



**A REVIEW OF THE VULNERABILITIES OF  
SPECIFIC GROUPS OF ADOLESCENTS TO  
INTERNET PORNOGRAPHY:  
A LITERATURE REVIEW BY DR. TAMASINE PREECE**

**CULTURE REFRAMED**

**SOLVING** THE PUBLIC HEALTH CRISIS OF THE DIGITAL AGE

## Introduction

The impact and imposition of pornography on adolescent users have been the center of considerable media and public scrutiny in recent years. This attention comes with a wide range of often contradictory views about how engagement can shape attitudes and behaviors. Two key literature reviews consider the subject thematically and methodologically. Although both support moving towards the identification of the adolescent user at greatest risk from negative outcomes when accessing pornographic content, these studies are far from comprehensive.

One study spans the research from 2005 to 2012, identifying ways in which porn has impacted teenagers' lives (*Owens et al., 2012*). The research addresses implications in psychosocial terms, relating to the conceptualization of the self and body. This includes the teenager's ability to navigate familial and intimate relationships and the impact on brain function and physical development. The analysis identifies a correlation between the use of pornography and the prevalence of sexist attitudes and beliefs, an increase in aggressive including sexually aggressive behaviors and compulsive, addictive, and criminal activity.

Peter and Valkenburg (2016) summarize the prevalence, predictors, and implications of adolescent use of pornography as identified in studies published between 2005 and 2015. Their findings paint a picture of the average user as a male (often of an advanced pubertal stage) or one who fits the mold of a 'sensation seeker' with 'weak or troubled family relations.' They are also likely to hold 'permissive sexual attitudes' and adhere to 'stronger gender-stereotypical sexual beliefs.' It's worth noting that this understanding is limited. Alongside methodological and theoretical shortcomings embedded in data collection, the study is rife with biases which Peter and Valkenburg (2016) surmise, preclude "internally valid causal conclusions." These shortcomings include a preference for the collation of cross-sectional rather than longitudinal data, self-selection sampling which is likely to attract the participation of adolescents with greater sexual experience and sexually permissive attitudes and beliefs, low rates of participation, and significant rates of attrition. The review also notes contradictory evidence related to the impact of pornography, citing Dombrowski et al. (2007) and Owens et al. (2012) who, other than concerning sexual aggression, do not find any significant relationship between the use of pornography and the behavior and attitudes of young people. On the contrary, Bloom and Hagedorn (2015) and Springate and Omar (2013) identify negative associations.

The limitations that inform Peter and Valkenburg's (2016) construction of the adolescent user notwithstanding, their summary form a useful starting point from which to consider in more detail the specific groups of young people most likely to be negatively impacted by engagement with pornographic content. Given the exponential political, social, and cultural shift that has taken place since both reviews were conducted, all of which are highly relevant to adolescent technology use, it is important to further consider each aspect of Peter and Valkenburg's (2016) description within the context of

the scholarly literature on the subject since 2015. Because Peter and Valkenburg's (2016) description prioritized evidence of propensity and prediction, further exploration of each characteristic within the context of studies published since their publication is much needed. Likewise, reviewing the literature related to corresponding problematic behaviors can support our understanding of how different groups of young people use pornography and the nature of negative externalities, respectively.

Owens and colleagues (2012) refer specifically to young males and females who have experienced a range of Adverse Childhood Experiences (ACES), and those with mental health concerns. There is limited reference or nuance directed toward adolescents based on racial or ethnic backgrounds, religious groups, and young people who identify as lesbian, gay, bisexual, or transgender (LGBT). This review aims to fill this gap in the literature. Each of these groups will be considered in relation to the impact of engagement with pornography as well the related behaviors of Substance Use Disorder (SUD) and Problematic Internet Media Use (PIMU), which includes internet addiction (IA) and Internet Gaming Disorder (IGD). This research relied on the PubMed database to identify reliable publications and develop an overview of emerging themes related to adolescent SUD and PIMU, including IGD relating to biological sex, ACES and mental health, experiences of the care system, race and ethnicity, religiosity, sexual orientation, and identity.

An initial search took place using PubMed to identify research related to adolescent pornography use published since Owens et al.'s (2012) study. Of these, 359 were available. Alongside systematic reviews of Owens et al. (2012) and Peter and Valkenburg (2016), three additional reviews have been conducted: a review by Kyriaki et al. (2018) regarding research trends between 2000 and 2017; Field's (2020) analysis of psychological narratives and reviews; and Paslakis et al.'s (2020) study of the impact of pornography on body image and sexual body image. The key outcomes pertaining to vulnerability and impact from Owens et al.'s (2012) and Peter and Valkenburg's (2016) reviews were considered alongside the emerging evidence from papers published since 2015.

Male adolescents are significantly more likely to use pornography than females (Spišák & Paasonen, 2020). In addition to differentiation by biological sex, users are also likely to be of the later pubertal stage (i.e., 14-15 years old), bisexual or of a sexual orientation other than heterosexual, engaged in SUD, of being non-religious or belonging to a religion other than Islam, of 'higher sexual interest,' and a user of social media to obtain sexual information. Sexual behavior increases with increased exposure to pornography (Farré et al., 2020; Luder et al., 2011; Mattebo et al., 2013; Spišák & Paasonen, 2017; Sylviana et al., 2018). Pornography use is, again, associated with high levels of sensation-seeking.

### Biological Sex

Discussion related to male adolescents focuses on the impact of pornography on the reflexive relationship between engagement with pornography and the perpetration of sexual violence. In contrast, studies related to females identify reduced wellbeing and increased risk or sexual risk-taking and victimization.

Evidence suggests males who access pornography are more likely to carry out riskier sexual practices as viewed in pornography than non-viewers (*Donevan & Mattebo, 2017*). This is particularly true in the case of sexually reactive children who victimize others and males who access pornography that depicts sexual violence (*Alexy et al., 2009; Bauserman, 1996; Gassó & Bruch-Granados, 2021; Kyriaki et al., 2018; Malamuth et al., 2020; Rostad et al., 2019; Stanley et al., 2016; Ybarra & Thompson, 2018*). Others such as Malamuth and colleagues (1995) acknowledge the potentiality for a 'circular relationship' between engagement with and attitudes towards pornography and subsequent aggression towards females. To this end, Taylor (2018) describes pornography as a public health issue, 'grooming' perpetrators. This suggests that males who engage with pornography are more likely to carry out sexual violence and aggression.

Unlike some of their contemporaries, Kohut and Štulhofer (2018) do not recognize a reduction in wellbeing amongst male adolescent users. Instead, they sought to construct a scientific basis on which pornography could be researched. The authors found it to be 'on shaky ground' to say the least (*Kohut et al., 2019*). In these two studies, pornography use was associated with increases in both self-esteem and symptoms of depression and anxiety, albeit only among adolescent women in one of the two panels (*Kohut & Štulhofer, 2018*). Furthermore, low subjective well-being was associated with a subsequent increase in pornography use, but only in female adolescents in one panel.

Contrasting some of these findings, other studies indicate reduced mental health outcomes and a higher incidence of psychosomatic symptoms in female adolescent users than males. However, there is stronger evidence for younger females than in mid and later adolescence (*Mattebo, 2018; Štulhofer et al., 2019*). Females who engage with pornography are reported to have lower self-esteem and distorted body perception and image (*Principi et al., 2019*). Likewise, female users are more likely to engage in additional risk-taking and health-harming behaviors such as alcohol consumption, daily smoking, having multiple sex partners, engaging in more frequent and casual sex, and testing positive for chlamydia (*Flood, 2009; Mattebo et al., 2016*). Females are also more likely to experience sexual victimization concurrent or subsequent to pornography engagement than males, but there is also evidence of an increase in perpetration in comparison with non-users (*Rostad et al., 2019*). Studies published after 2015 offer further insight into the impact of pornography on females. Whilst males report watching pornography from an early age and with greater frequency, females who are attracted to the same sex are identified as



accessing pornography more frequently from an earlier age and more frequently than heterosexual females as a form of sex and relationship education (*Bóthe et al., 2020*).

## Well-being, Personality Traits, and Mental Health Concerns

The process of adolescence including neuroplasticity and the growing need for independence makes teenagers particularly vulnerable to the effects of pornography. Pornography is linked to reduced psychological wellbeing for males and females, especially those who have pre-existing mental health conditions, specific character traits, and a diagnosis of or traits of Autistic Spectrum Disorder (ASD) and Attention Deficit Hyperactivity Disorder (ADHD).

Adolescence is a time of significant neurobiological and psychosexual transformation, typified by exploration, risk-taking, and transgressing boundaries. Brown and Wisco (2019) describe how the adolescent brain is structured differently relative to the mature brain. He identifies these as an:

immature prefrontal cortex and over-responsive limbic and striatal circuits, heightened period for neuroplasticity, overactive dopamine response, a pronounced HXA axis, augmented levels of testosterone, and the unique impact of hormones. (*p. 10*)

Furthermore, narcissism is a typical trait of the adolescent as a phase of psychosocial development. As a result, 'physical response to sexually explicit materials is delineated', the impact on the developing teenage brain highly significant and the young person at greater risk of experiencing emotional harm than the mature adult (*Brown & Wisco, 2019; Wilson, 2018*).

The known negative impact on young people of pornography notwithstanding, literature also suggests a need to differentiate between the effects of exposure to pornographic material on mental wellbeing in the general adolescent population and the identifiable characteristics and the subsequent impact on those young people with specific vulnerabilities such as an existing addiction, poor mental health, ACES, or a diagnosis of ASD or ADHD. Individual character traits such as extroversion or experiencing anxiety may also play a role in terms of the nature and impact of the child's engagement with material (*Stavropoulos et al., 2017*). Such traits associated with pornography use include heightened exhibitionism, an exaggerated sense of their own self-importance, and drive to court attention whilst also scoring low for social intimacy. The personality of the individual may also be neurotic, less extrovert-aggregable, or of lower conscientious judgment (*Efrati, 2020; Razzaq & Rafiq Dar, 2020*). Thus, sexual needs are met without the need for social interaction with individuals being less shy without the need for authentic connectiveness (*Efrati, 2020*). Efrati (2020) further describes how young people who use pornography score highly for overt narcissism. Wilson (2018) recognizes that for the narcissistic adolescent, access to pornography represents a 'porn retreat' from which the young person can explore without limitation of sexual fantasy. Adolescents for whom pornography serves this purpose are more likely to have lower self-esteem

and be of greater vulnerability with a “need to take flight from the external world” (p. 235). Thus, they tend to be more likely to be negatively impacted by sexual materials by way of emotional harm (Wilson, 2018). However, studies exploring causation between pornography and mental health are inconclusive with a lack of consistency in terms of definitions of mental health leading to the obfuscation of outcomes (Kohut & Štulhofer, 2018; Mattebo et al., 2016; Štulhofer et al., 2019). In Efrati’s (2020) study of problematic and non-problematic pornography use, negative effects on mental health are described as a matter of perspective with mental health being framed as impacted in the instance that behaviors align with definitions of compulsive sexual behaviors disorder as well as the perspective of the individual (Efrati, 2020). Kohut and Štulhofer (2018) posit that whilst engagement with pornography is not directly associated with a reduction in wellbeing, pointing to evidence that there may even be an increase in the self-esteem of users, an increase in depression and anxiety was observed in female participants of the study. Similarly, Mattebo et al. (2016) identify a rise in psychosocial symptoms in female users of pornography. Further recognized psychosocial outcomes include a reduced level of connectivity with others, distortion in body perception, impaired verbal memory, and the exacerbation of paraphilias (Brown & Wisco; 2016; Camilleri et al., 2021; Gassó & Bruch-Granados, 2021; Kyriaki et al., 2018; Prawiroharjo et al., 2019; Principi et al., 2019).

## Race and Ethnicity

Exploration of the relationship between race and ethnicity in relation to the use of pornography and other problematic behaviors is largely limited to the impact of socio-economic factors, particularly in the case of Hispanic, Black, and Native American adolescents. Studies focused on the experiences of Asian children and young people provide further insight into specific cultural factors which lead to or mitigate the impact of such behaviors.

Race and ethnicity are explored in relation to socio-economic factors that intersect with exposure to pornography such as income, parental and community resources in urban areas, access to and quality of education, and the ability of parents and carers to provide adequate guidance (Arrington-Sanders et al., 2015; Mattebo et al., 2016; Rothman et al., 2015). Insight into the role of cultural factors is limited to the preference of young people from minority groups for pornography that reflects their ethnicity (Rothman et al., 2015) as well as discussion regarding a perceived need for ‘adjusted and individualized support’ (Mattebo et al., 2016). Katayon et al.’s (2014) research with Iranian youth considers the relationship between engagement with pornography, key aspects of the wider religious and cultural context, and the need to develop culture-specific strategies for intervention.

Studies conducted by Shih et al. (2010) and Wu et al. (2011) identify Hispanic adolescents as most likely to report the highest lifetime and past month use of substances. Asian adolescents reported the lowest use with mediating factors related to

the individual, family, and school context (*Shih et al., 2010*). There was insufficient evidence that family and school factors were related to Hispanic substance use. In terms of SUD, Native Americans are most likely to have used alcohol or drugs in the last year as well and to have SUD. Individuals who are white, Hispanic, and of mixed race or ethnicity are more likely to use substances than other racial and ethnic groups and for the activity to escalate to disorder (*Wu et al., 2011*).

