APPROVED
APPROVAL DATE:	September 26, 2022
EXPIRATION DATE:	September 25, 2023
REVIEW TYPE:	Expedited Review
REVIEW CATEGORY:	Expedited review category # 7

Thank you for your submission of Revision materials for this project. The Bowling Green State University Institutional Review Board has APPROVED your submission. This approval is based on an appropriate risk/benefit ratio and a project design wherein the risks have been minimized. All research must be conducted in accordance with this approved submission.

The final approved version of the consent document(s) is available as a published Board Document in the Review Details page. You must use the approved version of the consent document when obtaining consent from participants. Informed consent must continue throughout the project via a dialogue between the researcher and research participant. Federal regulations require that each participant receives a copy of the consent document.

Please note that you are responsible to conduct the study as approved by the IRB. If you seek to make any changes in your project activities or procedures, those modifications must be approved by this committee prior to initiation. Please use the modification request form for this procedure.

All UNANTICIPATED PROBLEMS involving risks to subjects or others and SERIOUS and UNEXPECTED adverse events must be reported promptly to this office. All NON-COMPLIANCE issues or COMPLAINTS regarding this project must also be reported promptly to this office.

This approval expires on September 25, 2022. You will receive a continuing review notice before your project expires. If you wish to continue your work after the expiration date, your documentation for continuing review must be received with sufficient time for review and continued approval before the expiration date.

If you have any questions, please contact the Institutional Review Board at 419-372-7716 or irb@bgsu.edu. Please include your project title and reference number in all correspondence with this committee.