Tereshchenko and Kasparov's (2019) study of college students explicitly addresses the role of race and ethnicity in IA, a context that has been largely ignored in terms of research. The study concludes that Asian adolescents (e.g., from China, South Korea, etc.) are the demographic most likely to report IA. Carson and colleagues (2012) consider the relationship between race and ethnicity, sex, mental health, educational outcome, and media use, identifying a significant association between the significant media use by Asian-Americans who also experiences feelings of loneliness and isolation and Black females with a mental health diagnosis.

## Religiosity

Religiosity is identified as a protective factor against the effects of pornography and SUD but is dependent on the religious adherence of the individual. The use of pornography can reduce religiosity over time. The limited research related to mitigation in relation to IA identifies protection for females only.

Outcomes of studies relating to religiosity are mixed and contradictory. Research indicates that pornography use may be lower in the instance of adolescents who belong to a religious community, especially in the case of male adolescents (*Sun et al., 2016; Farré et al., 2020; Rasmussen and Bierman, 2016; Kohut and Štulhofer, 2018; Camilleri et al., 2021; Poulsen et al., 2013; Perry and Hayward, 2017*). Similarly, religiosity counteracts any increases in pornography use for males and females over time and may mitigate the negative effects of pornography on the young person (*Sun et al., 2021*).

However, Perry and Hayward (2017) identify that engagement with pornography leads to a reduction in religious observance in terms of less frequent participation in prayer and collective worship and a reduced sense of belief in a personal relationship with God. There is a need for exploration in terms of aspects of the religious community context. Nie (2020) observes that non-conservative Protestant adolescents are more likely to engage with pornography than conservative Protestant youths in states with a high conservative Protestant vote share. Nie (2020) recognizes that religiosity is reported as reduced by young people in states that have lower numbers of conservative voters, thus possibly indicating a need for further research into the role of religion as a buffer, such as the feelings of belonging, shared time and activity with family and friends who are likely to adhere to a similar system of values, and access to resources of and monitoring by the community.

The relationship between SUD and religiosity has been explored in six literature reviews (*Felipe et al., 2015; Fod and Hill, 2012; Francis et al., 2019; Kub & Solari-Twadell, 2013; Marsiglia et al., 2005; Shields et al., 2007*). With similarities to the associations between pornography and the mediating effects of adherence to a religion, religiosity is identified as providing a protective and moderating effect for the adolescent, reducing the incidence of use of alcohol, nicotine, and illegal drugs, and contributing to lifestyle choices and behaviors that are healthier and less risky. However, mediation is dependent on the young person's active participation in the faith community, the upholding of values, and belief in the forgiveness of God. The wider context of the faith community is also significant, providing positive networks with peers and family and reducing the likelihood of depressive symptoms.

There is a paucity of research regarding the relationship between religiosity and adolescent IA. Charlton et al. (2013) identify that faith is a protective factor but only with females. Charlton and colleagues attribute this to the lower prevalence of addictive behaviors of females in related contexts. Braun et al. (2016) explore the relationship between religion and IGD reflects that of the relationship with SUD: that active participation and belief is associated with lower gaming incidence and reduced prevalence of addiction.

### **Young People with Adverse Childhood Experiences (ACES)**

ACES are found to have a reflexive relationship with addictive behaviors including Problematic Interactive Media Use (PIMU) which may include pornography: The evidence suggests that young people who have experience of multiple ACES are more likely to misuse substances and are also less likely to benefit from the protective factors that mitigate the effects of pornography use such as connectedness and parental supervision.

The term ACES refers to potentially traumatic events that occur in childhood (i.e., 0-17 years old) and includes the witnessing or experiencing traumatic events as well as "aspects of the child's environment that can undermine their sense of safety, stability, and bonding" (*Center for Disease Control [CDC], 2021*). The literature identifies that there is a reflexive relationship between ACES and the use of pornography, SUD, and technologically mediated activities. Wéry et al. (2019) identify an interconnectedness between addiction to online pornography and a range of poor health and wellbeing outcomes such as impaired ability to form relationships, sexual addiction, and hypersexuality, feelings of negativity, insomnia, feelings of isolation, feelings of shame, withdrawal and isolation, and poor connectivity and attachment. Wéry et al. (2019) note that these behaviors are often experienced by young people who have experienced exploitation or who are experiencing dissociation. Efrati and Amichai-Hamburger (2019) describe how the attachment style of the adolescent impacts behaviors related to pornography with use high amongst individuals with anxious attachments. Furthermore, whilst the exact relationship in terms of cause and effect is not defined, the literature indicates a correlation between the use



of controlled and illicit substances are pornography. Male and female adolescent users of pornography are more likely to smoke, consume alcohol, and use substances (*Farré et al., 2020; Mattebo et al., 2013; Mattebo et al., 2016; Morelli et al., 2017; Svedin et al., 2011*). Related studies indicate that young people involved in risky sexual behaviors and perpetrators of sexual violence are more likely to be consumers of both alcohol and violent pornography (*Yazdi-Feyzabadi et al., 2019; Ybarra & Thompson, 2018*). Laier et al. (2013) identify the similarities in basic neurobiological function between online porn addiction and substance use. Similarly, Ko and colleagues (2013) identify an intersection between cue-induced games and smoking.

‘Early’ interest and exposure to sexual activity are classified as an ACE. Again, the literature demonstrates reflexivity in terms of exposure to pornography and early engagement in sexual behavior: studies focusing on the relationship between consumption of pornography and subsequent sexual behaviors identify an increased interest and preoccupation with sex (*Farré et al., 2020; Lin et al., 2020; Meenakshi & Rath, 2019*) and an increased likelihood of involvement in compulsive and sexually aggressive behaviors (*Alexy et al., 2009; Gassó & Bruch-Granados, 2021*).

Young people who are neglected by or have a poor attachment with caregivers are more likely to be more negatively impacted by engagement with pornography (*Alexy et al., 2009; Brown & Wisco, 2016*). Ybarra and Thompson’s (2018) exploration of adolescent perpetrators and victims of sexual violence identifies a correlation with prior exposure to domestic abuse as well as current access to violent pornography. Alexy et al. (2009) refer to adolescent perpetrators as sexually reactive children and adolescents (SCRAs) further identifying this demographic as having experienced maltreatment, neglect, and physical, sexual, and emotional abuse. Pornography is recognized as a ‘risk factor for aggression.’ SCRAs who use porn are more liable to physical aggression than those who do not. Similarly, SCRAs who present compulsive sexual behaviors– sexual aggression in the case of males and victimization in females– report a higher frequency of porn use (*Gassó & Bruch-Granados, 2021*).

The CDC recognizes that family’s experiences of low income and high levels of stress-related to parenting or finances as well as community contexts in which there is little cohesion or access to resources impact adversely on the wellbeing and future success of children and young people. In their study of Black and Hispanic youths, low-income, and those living with family in urban communities, Rothman and colleagues (2015) identify that whilst parents and carers are disapproving of their child’s behaviors, indicating parental and monitoring of engagement, the quality of the interaction regarding pornography is of greatest significance regarding parents who are “unsupportive of youth’s use of pornography but underequipped to discuss it” (p. 742). Thus, the use of pornography intersects with previously discussed high-risk behaviors such as frequent (i.e., weekly) access, the use of marijuana, and the carrying out of sexually reactive behaviors such as teenage dating abuse.

Social and community connectiveness is recognized by the CDC as providing protective factors to ACES. The literature considers the role of the parent as a modifying factor in relation to pornography use. The CDC identifies that the ability of parents and caregivers to provide emotional, physical, and economic security contributes significantly to the wellbeing outcomes of the child. Similarly, the context of the caregiver-child relationship in terms of meaningful engagement and interaction, the modeling of positive communication and critical analysis with media and the home and cultural background to include an equitable contribution to household chores (*Astle et al., 2019; Beyens et al., 2019; Flood, 2009*) mitigate or buffer the impact of engagement with pornography. Further to the indirect modification that is afforded by the familial context, 'monitoring' of the child by the parent or carer is likely to prevent early and frequent access to pornography (*Nieh et al., 2020*). Analogously, the literature suggests that the social support of friends provides a 'buffering role' that limits the negative impact of pornography (*Beyens et al., 2019; Shin & Lee, 2013*).

In comparison with the mitigatory effect provided by positive relationships with caregivers, social relatedness provides the strongest buffering effect. Wéry et al. (2019) identify social isolation as a key trait of online pornography-addicted adolescents. Relatedly, Efrati and Amichai-Hamburger (2019) include pornography use with subsequent compulsive sexual behavior as a mechanism by which to cope with loneliness, a 'lack of social ties' and to explore unconscious phantasy (*Nathanson, 2021*). Efrati identifies frequent users of pornography score lower for social intimacy. Furthermore, academic success can limit the impact on young people of ACES. Whilst discussion regarding the nature of impact is limited, there is evidence of a relationship between consumption of pornography and truancy of at least once a week (*Mattebo et al., 2013*), academic success in early adolescence (*Sevic et al., 2020*), and in classrooms that are extrovert in personality dynamic (*Stavropoulos et al., 2016*).

Studies identify a correlation between the use of pornography and several related problematic behaviors and addictive behaviors to include SUD, online sexual behaviors, IA, IGD, and gambling. As in the case of pornography and associated outcomes for adolescent users, there is limited research available regarding the relationship between mental health and addictive behaviors in terms of cause and effect. However, available research and emerging evidence on SUD, PIMU, and IGD reveal significant similarities between the patterns of behavior and biological sex, character traits and comorbidities, the individual and familial context. Again, the reigning protective factors include the family context and religiosity as discussed in relation to pornography. Furthermore, there is a clear trend amongst emerging evidence of reciprocity and interconnectedness between each of the emerging themes. It is important also to acknowledge both the dramatic neurological as well as the personal and social transformation that takes place during adolescence. Bearing this in mind, a new understanding is taking shape in the field. Wherein, the impact on adolescent and young people's wellbeing amid the new technological and social media landscape plays a leading role. This should be regarded as distinct from concepts such as addiction and access to problematic content, and in terms of the impact on the

general psychosomatic health such as lack of sleep, increased awareness of and interest in sex, decreased standards of behavior, reduced mood, poor concentration, and anxiety (Meenakshi & Rath, 2019; O'Reilly et al., 2018). The literature identifies that IA and IGD are associated but not identical behaviors, with IA being more common than IGD, and evidence suggest that individuals who participate in PIMU are more likely to be at risk for IGD.

A search of adolescent AND internet AND addiction AND Disorder produced 636 studies and 15 systematic reviews, although one study was not relevant to this review. The systematic reviews included those of Anderson et al. (2017), Kuss et al. (2014), and Lam (2014). Likewise, Hinojo-Lucena et al. (2019) consider the relationship between IA and eating disorders and Marchant et al. (2017) the correlation with self-harm and suicidal behaviors. A review of adolescent AND gaming AND addiction AND Disorder revealed 607 papers, many of which were included in the IA search. Sixteen literature reviews were available and included those of Paulus et al. (2018), Mihara and Higuchi (2017), King and Delfabbro (2014), Darvesh et al. (2020), and Schneider et al. (2017) which considers the role of the family in IGD, Kristensen et al. (2021) which studies the impact IGD on sleep, and studies by King et al. (2017) and Stevens et al. (2021) that focus on IGD within an international context. Correlations with IGD and ADHD lead to 100 studies and three literature reviews, one of which was highly relevant (Dullur et al., 2021). The same search with ASD produced seven results, only one of which focused specifically on adolescent problematic use and made a special mention of young people with ADHD (Kawabe et al., 2019).

IA and IGD are associated but not identical behaviors, with IA being more common than IGD, and evidence to suggest that individuals who participate in PIMU are more likely to be at risk for IGD (Király et al., 2014; Murray et al.). Further, IA and PIMU are most likely to affect male adolescents (Király et al., 2014; Prabhakaran et al., 2016; Su et al., 2019; Torres-Rodríguez et al., 2019). Lifestyle factors identified as affecting the prevalence of IGD include spending more than twenty hours a week online, lower socio-economic status and residing in a single-parent household with lower maternal education, family dysfunction, higher incidence of ADHD, and, in the case of females with PIMU, depression and social anxiety, exposure to high-stress situations, dysfunctional family dynamics and a lack of parental supervision, affiliation to deviant peers, low emotional intelligence, and significant social problems and poor academic performance (Fam, 2018; Feng et al., 2017; Karacic & Oreskovic, 2017; Ko et al., 2009; Ko et al., 2014; Kuss, 2013; Yang et al., 2018). Conversely, parental knowledge and supervision reduce the likelihood of adolescent IGD (Torres-Rodríguez et al., 2018; Wong & Lam, 2016).

Adolescents with IGD are also likely to display personality traits to include introversion, inhibition, submissiveness, low self-esteem, self-depreciation, interpersonal sensibility, obsessive-compulsive behaviors, social phobia and anxiety, and hostility and lower self-control as well as paranoia and borderline personality traits as well as sensation seeking (Gervasi et al., 2017; Kim et al., 2016; Tian et al., 2019; Torres-Rodríguez et al., 2018;

Wong & Lam, 2016). Comorbidities include depression, social anxiety as well as other clinical profiles (Király et al., 2014; Torres-Rodríguez et al., 2018; Torres-Rodríguez et al., 2019). Depression, introversion, ASD, and ADHD are also associated with IA (Carli et al., 2013; Ha et al., 2007; Müller et al., 2014; Prabhakaran et al., 2016; Tejeiro et al., 2012; Torres-Rodríguez et al., 2019; Tóth-Király et al., 2021; Wartberg et al., 2016) as well as aggression and hostility (Firat et al., 2018). However, Bickham (2021) also advises that the personality traits of individuals are as diverse as they are similar.

Specifically, regarding the relationship between ACES and mobile phone addiction, Li et al. (2020) explore the role of attachment style as a mediator finding a significant relationship between attachment style and interpersonal relationships in relation to ACES and mobile phone addiction:

adverse childhood experience was positively related to mobile phone addiction 2) both attachment anxiety and interpersonal relationship played partial and parallel mediating roles between adverse childhood experience and mobile phone addiction, and 3) attachment anxiety/avoidance and interpersonal relationship mediated the relationship between adverse childhood experience and mobile phone addiction sequentially. (p. 1)

In addition to attachment style, Forster et al. (2021) identify perceived peer support as limiting the effects of PIMU as well as acknowledging the benefit of a college education on life chances. However, the study calls for the role of specialist support systems in addition to peer and expert adults such as teachers as other authority figures.

The functionality of the family is instrumental in terms of providing protection, with at-risk adolescents witnessing and experiencing higher family conflict and poorer family relationships (Bonnaire & Phan, 2017; Schneider et al., 2017). Regarding problematic gameplay, the relationship between child and parent is, again, identified as the key protective factor with non-protective relationships typified by reduced quality time, reduced affection, poorer quality attachment particularly with their mother, lower quality parenting, and greater hostility (Ballarotto et al., 2018; Schneider et al., 2017). Contrarily, secure attachment to the father affords the adolescent protection (Schneider et al., 2017).

### **Young People and Addictive Behaviors (i.e., Substance Misuse Disorder, Problematic Internet Media Use, Internet Addiction, and Internet Gaming Disorder)**

Addictive behaviors are driven by the desire to experience pleasurable feelings which leads to uncontrollable behaviors and negative consequences for the addicted individual. SUD differs from addictions to technology-mediated behaviors in that the individual develops a dependency on the substance as well as the corresponding pleasurable behaviors. There is similarity, however, in both the characteristics which may lead to dependency and in terms of protective factors.

It is helpful first to consider an overview of addiction in general terms. For instance, adolescent substance misuse and problematic interactive media use to effectively evaluate associations between each of these themes. Goodman (1990) defines addiction as:

a process whereby a behavior, that can function both to produce pleasure and to provide relief from internal discomfort, is employed in a pattern characterized by (1) recurrent failure to control the behavior (powerlessness) and (2) continuation of the behavior despite significant negative consequences (unmanageability). (p. 1407)

Alavi et al. (2012) differentiate between SUD, in which an individual develops a dependency on the physiological response to a substance and compulsive behaviors such as 'gambling, overeating, television compulsion, and IA in which "(s)he is addicted to the behavior or the feeling experienced by acting out the behavior" (p. 2).

Substance use amongst young people of both sexes is wide-ranging in severity from normative to pathological (Gray & Squeglia, 2018). Kuhn and colleagues (2012) identify similarities in the context of SUD in adolescent males and females regarding the neurobiology of the developing brain and the influence of comorbidities to include depression and the family context. As puberty progresses, sex disparities emerge with males at particular risk of misusing substances as a form of pleasure and sensation-seeking and females self-medicating as a response to anxiety and depression. Kuhn (2015) suggests that these same neurobiological sex differences afford females protection, mitigating the risk of progression from normative use to addiction, including "lower levels of impulsivity and sensation seeking, higher levels of self-regulation during adolescence specifically" (p. 68) and, as has been explored in relation to pornography, "greater impact of family environment which provide a window into the role of biological factors in the absence of cultural and environmental risks" (p. 68). Similarly, Pluhar et al. (2019) define PIMU as:

the uncontrolled use of interactive screen media that results in negative consequences affecting an individual's functioning. Like other behavioral addictions, an individual suffering from PIMU may experience an increased tolerance to media use and negative reactions when forced to restrict their use. (p. 448)

This may include smartphone or IA, IGD, and or online gambling. IA is recognized as a mental health condition in the DSM-V but there is no such recognition of IGD.

The search of PubMed for the terms adolescent SUD produced 2786 results, 46 of which were systematic reviews focusing on causality, comorbidity, and treatment. In terms of the individual context of the adolescence, Fitzgerald and colleagues (2018) identify a positive relationship between SUD and the individual context of the adolescent in terms of high-risk behaviors, poor conduct, low self-esteem regarding academic achievement, criminal behavior, attending a socially-economically disadvantaged school, peer networks and intimate relationship breakdown were positively associated with SUD. Alcohol use is associated specifically with family breakdown, bereavement, living in a rural community,



and relationship breakdown. Smoking is linked to reduced academic achievement and cannabis, being male, feelings of anger, and residing in an urban community. These findings are echoed by Surís and colleagues (2015) who find that of individuals who have tried e-cigarettes, adolescents are also most likely to be male, to be vocational rather than academic students or to be out of school. The use of other substances was also associated to include alcohol, tobacco, and cannabis. Adolescent males who engage in sexual activity as part of intimate relationships at a younger age are more likely to participate in cannabis use than those who value romantic gestures as a demonstration of intimacy and commitment in such as the receiving of gifts, making declarations of love, and marriage (Liang & Chikritzhs, 2013). Similarly, Piko et al. (2012) identify a correlation between a lower incidence of alcohol use and religiosity with males who report adherence to a religion less likely to use alcohol.

Fifty-one papers were available related to the relationship between SUD and ACES of which seven are of relevance to this review: Kong et al. (2013), Espinoza et al. (2019) which also considers association with sexual risk-taking, Puente et al. (2008), Van et al. (2012), Gerra et al. (2004), Castellanos-Ryan et al. (2011), and Liraud and Verdoux (2000). Seven studies explore the relationship between ACES and adolescent sensation-seeking including one systematic review (Babad et al., 2019). Three studies explore the relationship between ACES and adolescent IGD, including Seo et al.'s (2020) study which considers the correlation with depressive symptoms. Fifty-nine referenced ACES and adolescent substance misuse: three were literature reviews, two of which were relevant to this study (Aytur et al., 2021; Weitzel et al., 2021).

Leza et al.'s (2021) literature review of studies related to the relationship between ACES and substance use disorder concludes that there is a higher incidence of ACES amongst adult populations reporting SUD than in the general population. There is also a positive association between childhood experiences and the trajectory and severity of the SUD during adolescence and adulthood. Douglas and colleagues (2012) identify childhood abuse and exposure to violent crime as specific incidents that contribute to the later development of depression, anxiety, and substance use disorders. A systematic review of the literature by Arnevik and Helverschou (2016) whilst acknowledging the range of definitions and criteria for SUD, concluded that there was a lower incidence of SUD amongst individuals with ASD. However, a later study concluded that there is a much higher incidence of SUD among individuals with ASD than among non-ASD controls particularly in the case of individuals with both ASD and ADHD (Butwicka et al., 2017).

105 papers and three literature reviews included references to IA and ADHD including Wang et al. (2017) and Marin et al. (2017) reviews, both of which are specifically focused on the relationship between attention and IA. Tateno et al.'s (2019) exploration of the relationship between PIMU and the social trait of Japanese hikikomori (i.e., extreme social withdrawal) is also of particular interest. There was not any evidence available regarding ASD nor was it possible to find studies exploring adolescent SUD and any specific correlations with IA. Four papers considered adolescent SUD and IGD disorder

including studies by Ofir and Bechara (2019) who find that limited gaming activity can be a protective factor whereas excessive gaming can be a risk factor for problematic gaming.

Searches related to sensation seeking AND gaming AND addiction AND disorder discovered nine studies relating to gaming addiction and seven for IA. Among these, no available literature reviews existed. Most relevant to these areas of PIMU, referring to a range of problematic online behaviors, are studies by Jo et al. (2020), Müller et al. (2016), Rømer Thomsen et al. (2018), and Mehroof and Griffiths (2010). Zhai et al.'s (2020) research relates specifically to sensation seeking, IA, and associated violent behavior. Forster and colleagues (2021) recognize similarities in terms of the 'structural and neural functioning' of individuals with SUD and those at risk for PIMU, with Lee et al. (2013) suggesting that substance misuse precedes IA (Forster et al., 2021; Ko et al.). In terms of causality, Seo et al. (2020) describe how adolescents turn to Internet communication as a response to negative emotions, an activity that reinforces problematic use of the Internet. The adolescent subsequently is at greater risk of physical and mental health which, in turn, increases the likelihood of developing depressive symptoms.

### **Young People with Autistic Spectrum Disorder (ASD) and Attention Deficit Hyperactivity Disorder (ADHD)**

There is a paucity of evidence regarding the impact of engagement with pornography on adolescents with a diagnosis of ASD and/or ADHD. Studies exploring SUD, IA, and IGD identify specific traits that are common to people with ASD and/or ADHD including challenges related to attachment and experiences of social isolation and peer-rejection as well as a proclivity for sensation-seeking and focused-interests suggest that this demographic is likely to be of increased vulnerability.

A series of searches took place again using PubMed to develop an overview of English language peer-reviewed research that has been conducted in relation to each aspect of this study. Papers were then included in this study if they focused specifically on the interrelationship between pornography, SUD, IA or IGD, ADHD, ASD, and supported the development of understanding of the vulnerability of and subsequent impact on specific groups of adolescent males and females up to the age of 25, to reflect the growing understanding that the brain, specifically the prefrontal cortex continues to develop beyond adolescence (Erain et al., 2013). Whilst studies have been conducted regarding the relationship between ASD and sexual behavior and offenses (Baarsma et al., 2016; Dewinter et al., 2016; Schöttle et al., 2017) it was not possible to find research focused specifically on ASD and the use of pornography.

Regarding ADHD, studies exist in relation to adults but not adolescents (Böthe et al., 2019; Love et al., 2015). Individuals with ADHD and/or ASD demonstrate significant differences in sensory processing from neurotypical populations including a higher propensity for sensation-seeking (Clinge et al., 2016; Liss et al., 2006). In terms of

attachment, individuals with ADHD and ASD often report social isolation and rejection (Ferretti et al., 2019; Matthews et al., 2014). Given these important associations, it may be said that this is an area that requires specific attention. To further understand the relationship between attachment, pornography, and related problematic behavior this review will later consider young people who have experienced ACES, particularly care-experienced individuals. as poor attachment is a recognized outcome of traumatic childhood (Barnett & Howe, 2021; Lin et al., 2020).

Given the significance of this study of ADHD, ASD, and concerns relating to attachment, it is useful to consider the landscape relating to young people and mental health and how this relates in broad terms to pornography use and related behaviors. The CDC (2021) identifies the four most common diagnosable mental health concerns as ADHD, identifiable behavior problems, anxiety, and depression with 9.4% of 2-17-year-olds and 7.4%, 7.1%, and 3.2% of 3-17-year-olds having a diagnosis, respectively. It is common for young people with mental health concerns to be identified as having diagnoses of additional illness alongside, most typically, depression. Younger children between the ages of 3-8 are most likely to be diagnosed with behavior problems and older children with anxiety and depression; there has been an increase in the incidence of depression and anxiety over time.

The context of the individual in terms of sex, attention concern, and oppositional behavioral problems as well as the social factors such as access to and time spent online, and parental rules are significant predictors of IGD. As well as ADHD and ASD, comorbidities for GD reflect those of SUD and include depression and anxiety, inattention, hyperactivity, impulsiveness, and oppositional behavior (Coutelle et al., 2021; Normand et al., 2021). Related to this, children with autism show a preference for non-social stimuli (Gale et al., 2019). Furthermore, individuals will select “repetitive and stereotyped behaviors....motivated and reinforced by the sensory consequences that they produce” (Gale et al., 2019, p. 6) Cunningham & Schreibman, 2008; Neely et al., 2016). As previously discussed, adolescents with ASD are at risk of social isolation, often seeking out peer social connection whilst also experiencing peer rejection due to the specific nature of their learning needs, defined as sensory interests, repetition, and seeking behaviors (Kirby et al., 2015; Rezayi, 2013). Subsequently, DeFilippis (2018) identifies a higher incidence of depression in the case of adolescents with ASD than in the general population.

There is evidence of a strong correlation between people who have ASD and/or ADHD and individuals who have PIMU with two key underpinning hypotheses: specific interests and hobbies and specific interest and connectivity. It is suggested that people with ASD are more likely to develop IGD because of focused interest rather than a desire for connectivity particularly in the case of boys with IGD who also have a diagnosis of ASD and are gaming addicted (Coutelle et al., 2021; Craig et al., 2021; Poulus et al., 2019).]

## Young People who Identify as Lesbian, Gay, Bisexual, or Transgender (LGBT)

^ In contrast to other demographics of adolescent users of pornography, access by young people who are LGBT is constructed as sex education, enabling users to explore sexual behavior and identity. The literature presents, uncritically, narratives related to extreme and decontextualized sexual activity, leading to confusion and misunderstanding. The literature that explores the impact of engagement with pornography on LGBT youth is notably different from discourse related to other youth demographics in terms of the lack of interrogation and scrutiny of the young people's perspectives and the potentiality for negative outcomes.

Böthe and colleagues (2020) explore the frequency of engagement with pornography of five groups of young people to include boys and girls who identify as belonging to a Sexual and Gender Minority group (SGM), boys and girls who are heterosexual and do not identify as transgender, and young people who identify as transgender. The study finds that SGM young people are more likely to use pornography, positing that SGM young people may be motivated to access material as a source of information regarding sexual orientation and as a response to limited opportunities to encounter romantic or sexual partners (*Böthe et al., 2020*). The construction of pornography as Sex and Relationship Education (SRE) for young people is reinforced by research by Formby and Donovan (2020) who state, "within focus group discussion, it was pornography that emerged as the most accessed source of online SRE, with participants referring to this as "rule 34" (i.e., if it exists, there is porn of it)" (p. 15). The narrative accepts the research participants' construction of the experiences without reflecting on the usefulness of pornography to enable the young people to know and understand key information about sex and relationships. Furthermore, LGBT youth are not afforded the same safeguards as are heterosexual children, their engagement with pornography is framed as curiosity, and narratives related to pornography as a source of information and tool to support identity and sexual development are accepted without challenge.

The findings of Böthe and colleagues (2020) include that, whilst there is little difference between engagement with pornography between SGM boys (who reported most frequent use of pornography) and heterosexual boys who do not identify as transgender, there is a marked difference for girls. SGM girls are accessing pornography at a younger age and, subsequently, more frequently than heterosexual girls who do not identify as transgender access and report accessing pornography least frequently. The report concludes that pornography use may play 'an important role' in the sexual development of all groups of young people.

Rather than developing into a problematic behavior, the study asserts that pornography – in addition to facilitating masturbation– serves an educational purpose for young people who are LGB or who identify as transgender or queer/questioning, supporting them to learn about sexuality or to develop their sexual identity. Thus pornography, it is suggested, addresses unmet needs and forms part of the sexual

identity development process. Again, the study does not consider the perceptions of the participating adolescents concerning evidence that pornography use misrepresents sexual practices, normalizing behaviors that are violent, unsafe, and illegal (*Carrotte et al., 2020*).

McCormack and Wignall's (2017) study into non-exclusive sexual orientations similarly constructs the use and purpose of pornography of 'non-exclusive sexual orientations', young men who describe their orientation as 'not exclusively heterosexual', and 'exclusively homosexual'. The study, again without consideration of the potentiality for negative health or psychosocial outcomes, surmises that pornography has 'educational benefits for these young men related to their sexual desires, emerging sexual identities, and for developing new sexual techniques.' McCormack and Wignall (2017) use several vignettes by way of illustration. For example, a respondent named Thomas said:

It started with lesbian porn... but it moved to the more fetish stuff, BDSM, about 14 or 15. Rather than focusing on the submissive male. I was really intrigued by the dominant male in those scenes. Then it went into gay BDSM porn. (p.986)

Further, several research participants state that engagement with pornography has supported their construction of sexual orientation and sexual identity. It is interesting also that whilst aspects of adolescent pornography use are considered reflexively – such as in terms of cause and effect in relation to access to violent pornographic material, victimization and perpetration – this discourse is not afforded to discussions regarding sexual orientation and identity despite the proliferation of evidence that access to pornography entrenches gendered expectations of males and females and initiates feelings of dysphoria, particularly in females (*Love et al., 2015*). This may have implications for how young people who are exploring their sexuality, particularly those who may be experiencing ambivalence towards their sexual orientation, develop their knowledge and understanding of the sexed body and their relationship with corresponding gender stereotypes. Another respondent of McCormack and Wignall (2017) describes:

It was confusing watching both straight and non-straight porn because it made me wonder if it was a phase; could I enjoy straight, lesbian, and gay porn? It made me feel more confused. I wasn't able to fit into a binary with one direct label on it. (p.985)

The authors then asked another respondent if pornography was used to explore sexuality. Lee, who was into furry play, a known 'kink', said "[a]bsolutely. There was this progression of looking at porn and then I would catch myself looking at gay porn and furry porn" (*McCormack & Wignall, 2017, p. 986*). Another respondent named Richard discussed with the authors a form of Japanese pornography, known as Futanari porn, which focuses on oversized disembodied penises. Richard elaborates, "Futanari porn, dick girls. I really do like it, and I don't know why. I don't know if it is because of the penis as its own thing or because of it is always in the context of femininity." (p. 986)

Pornography is framed not only as a 'casual leisure activity' from which those who are LGBT derive no negative effects other than judgment and consequences from parents



but, referencing McCormack and Wignall (2017) “the importance of pornography for sexual minorities, not least because of the sexual visibility it provides in a broader heterosexist and mono-sexist culture that stigmatizes gender non-exclusive sexual desires” (p. 985).

Shin and Lee (2019) identify the ‘buffering effect’ of parental intervention with regards to adolescent pornography use, modeling critical thinking skills with media. Flores et al. (2019) reference one participant from a study of gay young people. MS, an 18-year-old white gay male, recalls of his mother, “She specifically told me not to watch porn because she said it would give me unrealistic ideas of what sex looked like” (p. 540). It may be said that discourse regarding gay young people’s engagement with pornography and the wider protective contexts that have been identified regarding other demographics are understood inversely with LGBT youth. Furthermore, Harvey (2020) constructs a problematic representation within pornography rather than the pornography itself, calling for a more LGBTQ-inclusive representative visuals presented in mainstream pornography. The refracting lens of the online experience, as well as the opportunities provided for identity play, are evident in Broman and Hakansson’s (2018) study into IGD and internet use, which identifies the prevalence of ‘gender swapping in digi games.’

The context provided in the introduction to the study is critical of studies that priorities the wellbeing of females such as that of Rothman et al. (2015) over the broader findings of the study. The research does not consider the legality of accessing pornographic material or sharing it with others. Nor does it reference wider contexts such as exploitation and people trafficking or implications for physiology such as erectile dysfunction or mental health outcomes.

Whilst it was not possible to find studies on PubMed related to individuals who are LGB or who identify as transgender and associated PIMU, studies indicate that young people who are lesbian, gay, or bisexual or who identify as transgender are more vulnerable to comorbidities such as addiction and psychological distress (Broman & Hakansson, 2018; Strittmatter et al., 2015). Two hundred twenty-two papers, including one relevant systemic review, were available regarding sexual orientation and SUD. Furthermore, young people who are lesbian, gay, and bisexual have a higher incidence (190%) of SUD than young people who are heterosexual. Bisexual young people and females (lesbian and bisexual) are 340% and 400% more likely to use substances respectively (Marshall et al., 2008). Wilson and Cariola (2020) consider LGBT youth in relation to contributory factors, identifying from their review of related literature an individual context of isolation, rejection, phobia, a need for support, marginalization, depression, self-harm, and suicidality, policy and environment, and connectedness.

Similarly, IGD and IA are found to be significantly more prevalent amongst young people who are LGB or identify as transgender than heterosexual adolescent populations with a corresponding increased likelihood of psychological distress and higher rates of daily social media use more than three hours a day (Broman & Hakansson, 2018). Whilst the study explores opportunities afforded to adolescents to explore aspects of sexuality and

identity, it does not consider activity with comorbidities.

### Young People who are Care-Experienced

Care-experienced children and young people are a group that is likely to have experienced a high number of ACES such as neglect, abuse, or the loss of a parent. Care-experienced children and young people are also at an increased risk for sexual victimization and sex trafficking.

Young people who are care-experienced (i.e., residing in foster care or adopted following an experience of foster care) are likely to have experienced a higher number of ACES than children and young people from the lowest socio-economic demographic or impacted by family structure (*Turney & Wildeman, 2016*). Turney and Wildeman (2016) identify that care-experienced children and young people are more likely to have experience of parental divorce or separation, incarceration, death, or abuse, exposure to violence, and a household member who has a mental health issue or has misused substance. Care-experienced children are more likely to be impacted by the risk factors of maltreatment, neglect, and physical, sexual, and emotional abuse as identified by Alexa (2009) with limited mitigatory social ties.

Young people who are care-experienced display a higher incidence of substance misuse, including tobacco, alcohol, cannabis, and mephedrone use. Individuals also report poorer relationships with adults, reduced wellbeing, higher incidence of attachment disorder, the experience of bullying, and dating violence (*Buttram et al., 2019; Long et al., 2017; Marotta, 2017*). A 2009 study of 155 care-experienced girls found that 81% of the sample had experienced sexual abuse, with 68% experiencing abuse by more than one person.

Whilst the development of the knowledge and skills with which to navigate the online world is challenging for all young people, the experiences of ACES as well as the unique personal context of the care-experienced child create additional complexities and carry additional risks. Sage and Jackson's (2021) identify that communication technology represents access to information and resources for maintaining connection, building social capital, normalcy, recreation and relaxing, self-soothing, voicing empowerment and independence, and identity formation and exploration. These are all factors which mirror motivations for the accessing of pornography across youth demographic. Therefore, the use of mediated technology and social media to initiate and maintain relationships puts the care-experienced child at an increased incidence of sexual exploitation and domestic violence (*Kachingwe et al., 2020; Rueda et al., 2020; Sen, 2016*).

Selig (2020) identifies that of the 100,000 children trafficked for sexual exploitation in the United States each year, the majority are children who are part of or who have experience of the care system. Selig (2020) cites the report of the National Center for

Missing and Exploited Children which states: '1 in 6 of the 18,500 runaways reported to [the center] in 2016 were likely sex trafficking victims' adding 'Of that number, 86% of these victims were under the protection of foster care or social services.' Furthermore, as well as experiencing challenges that make the incidence of PIMU, IA, SM and IGD more likely, the care-experienced child is less likely to be afforded the mitigatory factors such as parental engagement and peer-connectedness that limit the impact of exposure to pornography.

## Summary

Farré et al. (2020) acknowledge “knowing adolescent pornography consumers profiles and the impact of pornography on this population would allow for the designing of more effective prevention and regulation proposals” (*p.1*). Adolescents who are male, who have symptoms of anxiety or depression, a diagnosis of ASD and/or ADHD, and who have experienced multiple ACES are likely to be at the greatest risk from watching pornography when considered within the broader context of PIMU, particularly if it depicts sexual violence. Parental input and positive peer interactions provide ‘buffering from the impact’ of pornography, particularly if the young person is an active member of a religious community. Individuals who are gay, lesbian, or bisexual may not be afforded the same safeguards in terms of critical discourse by expert adults as promoted for heterosexual adolescents of both sexes; there is a particular need for longitudinal data concerning the impact of pornography specific groups. Given the many significant similarities between SUD, PIMU, and pornography there may be sufficient evidence for problematic use to be regarded within the context of Internet Addiction Disorder.

## References

- Alavi, S. S., Ferdosi, M., Jannatifard, F., Eslami, M., Alaghemandan, H., & Setare, M. (2012). *Behavioral addiction versus substance addiction: Correspondence of psychiatric and psychological views. International Journal of Preventive Medicine*, 3(4), 290–4.
- Alexy, E., Burgess, A., & Prentky, R. (2009). *Pornography use as a risk marker for an aggressive pattern of behavior among sexually reactive children and adolescents. Journal of the American Psychiatric Nurses Association*, 14(6), 442–453.
- Anderson, E. L., Stavropoulos, V., & Steen, E. (2017). *Internet use and problematic internet use: A systematic review of longitudinal research trends in adolescence and emergent adulthood. International Journal of Adolescence and Youth*, 22(4), 430–454. <https://doi.org/10.1080/02673843.2016.1227716>
- Arain, M., Haque, M., Johal, L., Mathur, P., Nel, W., Rais, A., Sandhu, R., & Sharma, S. (2013). *Maturation of the adolescent brain. Neuropsychiatric Disease and Treatment*, 9, 449–61. <https://doi.org/10.2147/NDT.S39776>
- Arnevik, E. A., & Helverschou, S. B. (2016). *Autism Spectrum Disorder and co-occurring Substance Use Disorder – A systematic review. Substance Abuse: Research and Treatment*, 10, 69–70. <https://doi.org/10.4137/SART.S39921>
- Arrington-Sanders, R., Harper, G. W., Morgan, A., Ogunbajo, A., Trent, M., & Fortenberry, J. D. (2015). *The role of sexually explicit material in the sexual development of same-sex-attracted Black adolescent males. Archives of Sexual Behavior*, 44(3), 597–608. <https://doi.org/10.1007/s10508-014-0416-x>
- Astle, S., Leonhardt, N., & Willoughby, B. (2020). *Home base: Family of origin factors and the debut of vaginal sex, anal sex, oral sex, masturbation, and pornography use in a national sample of adolescents. Journal of Sex Research*, 57(9), 1089–1099. <https://doi.org/10.1080/00224499.2019.1691140>
- Aytur, S. A., Carlino, S., Bernard, F., West, K., Dobrzycki, V., & Malik, R. (2021). *Social-ecological theory, substance misuse, adverse childhood experiences, and adolescent suicidal ideation: Applications for community-academic partnerships. Journal of Community Psychology*, 2021 May 04. <https://doi.org/10.1002/jcop.22560>
- Baarsma, M. E., Boonmann, C., 't Hart-Kerkhoffs, L. A., de Graaf, H., Doreleijers, T. A. H., Vermeiren, R. R. J. M., & Jansen, L. M. C. (2016). *Sexuality and autistic-like symptoms*

- in juvenile sex offenders: A follow-up after 8 years. *Journal of Autism and Developmental Disorders*, 46(8), 2679–2691. <https://doi.org/10.1007/s10803-016-2805-6>
- Babad, S., Zwillling, A., Carson, K. W., Fairchild, V., Razak, S., Robinson, G., & Nikulina, V. (2019). *Risk-taking propensity and sensation seeking in survivors of adverse childhood experiences*. *Journal of Interpersonal Violence*, (201909). <https://doi.org/10.1177/0886260519876035>
- Ballarotto, G., Volpi, B., Marzilli, E., & Tambelli, R. (2018). *Adolescent internet abuse: A study on the role of attachment to parents and peers in a large community sample*. *Biomed Research International*, (5769250). <https://doi.org/10.1155/2018/5769250>
- Barnett, J. E., & Howe, T. R. (2021). *Multiple maltreatment and adverse childhood experiences: Exploring cumulative threats to attachment quality*. *Violence and Victims*, 36(2), 214–232. <https://doi.org/10.1891/VV-D-19-00158>
- Bauserman, R. (1996). *Sexual aggression and pornography: A review of correlational research*. *Basic and Applied Social Psychology*, 18(4), 405–427. [https://doi.org/10.1207/s15324834basp1804\\_4](https://doi.org/10.1207/s15324834basp1804_4)
- Beyens, I., Vandenbosch, L., & Eggermont, S. (2015). *Early adolescent boys' exposure to internet pornography: Relationships to pubertal timing, sensation seeking, and academic performance*. *Journal of Early Adolescence*, 35(8), 1045–1068. <https://doi.org/10.1177/0272431614548069>
- Bloom, Z. D., & Hagedorn, W. B. (2015). *Male adolescents and contemporary pornography: Implications for marriage and family counselors*. *Family Journal*, 23(1), 82–89. <https://doi.org/10.1177/1066480714555672>
- Bóthe, B., Vaillancourt-Morel, M.-P., Girouard, A., Štulhofer, A., Dion, J., & Bergeron, S. (2020). *A large-scale comparison of Canadian sexual/gender minority and heterosexual, cisgender adolescents' pornography use characteristics*. *The Journal of Sexual Medicine*, 17(6), 1156–1167. <https://doi.org/10.1016/j.jsxm.2020.02.009>
- Bóthe, B., Koós, M., Tóth-Király, I., Orosz, G., & Demetrovics, Z. (2019). *Investigating the associations of adult ADHD symptoms, hypersexuality, and problematic pornography use among men and women on a largescale, non-clinical sample*. *The Journal of Sexual Medicine*, 16(4), 489–499. <https://doi.org/10.1016/j.jsxm.2019.01.312>
- Braun, B., Kornhuber, J., & Lenz, B. (2016). *Gaming and religion: the impact of spirituality and denomination*. *Journal of Religion and Health*, 55(4), 1464–1471. <https://doi.org/10.1007/s10943-015-0152-0>



- Broman, N., & Hakansson, A. (2018). *Problematic gaming and internet use but not gambling may be overrepresented in sexual minorities - A pilot population web survey study*. *Frontiers in Psychology*, 9, 2184–2184. <https://doi.org/10.3389/fpsyg.2018.02184>
- Brown, J. A., & Wisco, J. J. (2019). *The components of the adolescent brain and its unique sensitivity to sexually explicit material*. *Journal of Adolescence*, 72, 10-13. <https://doi.org/10.1016/j.adolescence.2019.01.006>
- Bonnaire, C., & Phan, O. (2017). *Relationships between parental attitudes, family functioning and internet gaming disorder in adolescents attending school*. *Psychiatry Research*, 255, 104–110. <https://doi.org/10.1016/j.psychres.2017.05.030>
- Buttram, M. E., Pagano, M. E., & Kurtz, S. P. (2019). *Foster care, syndemic health disparities and associations with HIV/STI diagnoses among young adult substance users*. *Sexually Transmitted Infections*, 95(3), 175–175. <https://doi.org/10.1136/sextrans-2017-053490>
- Butwicka, A., Långström, N., Larsson, H., Lundström, S., Serlachius, E., Almqvist, C., Frisé, L., & Lichtenstein, P. (2017). *Increased risk for substance use-related problems in autism spectrum disorders: A population-based cohort study*. *Journal of Autism and Developmental Disorders*, 47(1), 80–89. <https://doi.org/10.1007/s10803-016-2914-2>
- Camilleri, C., Perry, J. T., & Sammut, S. (2020). *Compulsive internet pornography use and mental health: A cross-sectional study in a sample of university students in the united states*. *Frontiers in Psychology*, 11, 613244. <https://doi.org/10.3389/fpsyg.2020.613244>
- Carli, V., Durkee, T., Wasserman, D., Hadlaczky, G., Despalins, R., Kramarz, E., Wasserman, C., Sarchiapone, M., Hoven, C. W., Brunner, R., & Kaess, M. (2013). *The association between pathological internet use and comorbid psychopathology: A systematic review*. *Psychopathology*, 46(1), 1–13. <https://doi.org/10.1159/000337971>
- Carrotte, E. R., Davis, A. C., & Lim, M. S. (2020). *Sexual behaviors and violence in pornography: Systematic review and narrative synthesis of video content analyses*. *Journal of Medical Internet Research*, 22(5), 16702. <https://doi.org/10.2196/16702>
- Carson, N., Lê Cook Benjamin, Chen, C.-N., & Alegria, M. (2012). *Racial/ethnic differences in video game and internet use among us adolescents with mental health and educational difficulties*. *Journal of Children and Media*, 6(4), 450–468. <https://doi.org/10.1080/17482798.2012.724592>
- Castellanos-Ryan, N., Rubia, K., & Conrod, P. J. (2011). *Response inhibition and reward response bias mediate the predictive relationships between impulsivity and sensation seeking and common and unique variance in conduct disorder and substance misuse*. *Alcoholism*

- Clinical and Experimental Research*, 35(1), 140–155. <https://doi.org/10.1111/j.1530-0277.2010.01331.x>
- Center for Disease Control. (2021 March 22). *Data and statistics on children's mental health*. Retrieved from <https://www.cdc.gov/childrensmentalhealth/data.html>
- Charlton, J. P., Soh, P. C.-H., Ang, P. H. & Chew, K.W. (2013) *Religiosity, adolescent Internet usage motives and addiction*. *Information, Communication & Society*, 16(10), 1619-1638. <https://doi.org/10.1080/1369118X.2012.735251>
- Clince, M., Connolly, L., & Nolan, C. (2016). *Comparing and exploring the sensory processing patterns of higher education students with Attention Deficit Hyperactivity Disorder and Autism Spectrum Disorder*. *The American Journal of Occupational Therapy: Official Publication of the American Occupational Therapy Association*, 70(2), 1–9. <https://doi.org/10.5014/ajot.2016.016816>
- Coutelle, R., Weiner, L., Paasche, C., Pottellette, J., Bertschy, G., Schröder Carmen M, & Lalanne, L. (2021). *Autism Spectrum Disorder and video games: Restricted interests or addiction? International Journal of Mental Health and Addiction*, (20210308). <https://doi.org/10.1007/s11469-021-00511-4>
- Craig, F., Tenuta, F., De Giacomo, A., Trabacca, A., & Costabile, A. (2021). *A systematic review of problematic video-game use in people with autism spectrum disorders*. *Research in Autism Spectrum Disorders*, 82. <https://doi.org/10.1016/j.rasd.2021.101726>
- Cunningham, A. B., & Schreibman, L. (2008). *Stereotypy in Autism: The importance of function*. *Research in Autism Spectrum Disorders*, 2(3), 469–479. <https://doi.org/10.1016/j.rasd.2007.09.006>
- Darvesh, N., Radhakrishnan, A., Lachance, C. C., Nincic, V., Sharpe, J. P., Ghassemi, M., Straus, S. E., & Tricco, A. C. (2020). *Exploring the prevalence of gaming disorder and internet gaming disorder: A rapid scoping review*. *Systematic Reviews*, 9(1). <https://doi.org/10.1186/s13643-020-01329-2>
- DeFilippis, M. (2018). *Depression in children and adolescents with Autism Spectrum Disorder*. *Children (Basel, Switzerland)*, 5(9), 112. <https://doi.org/10.3390/children5090112>
- Dewinter, J., Vermeiren, R., Vanwesenbeeck, I., Lobbestael, J., & Van Nieuwenhuizen, C. (2015). *Sexuality in adolescent boys with Autism Spectrum Disorder: Self-reported behaviors and attitudes*. *Journal of Autism and Developmental Disorders*, 45(3), 731–741. <https://doi.org/10.1007/s10803-014-2226-3>

- Dombrowski, S. C., Gischlar, K. L., & Durst, T. (2007). *Safeguarding young people from cyber pornography and cyber sexual predation: A major dilemma of the internet*. *Child Abuse Review*, 16(3), 153–170. <https://doi.org/10.1002/car.939>
- Donevan, M., & Mattebo, M. (2017). *The relationship between frequent pornography consumption, behaviors, and sexual preoccupation among male adolescents in Sweden*. *Sexual & Reproductive Healthcare: Official Journal of the Swedish Association of Midwives*, 12, 82–87. <https://doi.org/10.1016/j.srhc.2017.03.002>
- Douglas, K. R., Chan, G., Gelernter, J., Arias, A. J., Anton, R. F., Weiss, R. D., Brady, K., Poling, J., Farrer, L., & Kranzler, H. R. (2010). *Adverse childhood events as risk factors for substance dependence: Partial mediation by mood and anxiety disorders*. *Addictive Behaviors*, 35(1), 7–13. <https://doi.org/10.1016/j.addbeh.2009.07.004>
- Dullur, P., Krishnan, V., & Diaz, A. M. (2021). *A systematic review on the intersection of attention-deficit hyperactivity disorder and gaming disorder*. *Journal of Psychiatric Research*, 133, 212–222. <https://doi.org/10.1016/j.jpsychires.2020.12.026>
- Efrati, Y. (2020). *Problematic and non-problematic pornography use and compulsive sexual behaviors among understudied populations: children and adolescents*. *Current Addiction Reports*, 7(1), 68–75. <https://doi.org/10.1007/s40429-020-00300-4>
- Efrati, Y., & Amichai-Hamburger, Y. (2019). *The use of online pornography as compensation for loneliness and lack of social ties among Israeli adolescents*. *Psychological Reports*, 122(5), 1865–1882. <https://doi.org/10.1177/0033294118797580>
- Espinoza, L., Richardson, J. L., Ferguson, K., Chou, C.-P., Baezconde-Garbanati, L., & Stacy, A. W. (2019). *Adolescent substance use and sensation-seeking on sexual behaviors among young adults from continuation high schools*. *Substance Use & Misuse*, 54(3), 373–383. <https://doi.org/10.1080/10826084.2018.1496453>
- Fam, J. Y. (2018). *Prevalence of internet gaming disorder in adolescents: A meta-analysis across three decades*. *Scandinavian Journal of Psychology*, 59, 524–531.
- Farré, J. M., Montejo, A. L., Agulló, M., Granero, R., Chiclana, A. C., Villena, A., Maideu, E., Sánchez, M., Fernández-Aranda, F., Jiménez-Murcia, S., & Mestre-Bach, G. (2020). *Pornography use in adolescents and its clinical implications*. *Journal of Clinical Medicine*, 9(11). <https://doi.org/10.3390/jcm9113625>
- Felipe, A. O. B., Carvalho, A. M. P., & Andrade, C. U. B. (2015). *Spirituality and religion as protectors for adolescent drug use*. *SMAD Revista Eletrônica Saúde Mental Álcool E Drogas (Edição Em Português)*, 11(1), 49–58. <https://doi.org/10.11606/issn.1806-6976.v11i1p49-58>

- Feng, W., Ramo, D. E., Chan, S. R., & Bourgeois, J. A. (2017). *Internet gaming disorder: Trends in prevalence 1998-2016*. *Addictive Behaviors*, 75, 17-24. <https://doi.org/10.1016/j.addbeh.2017.06.010>
- Ferretti, N. M., King, S. L., Hilton, D. C., Rondon, A. T., & Jarrett, M. A. (2019). *Social functioning in youth with Attention-Deficit/Hyperactivity Disorder and sluggish cognitive tempo*. *The Yale Journal of Biology and Medicine*, 92(1), 29-35.
- Field, T. (2020). *Adolescent pornography: A narrative review*. *International Journal of Psychological Research and Reviews*, 3(36). <https://doi.org/10.28933/ijpr-2020-03-0505>
- Firat, S., Gül H, Sertçelik M, Gül A, Gürel Y, & Kılıç BG. (2018). *The relationship between problematic smartphone use and psychiatric symptoms among adolescents who applied to psychiatry clinics*. *Psychiatry Research*, 270, 97-103. <https://doi.org/10.1016/j.psychres.2018.09.015>
- Fitzgerald, A., Mac Giollabhui, N., Dolphin, L., Whelan, R., Dooley, B., & Sanchez, Z. M. (2018). *Dissociable psychosocial profiles of adolescent substance users*. *Plos One*, 13(8), 0202498. <https://doi.org/10.1371/journal.pone.0202498>
- Flood, M. (2009). *The harms of pornography exposure among children and young people*. *Child Abuse Review*, 18(6), 384-400. <https://doi.org/10.1002/car.1092>
- Flores, D., Docherty, S. L., Relf, M. V., McKinney, R. E., & Barroso, J. V. (2019). *“it’s almost like gay sex doesn’t exist:” Parent-child sex communication according to gay, bisexual, and queer adolescent sons*. *Journal of Adolescent Research*, 34(5), 528-562. <https://doi.org/10.1177/0743558418757464>
- Ford, J. A., & Hill, T. D. (2012). *Religiosity and adolescent substance use: Evidence from the national survey on drug use and health*. *Substance Use & Misuse*, 47(7), 787-798. <https://doi.org/10.3109/10826084.2012.667489>
- Formby, E., & Donovan, C. (2020). *Sex and relationships education for LGBT+ young people: Lessons from UK youth work*. *Sexualities*, 23(7), 1155-1178. <https://doi.org/10.1177/1363460719888432>
- Forster, M., Rogers, C. J., Sussman, S., Watts, J., Rahman, T., Yu, S., Benjamin, S. M., & Tchounwou, P. B. (2021). *Can adverse childhood experiences heighten risk for problematic internet and smartphone use? Findings from a college sample*. *International Journal of Environmental Research and Public Health*, 18(11). <https://doi.org/10.3390/ijerph18115978>

- Gale, C. M., Eikeseth, S., & Klintwall, L. (2019). *Children with autism show atypical preference for non-social stimuli*. *Scientific Reports*, 9(1). <https://doi.org/10.1038/s41598-019-46705-8>
- Gerra, G., Angioni, L., Zaimovic, A., Moi, G., Bussandri, M., Bertacca, S., Santoro, G., Gardini, S., Caccavari, R., & Nicoli, M. A. (2004). *Substance use among high-school students: Relationships with temperament, personality traits, and parental care perception*. *Substance Use & Misuse*, 39(2), 345–367. <https://doi.org/10.1081/ja-120028493>
- Gervasi, A. M., La Marca, L., Costanzo, A., Pace, U., Guglielmucci, F., & Schimmenti, A. (2017). *Personality and internet gaming disorder: A systematic review of recent literature*. *Current Addiction Reports*, 4(3), 293–307. <https://doi.org/10.1007/s40429-017-0159-6>
- Goodman, A. (1990). *Addiction: Definition and implications*. *British Journal of Addiction*, 85, 1403-1408. <https://doi.org/10.1111/j.1360-0443.1990.tb01620.x>
- Gray, K. M., & Squeglia, L. M. (2018). *Research review: What have we learned about adolescent substance use?* *Journal of Child Psychology and Psychiatry, and Allied Disciplines*, 59(6), 618–627. <https://doi.org/10.1111/jcpp.12783>
- Harvey, P. (2020). *Let's talk about porn: The perceived effect of online mainstream pornography on LGBTQ youth*. In D. N. Farris, D. L. R. Compton, & A. P. Herrera, (Eds.), *Gender, sexuality and race in the digital age* (pp.31-52). Springer. [https://doi.org/10.1007/978-3-030-29855-5\\_3](https://doi.org/10.1007/978-3-030-29855-5_3)
- Healy-Cullen, S., Taylor, J. E., Ross, K., & Morison, T. (2021). *Youth encounters with internet pornography: A survey of youth, caregiver, and educator perspectives*. *Sexuality & Culture*, (20210814). <https://doi.org/10.1007/s12119-021-09904-y>
- Hinojo-Lucena, F. J., Aznar-Díaz, I., Cáceres-Reche, M. P., Trujillo-Torres, J. M., & Romero-Rodríguez, J. M. (2019). *Problematic internet use as a predictor of eating disorders in students: A systematic review and meta-analysis study*. *Nutrients*, 11(9). <https://doi.org/10.3390/nu11092151>
- Jo, Y. S., Bhang, S. Y., Choi, J. S., Lee, H. K., Lee, S. Y., & Kweon, Y. S. (2020). *Internet, gaming, and smartphone usage patterns of children and adolescents in Korea: A c-CURE clinical cohort study*. *Journal of Behavioral Addictions*, 9(2), 420–432. <https://doi.org/10.1556/2006.2020.00022>
- Kachingwe, O. N., Salerno, J. P., Boekeloo, B. O., Fish, J. N., Geddings-Hayes, M., Aden, F., & Aparicio, E. M. (2020). *"The internet is not private": The role of social media in sexual health among youth in foster care*. *Journal of Adolescence*, 82(C), 50–57. <https://doi.org/10.1016/j.adolescence.2020.06.005>



- Karacic, S., & Oreskovic, S. (2017). *Internet addiction through the phase of adolescence: A questionnaire study*. *JMIR Mental Health*, 4(2), 11. <https://doi.org/10.2196/mental.5537>
- Katayon, V., Seyed, A. M., & Afsaneh, K. (2014). *Estimation of sexual behavior in the 18-to-24-years-old Iranian youth based on a crosswise model study*. *BMC Research Notes*, 7(1), 28–28. <https://doi.org/10.1186/1756-0500-7-28>
- Kawabe, K., Horiuchi, F., Miyama, T., Jogamoto, T., Aibara, K., Ishii, E., & Ueno, S. I. (2019). *Internet addiction and Attention-Deficit/Hyperactivity Disorder symptoms in adolescents with Autism Spectrum Disorder*. *Research in Developmental Disabilities*, 89, 22–28. <https://doi.org/10.1016/j.ridd.2019.03.002>
- Kim, S. Y., Kim, M.-S., Park, B., Kim, J.-H., Choi, H. G., & Federici, S. (2017). *The associations between internet use time and school performance among Korean adolescents differ according to the purpose of internet use*. *Plos One*, 12(4), 0174878. <https://doi.org/10.1371/journal.pone.0174878>
- King, D. L., & Delfabbro, P. H. (2016). *The cognitive psychopathology of internet gaming disorder in adolescence*. *Journal of Abnormal Child Psychology*, 44(8), 1635–1645.
- King, D. L., Delfabbro, P. H., Wu, A., Doh, Y. Y., Kuss, D. J., Pallesen, S., Mentzoni, R., Carragher, N., & Sakuma, H. (2017). *Treatment of Internet gaming disorder: An international systematic review and CONSORT evaluation*. *Clinical Psychology Review*, 54, 123–133. <https://doi.org/10.1016/j.cpr.2017.04.002>
- Király, O., Griffiths, M. D., Urbán R, Farkas, J., Kökönyei G, Elekes, Z., Tamás D, & Demetrovics, Z. (2014). *Problematic internet use and problematic online gaming are not the same: Findings from a large nationally representative adolescent sample*. *Cyberpsychology, Behavior and Social Networking*, 17(12), 749–54. <https://doi.org/10.1089/cyber.2014.0475>
- Kirby, A. V., Dickie, V. A., & Baranek, G. T. (2015). *Sensory experiences of children with Autism Spectrum Disorder: In their own words*. *Autism: The International Journal of Research and Practice*, 19(3), 316–326. <https://doi.org/10.1177/1362361314520756>
- Ko, C.-H., Liu, T.-L., Wang, P.-W., Chen, C.-S., Yen, C.-F., & Yen, J.-Y. (2014). *The exacerbation of depression, hostility, and social anxiety in the course of Internet addiction among adolescents: A prospective study*. *Comprehensive Psychiatry*, 55(6), 1377–1384. <https://doi.org/10.1016/j.comppsy.2014.05.003>

- Ko, C.-H., Liu, G.-C., Yen, J.-Y., Yen, C.-F., Chen, C.-S., & Lin, W.-C. (2013). *The brain activations for both cue-induced gaming urge and smoking craving among subjects comorbid with Internet gaming addiction and nicotine dependence. Journal of Psychiatric Research, 47*(4), 486–493.
- Ko, C.-H., Yen, J.-Y., Chen, C.-S., Yeh, Y.-C., & Yen, C.-F. (2009). *Predictive values of psychiatric symptoms for internet addiction in adolescents: A 2-year prospective study. Archives of Pediatrics & Adolescent Medicine, 163*(10), 937–943. <https://doi.org/10.1001/archpediatrics.2009.159>
- Ko, C.-H., Yen, J.-Y., Yen, C.-F., Lin, H.-C., & Yang, M.-J. (2007). *Factors predictive for incidence and remission of internet addiction in young adolescents: A prospective study. CyberPsychology & Behavior, 10*(4), 545–551.
- Kohut, T., Balzarini, R. N., Fisher, W. A., Grubbs, J. B., Campbell, L., & Prause, N. (2020). *Surveying pornography use: A shaky science resting on poor measurement foundations. The Journal of Sex Research, 57*(6), 722–742. <https://doi.org/10.1080/00224499.2019.1695244>
- Kohut, T., & Štulhofer, A. (2018a). *Is pornography use a risk for adolescent well-being? An examination of temporal relationships in two independent panel samples. PloS One, 3*(8), e0202048. doi:10.1371/journal.pone.0202048
- Kohut, T., & Štulhofer, A. (2018b). *The role of religiosity in adolescents' compulsive pornography use: A longitudinal assessment. Journal of Sex & Marital Therapy, 44*(8), 759–775. <https://doi.org/10.1080/0092623X.2018.1466012>
- Kong, G., Smith, A. E., McMahon, T. J., Cavallo, D. A., Schepis, T. S., Desai, R. A., Potenza, M. N., & Krishnan-Sarin, S. (2013). *Pubertal status, sensation-seeking, impulsivity, and substance use in high school-aged boys and girls. Journal of Addiction Medicine, 7*(2), 116–121. <https://doi.org/10.1097/ADM.0b013e31828230ca>
- Kristensen, J. H., Pallesen, S., King, D. L., Hysing, M., & Erevik, E. K. (2021). *Problematic gaming and sleep: A systematic review and meta-analysis. Frontiers in Psychiatry, 12*, 675237. <https://doi.org/10.3389/fpsyt.2021.675237>
- Kub, J., & Solari-Twadell, P. A. (2013). *Religiosity/spirituality and substance use in adolescence as related to positive development: A literature review. Journal of Addictions Nursing, 24*(4), 247–262. <https://doi.org/10.1097/JAN.0000000000000006>
- Kuhn, C. (2015). *Emergence of sex differences in the development of substance use and abuse during adolescence. Pharmacology & Therapeutics, 153*, 55–78. <https://doi.org/10.1016/j.pharmthera.2015.06.003>

- Kuss, D. J. (2013). *Internet gaming addiction: Current perspectives. Psychology Research and Behavior Management*, 6, 125–137. <https://doi.org/10.2147/PRBM.S39476>
- Kuss, D. J., Griffiths, M. D., Karila, L., & Billieux, J. (2014). *Internet addiction: A systematic review of epidemiological research for the last decade. Current Pharmaceutical Design*, 20(25), 4026–52. <https://doi.org/10.2174/13816128113199990617>
- Kyriaki, A., Vasileios, S., Emma, A., Mohammad, Q. L., & Rapson, G. (2018). *Adolescent pornography use: A systematic literature review of research trends 2000-2017. Current Psychiatry Reviews*, 14(1), 47–58. <https://doi.org/10.2174/2211556007666180606073617>
- Laier, C., Pawlikowski, M., Pekal, J., Schulte, F. P., & Brand, M. (2013). *Cybersex addiction: Experienced sexual arousal when watching pornography and not real-life sexual contacts makes the difference. Journal of Behavioral Addictions*, 2(2), 100–7. <https://doi.org/10.1556/JBA.2.2013.002>
- Lam, L. T. (2014). *Risk factors of Internet addiction and the health effect of Internet addiction on adolescents: A systematic review of longitudinal and prospective studies. Current Psychiatry Reports*, 16(11), 508. doi:10.1007/s11920-014-0508-2
- Lee, Y. S., Han, D. H., Kim, S. M., & Renshaw, P. F. (2013). *Substance abuse precedes Internet addiction. Addictive Behaviors*, 38(4), 2022–2025. <https://doi.org/10.1016/j.addbeh.2012.12.024>
- Leza, L., Siria, S., López-Goñi José J, & Fernández-Montalvo Javier. (2021). *Adverse Childhood Experiences (ACES) and Substance Use Disorder (SUD): A scoping review. Drug and Alcohol Dependence*, 221. <https://doi.org/10.1016/j.drugalcdep.2021.108563>
- Li, W., Zhang, X., Chu, M., & Li, G. (2020). *The impact of Adverse Childhood Experiences on mobile phone addiction in Chinese college students: A serial multiple mediator model. Frontiers in Psychology*, 11, 834–834. <https://doi.org/10.3389/fpsyg.2020.00834>
- Liang, W., & Chikritzhs, T. (2013). *Motives for romantic relationships and the risk of heavy alcohol use, regular smoking and cannabis use during adolescence and early adulthood: a longitudinal study. Open Journal of Internal Medicine*, 3(2), 23–29. <https://doi.org/10.4236/ojim.2013.32006>
- Lin, H.-C., Yang, Y., Elliott, L., & Green, E. (2020). *Individual differences in attachment anxiety shape the association between adverse childhood experiences and adult somatic symptoms. Child Abuse & Neglect*, 101. <https://doi.org/10.1016/j.chiabu.2019.104325>

- Lin, W.-H., Liu, C.-H., Yi, C.-C., & Miller, L. M. (2020). *Exposure to sexually explicit media in early adolescence is related to risky sexual behavior in emerging adulthood*. *Plos One*, 15(4), 0230242. <https://doi.org/10.1371/journal.pone.0230242>
- Liraud, F., & Verdoux, H. (2000). *Which temperamental characteristics are associated with substance use in subjects with psychotic and mood disorders?* *Psychiatry Research*, 93(1), 63–72. [https://doi.org/10.1016/s0165-1781\(99\)00120-1](https://doi.org/10.1016/s0165-1781(99)00120-1)
- Liss, M., Saulnier, C., Fein, D., & Kinsbourne, M. (2006). *Sensory and attention abnormalities in autistic spectrum disorders*. *Autism: The International Journal of Research and Practice*, 10(2), 155–172. <https://doi.org/10.1177/1362361306062021>
- Long, S. J., Evans, R. E., Fletcher, A., Hewitt, G., Murphy, S., Young, H., & Moore, G. F. (2017). *Comparison of substance use, subjective well-being and interpersonal relationships among young people in foster care and private households: A cross sectional analysis of the school health research network survey in Wales*. *BMJ Open*, 7(2), 014198. <https://doi.org/10.1136/bmjopen-2016-014198>
- Love, T., Laier, C., Brand, M., Hatch, L., & Hajela, R. (2015). *Neuroscience of internet pornography addiction: A review and update*. *Behavioral Sciences*, 5(3), 388–433. <https://doi.org/10.3390/bs5030388>
- Luder, M. T., Pittet, I., Berchtold, A., Akre, C., Michaud, P. A., & Surís, J. C. (2011). *Associations between online pornography and sexual behavior among adolescents: Myth or reality?* *Archives of Sexual Behavior*, 40(5), 1027–1035. <https://doi.org/10.1007/s10508-010-9714-0>
- Malamuth, N. M., Addison, T., & Koss, M. (2000). *Pornography and sexual aggression: Are there reliable effects and can we understand them?* *Annual Review of Sex Research*, 11, 26–91.
- Malamuth, N. M., Linz, D., Heavey, C. L., & Barnes, G. (1995). *Using the confluence model of sexual aggression to predict men's conflict with women: A 10-year follow-up study*. *Journal of Personality and Social Psychology*, 69(2), 353–353.
- Marchant, A., Hawton, K., Stewart, A., Montgomery, P., Singaravelu, V., Lloyd, K., Purdy, N., Daine, K., & John, A. (2017). *A systematic review of the relationship between internet use, self-harm and suicidal behavior in young people: The good, the bad and the unknown*. *Plos One*, 12(8), 0181722. <https://doi.org/10.1371/journal.pone.0181722>
- Marin, M. G., Nuñez, X., & de Almeida, R. (2021). *Internet addiction and attention in adolescents: A systematic review*. *Cyberpsychology, Behavior and Social Networking*, 24(4), 237–249. <https://doi.org/10.1089/cyber.2019.0698>

- Marshal, M. P., Friedman, M. S., Stall, R., King, K. M., Miles, J., Gold, M. A., Bukstein, O. G., & Morse, J. Q. (2008). *Sexual orientation and adolescent substance use: A meta-analysis and methodological review*. *Addiction*, 103(4), 546–556. <https://doi.org/10.1111/j.1360-0443.2008.02149.x>
- Marsiglia, F. F., Kulis, S., Nieri, T., & Parsai, M. (2005). *God forbid! Substance use among religious and nonreligious youth*. *American Journal of Orthopsychiatry*, 75, 585-598. <https://doi.org/10.1037/0002-9432.75.4.585>
- Marotta, P. L. (2017). *Childhood adversities and substance misuse among the incarcerated: Implications for treatment and practice in correctional settings*. *Substance Use & Misuse*, 52(6), 717–733. <https://doi.org/10.1080/10826084.2016.1261899>
- Mattebo, M., Tydén, T., Häggström-Nordin, E., Nilsson, K.W. & Larsson, M. (2016). *Pornography consumption among adolescent girls in Sweden*. *The European Journal of Contraception & Reproductive Health Care*, 21(4), 295-302. <https://doi.org/10.1080/13625187.2016.1186268>
- Mattebo, M., Tydén T, Häggström-Nordin E, Nilsson, K. W., & Larsson, M. (2013). *Pornography consumption, sexual experiences, lifestyles, and self-rated health among male adolescents in Sweden*. *Journal of Developmental and Behavioral Pediatrics*, 34(7), 460–8. <https://doi.org/10.1097/DBP.0b013e31829c44a2>
- Matthews, T., Danese, A., Wertz, J., Ambler, A., Kelly, M., Diver, A., Caspi, A., Moffitt, T. E., & Arseneault, L. (2015). *Social isolation and mental health at primary and secondary school entry: A longitudinal cohort study*. *Journal of the American Academy of Child and Adolescent Psychiatry*, 54(3), 225–232. <https://doi.org/10.1016/j.jaac.2014.12.008>
- McCormack, M., & Wignall L. (2017). *Enjoyment, exploration and education: Understanding the consumption of pornography among young men with non-exclusive sexual orientations*. *Sociology*, 51(5), 975-991. <https://doi.org/10.1177/0038038516629909>
- McGeough, B. L., & Sterzing, P. R. (2018). *A systematic review of family victimization experiences among sexual minority youth*. *The Journal of Primary Prevention*, 39(5), 491–528. <https://doi.org/10.1007/s10935-018-0523-x>
- Meenakshi, M., & Rath, P. (2019). *Effect of internet on the psychosomatic health of adolescent school children in Rourkela - A cross-sectional study*. *Indian Journal of Child Health*, 4(3), 289-293. <https://doi.org/10.32677/IJCH.2017.v04.i03.003>



- Mehroof, M., & Griffiths, M. D. (2010). *Online gaming addiction: The role of sensation seeking, self-control, neuroticism, aggression, state anxiety, and trait anxiety*. *Cyberpsychology, Behavior and Social Networking*, 13(3), 313–316. <https://doi.org/10.1089/cyber.2009.0229>
- Mihara, S., & Higuchi, S. (2017). *Cross-sectional and longitudinal epidemiological studies of internet gaming disorder: A systematic review of the literature*. *Psychiatry and Clinical Neurosciences*, 71(7), 425–444. <https://doi.org/10.1111/pcn.12532>
- Morelli, M., Bianchi, D., Baiocco, R., Pezzuti, L., & Chirumbolo, A. (2017). *Sexting behaviors and cyber pornography addiction among adolescents: The moderating role of alcohol consumption*. *Sexuality Research and Social Policy*, 14(2), 113–121. <https://doi.org/10.1007/s13178-016-0234-0>
- Müller, K. W., Dreier, M., Beutel, M. E., & Wölfling, K. (2016). *Is Sensation Seeking a correlate of excessive behaviors and behavioral addictions? A detailed examination of patients with Gambling Disorder and Internet Addiction*. *Psychiatry Research*, 242, 319–325. <https://doi.org/10.1016/j.psychres.2016.06.004>
- Müller, K. W., Glaesmer, H., Brähler, E., Woelfling, K., & Beutel, M. E. (2014). *Prevalence of internet addiction in the general population: Results from a German population-based survey*. *Behavior & Information Technology*, 33(7), 757–766. <https://doi.org/10.1080/0144929X.2013.810778>
- Nathanson, A. (2021). *Psychotherapy with young people addicted to internet pornography. The Psychoanalytic Study of the Child*, 74(1), 160–173. <https://doi.org/10.1080/00797308.2020.1859286>
- National Center for Missing and Exploited Children. (2017 Jun). *Child sex trafficking in America*. Retrieved from <http://www.missingkids.org/enUS/documents/FactSheetParentsGuardians2017>
- Nie, F. (2020). *Adolescent porn viewing and religious context: Is the eye still the light of the body?* *Deviant Behavior*, 42(11), 1382–1395. <https://doi.org/10.1080/01639625.2020.1747154>
- Nieh, H. P., Chang, L. Y., Chang, H. Y., Chiang, T. L. & Yen, L. L.(2020). *Pubertal timing, parenting style, and trajectories of pornography use in adolescence: Peer pornography use as the mediator*. *The Journal of Sex Research*, 57(1), 29-41. <https://doi.org/10.1080/00224499.2019.1623163>

- Normand, C. L., Fisher, M. H., Simonato, I., Fecteau, S.-M., & Poulin, M.-H. (2021). A systematic review of problematic internet use in children, adolescents, and adults with Autism Spectrum Disorder. *Review Journal of Autism and Developmental Disorders*, (20210611). <https://doi.org/10.1007/s40489-021-00270-x>
- Ofir, T., & Bechara, A. (2019). Little video-gaming in adolescents can be protective, but too much is associated with increased substance use. *Substance Use & Misuse*, 54(3), 384-395. <https://doi.org/10.1080/10826084.2018.1496455>
- O'Reilly, M., Dogra, N., Whiteman, N., Hughes, J., Eruyar, S., & Reilly, P. (2018). Is social media bad for mental health and wellbeing? Exploring the perspectives of adolescents. *Clinical Child Psychology and Psychiatry*, 23(4), 601–613. <https://doi.org/10.1177/1359104518775154>
- Owens, E. W., Behun, R. J., Manning, J. C., & Reid, R. C. (2012). The impact of internet pornography on adolescents: A review of the research. *Sexual Addiction & Compulsivity*, 19(1-2), 99–122. <https://doi.org/10.1080/10720162.2012.660431>
- Paslakis, G., Chiclana Actis, C., & Mestre-Bach, G. (2020). Associations between pornography exposure, body image and sexual body image: A systematic review. *Journal of Health Psychology*. <https://doi.org/10.1177/1359105320967085>
- Paulus, F. W., Ohmann, S., von, G. A., & Popow, C. (2018). Internet gaming disorder in children and adolescents: A systematic review. *Developmental Medicine and Child Neurology*, 60(7), 645–659. <https://doi.org/10.1111/dmcn.13754>
- Perry, S. L., & Hayward, G. M. (2017). Seeing is (not) believing: How viewing pornography shapes the religious lives of young Americans. *Social Forces*, 95(4), 1757–1788.
- Peter, J., & Valkenburg, P. M. (2016). Adolescents and pornography: A review of 20 years of research. *Journal of Sex Research*, 53(4-5), 509–31. <https://doi.org/10.1080/00224499.2016.1143441>
- Piko, B. F., Kovacs, E., Kriston, P., & Fitzpatrick, K. M. (2012). “To believe or not to believe?” Religiosity, spirituality, and alcohol use among Hungarian adolescents. *Journal of Studies on Alcohol and Drugs*, 73(4), 666–74.
- Pluhar, E., Kavanaugh, J. R., Levinson, J. A., & Rich, M. (2019). Problematic interactive media use in teens: Comorbidities, assessment, and treatment. *Psychology Research and Behavior Management*, 12, 447–455. <https://doi.org/10.2147/PRBM.S208968>

- Poulsen, F. O., Busby, D. M., & Galovan, A. M. (2013). *Pornography use: Who uses it and how it is associated with couple outcomes*. *Journal of Sex Research*, 50(1), 72–83. <https://doi.org/10.1080/00224499.2011.648027>
- Prabhakaran, M. C., Patel, V. R., Ganjiwale, D. J., & Nimbalkar, M. S. (2016). *Factors associated with internet addiction among school-going adolescents in Vadodara*. *Journal of Family Medicine and Primary Care*, 5(4), 765–769. <https://doi.org/10.4103/2249-4863.201149>
- Prawiroharjo, P., Ellydar, H., Pratama, P., Edison, R. E., Suaidy, S. E. I., Amani, N. Z., & Carissima, D. (2019). *Impaired recent verbal memory in pornography-addicted juvenile subjects*. *Neurology Research International*, 2019, 2351638. <https://doi.org/10.1155/2019/2351638>
- Principi, N., Magnoni, P., Grimoldi, L., Carnevali, D., Cavazzana, L., & Pellai, A. (2019). *Consumption of sexually explicit internet material and its effects on minors' health: Latest evidence from the literature*. *Minerva Pediatrica*, 2019 Feb 13. <https://doi.org/10.23736/S0026-4946.19.05367-2>
- Puente, C., González, J., Carretero, I., & López, A. (2008). *Sensation seeking, attitudes toward drug use, and actual use among adolescents: Testing a model for alcohol and ecstasy use*. *Substance Use & Misuse*, 43(11), 1615–27. <https://doi.org/10.1080/10826080802241151>
- Rasmussen, K., & Bierman, A. (2016). *How does religious attendance shape trajectories of pornography use across adolescence?* *Journal of Adolescence*, 49, 191–203. <https://doi.org/10.1016/j.adolescence.2016.03.017>
- Razzaq, K., & Rafiq Dar, M. (2020). *Development and validation of a scale for the assessment of psychosocial issues associated with Internet pornography among male university students*. *Pakistan Journal of Medical Research*, 59(1), 22-27.
- Rezayi, S. (2013). *Social competence in children with learning and Autism Spectrum Disorders*. *Practice in Clinical Psychology*, 1(4), 233-237.
- Rømer Thomsen, K., Callesen, M. B., Hesse, M., Kvamme, T. L., Pedersen, M. M., Pedersen, M. U., & Voon, V. (2018). *Impulsivity traits and addiction-related behaviors in youth*. *Journal of Behavioral Addictions*, 7(2), 317–330. <https://doi.org/10.1556/2006.7.2018.22>
- Rostad, W. L., Gittins-Stone, D., Huntington, C., Rizzo, C. J., Pearlman, D., & Orchowski, L. (2019). *The association between exposure to violent pornography and teen dating violence in grade 10 high school students*. *Archives of Sexual Behavior: The Official Publication of the International Academy of Sex Research*, 48(7), 2137–2147. <https://doi.org/10.1007/s10508-019-1435-4>

- Rothman, E. F., Kaczmarzky, C., Burke, N., Jansen, E., & Baughman, A. (2015). "Without porn ... I wouldn't know half the things I know now:" A qualitative study of pornography use among a sample of urban, low-income, Black and Hispanic youth. *Journal of Sex Research*, 52(7), 736–746. <https://doi.org/10.1080/00224499.2014.960908>
- Rueda, H. A., Brown, M. L., & Geiger, J. M. (2020). *Technology and dating among pregnant and parenting youth in residential foster care: A mixed qualitative approach comparing staff and adolescent perspectives*. *Journal of Adolescent Research*, 35(4), 521–545. <https://doi.org/10.1177/0743558419861087>
- Sage, M., & Jackson, S. (2021). A systematic review of internet communication technology use by youth in foster care. *Child & Adolescent Social Work Journal: C & A*, 1-16. <https://doi.org/10.1007/s10560-021-00738-z>
- Schneider, L. A., King, D. L., & Delfabbro, P. H. (2017). *Family factors in adolescent problematic Internet gaming: A systematic review*. *Journal of Behavioral Addictions*, 6(3), 321–333. <https://doi.org/10.1556/2006.6.2017.035>
- Schöttle, D., Briken, P., Tüscher, O., & Turner, D. (2017). *Sexuality in Autism: Hypersexual and paraphilic behavior in women and men with high-functioning autism spectrum disorder*. *Dialogues in Clinical Neuroscience*, 19(4), 381–393. <https://doi.org/10.31887/DCNS.2017.19.4/dschoettle>
- Selig, E. (2020). *Statistically speaking: The overrepresentation of foster youth in sex trafficking*. *Children's Legal Rights Journal*, 38(1), 84-87. <https://lawcommons.luc.edu/clrj/vol38/iss1/8/>
- Sen, R. (2016). *Not all that is solid melts into air? Care-experienced young people, friendship and relationships in the 'digital age'*. *British Journal of Social Work*, 46(4), 1059–1075.
- Seo, J., Lee, C. S., Lee, Y. J., Lee, M. S., Bhang, S. Y., & Lee, D. (2020). *The mediating effect of depressive symptoms on the relationship between adverse childhood experiences and problematic internet use in children and adolescents*. *Journal of Korean Medical Science*, 35(31), e282. <https://doi.org/10.3346/jkms.2020.35.e282>
- Sevic, S., Ciprić, A., Buško, V., & Štulhofer, A. (2020). *The relationship between the use of social networking sites and sexually explicit material, the internalization of appearance ideals and body self-surveillance: Results from a longitudinal study of male adolescents*. *Journal of Youth and Adolescence*, 49(2), 383–398. <https://doi.org/10.1007/s10964-019-01172-2>
- Shields, J. J., Kirk, M. B., Peter, J. D., Bennett, W. F., & Patrick, M. F. (2007). *Religion and substance abuse treatment: Individual and program effects*. *Journal for the Scientific Study of Religion*, 46(3), 355–371.

- Shih, R. A., Miles, J. N., Tucker, J. S., Zhou, A. J., & D'Amico, E. J. (2010). *Racial/ethnic differences in adolescent substance use: Mediation by individual, family, and school factors. Journal of Studies on Alcohol and Drugs*, 71(5), 640–51.
- Shin, J., & Lee, C. H. (2019). *Exposure to internet pornography and sexually aggressive behavior: Protective roles of social support among Korean adolescents. Journal of Sexual Aggression*, 25(2), 90-104. <https://doi.org/10.1080/13552600.2018.1528795>
- Springate, J., & Omar, H. A. (2013). *The impact of the Internet on the sexual health of adolescents: A brief review. International Journal of Child and Adolescent Health*, 6(4), 469–471.
- Spišák, S., & Paasonen, S. (2017). *Bad education? Childhood recollections of pornography, sexual exploration, learning and agency in Finland. Childhood*, 24(1), 99–112. <https://doi.org/10.1177/0907568216646436>
- Stanley, N., Barter, C., Wood, M., Aghtaie, N., Larkins, C., Lanau, A., & Överlien C. (2018). *Pornography, sexual coercion and abuse and sexting in young people's intimate relationships: A European study. Journal of Interpersonal Violence*, 33(19), 2919–2944. <https://doi.org/10.1177/0886260516633204>
- Stavropoulos, V., Gomez, R., Steen, E., Beard, C., Liew, L., & Griffiths, M. D. (2017). *The longitudinal association between anxiety and internet addiction in adolescence: The moderating effect of classroom extraversion. Journal of Behavioral Addictions*, 6(2), 237–247. <https://doi.org/10.1556/2006.6.2017.026>
- Stavropoulos, V., Wilson, P. E., Kuss, D. J., Griffiths, M. D., & Gentile, D. (2016). *A multilevel longitudinal study of experiencing presence in adolescence: The role of anxiety and openness to experience. Behavior & Information Technology*, 36(5), 524-539. <https://doi.org/10.1080/0144929X.2016.1262900>
- Stevens, M. W., Dorstyn, D., Delfabbro, P. H. & King, D. L. (2021). *Global prevalence of gaming disorder: A systematic review and meta-analysis. Australian & New Zealand Journal of Psychiatry*, 55(6), 553-568. <https://doi.org/10.1177/0004867420962851>
- Strittmatter, E., Kaess, M., Parzer, P., Fischer, G., Carli, V., Hoven, C. W., Wasserman, C., Sarchiapone, M., Durkee, T., Apter, A., Bobes, J., Brunner, R., Cosman, D., Sisask, M., Värnik, P., & Wasserman, D. (2015). *Pathological internet use among adolescents: Comparing gamers and non-gamers. Psychiatry Research*, 228(1), 128–135. <https://doi.org/10.1016/j.psychres.2015.04.029>



- Štulhofer, A., Tafro, A., & Kohut, T. (2019). *The dynamics of adolescents' pornography use and psychological well-being: A six-wave latent growth and latent class modeling approach. European Child & Adolescent Psychiatry*, 28(12), 1567–1579. <https://doi.org/10.1007/s00787-019-01318-4>
- Su, W., Han, X., Jin, C., Yan, Y., & Potenza, M. N. (2019). *Are males more likely to be addicted to the internet than females? A meta-analysis involving 34 global jurisdictions. Computers in Human Behavior*, 99, 86–100. <https://doi.org/10.1016/j.chb.2019.04.021>
- Sun, C., Bridges, A., Johnson, J. A., & Ezzell, M. B. (2016). *Pornography and the male sexual script: An analysis of consumption and sexual relations. Archives of Sexual Behavior: The Official Publication of the International Academy of Sex Research*, 45(4), 983–994. <https://doi.org/10.1007/s10508-014-0391-2>
- Surís, J. C., Berchtold, A., & Akre, C. (2015). *Reasons to use e-cigarettes and associations with other substances among adolescents in Switzerland. Drug and Alcohol Dependence*, 153, 140–4. <https://doi.org/10.1016/j.drugalcdep.2015.05.034>
- Svedin, C. G., Åkerman, I., & Priebe, G., (2011). *Frequent users of pornography: A population based epidemiological study of Swedish male adolescents. Journal of Adolescence*, 34(4), 779–788. <https://doi.org/10.1016/j.adolescence.2010.04.010>
- Sylviana, E., Sanusi, S. R., & Tukiman, S. (2018). *The association between exposure to pornography and sexual behavior in adolescents in Medan, North Sumatera. Mid-International Conference on Public Health 2018, Surakarta, Indonesia, April 2018.* <https://doi.org/doi:10.26911/mid.icph.2018.02.15>
- Tateno, M., Teo, A. R., Ukai, W., Kanazawa, J., Katsuki, R., Kubo, H., & Kato, T. A. (2019). *Internet addiction, smartphone addiction, and hikikomori trait in Japanese young adult: Social isolation and social network. Frontiers in Psychiatry*, 10, 455–455. <https://doi.org/10.3389/fpsyt.2019.00455>
- Taylor, E. (2018). *Pornography as a public health issue: Promoting violence and exploitation of children, youth, and adults. Dignity: A Journal on Sexual Exploitation and Violence*, 3(2). <https://doi.org/10.23860/dignity.2018.03.02.08>
- Tejeiro, R., Gómez-Vallecillo, J., Pelegrina, M., Wallace, A. & Emberley, E. (2012). *Risk factors associated with the abuse of video games in adolescents. Psychology*, 3, 310-314. <https://doi.org/10.4236/psych.2012.34044>

- Tereshchenko, S., & Kasparov, E. (2019). *Neurobiological risk factors for the development of internet addiction in adolescents*. *Behavioral Sciences*, 9(6). <https://doi.org/10.3390/bs9060062>
- Tian, Y., Yu, C., Lin, S., Lu, J., Liu, Y., & Zhang, W. (2018). *Sensation seeking, deviant peer affiliation, and internet gaming addiction among Chinese adolescents: The moderating effect of parental knowledge*. *Frontiers in Psychology*, 9, 2727–2727. <https://doi.org/10.3389/fpsyg.2018.02727>
- Tóth-Király, I., Morin, A. J. S., Hietajärvi, L., & Salmela-Aro, K. (2021). *Longitudinal trajectories, social and individual antecedents, and outcomes of problematic internet use among late adolescents*. *Child Development*, 92(4), 673. <https://doi.org/10.1111/cdev.13525>
- Van, E. K., Markle, R. S., & Flory, K. (2012). *Do conduct problems and sensation seeking moderate the association between ADHD and three types of stimulant use in a college population? Psychology of Addictive Behaviors: Journal of the Society of Psychologists in Addictive Behaviors*, 26(4), 939–47. <https://doi.org/10.1037/a0027431>
- Wang, B.-Q., Yao, N.-Q., Zhou, X., Liu, J., & Lv, Z.-T. (2017). *The association between Attention Deficit/Hyperactivity Disorder and internet addiction: A systematic review and meta-analysis*. *BMC Psychiatry*, 17(1). <https://doi.org/10.1186/s12888-017-1408-x>
- Wartberg, L., Kriston, L., Kramer, M., Schwedler, A., Lincoln, T. M., & Kammerl, R. (2017). *Internet gaming disorder in early adolescence: Associations with parental and adolescent mental health*. *European Psychiatry*, 43, 14–18. <https://doi.org/10.1016/j.eurpsy.2016.12.013>
- Weitzel, E., Hopper, C., & Herridge, D. (2021). *Adolescent gangs: Substance misuse and exposure to adverse childhood experiences*. *Psychiatry*, 84(1), 33–45. <https://doi.org/10.1080/00332747.2020.1800291>
- Wéry, A., Schimmenti, A., Karila, L., & Billieux, J. (2019). *Where the mind cannot dare: A case of addictive use of online pornography and its relationship with childhood trauma*. *Journal of Sex & Marital Therapy*, 45(2), 114–127. <https://doi.org/10.1080/0092623X.2018.1488324>
- Wilson, P. J. B. (2018). *The porn retreat: Narcissism and adolescence*. *Psychodynamic Practice*, 24(3), 235–244. <https://doi.org/10.1080/14753634.2018.1494621>
- Wilson, C., & Cariola, L.A. (2020). *LGBTQI+ youth and mental health: A systematic review of qualitative research*. *Adolescent Research Review*, 5, 187–211. <https://doi.org/10.1007/s40894-019-00118-w>

- Wu, L., Woody, G. E., Yang, C., Pan, J. & Blazer, D. G. (2011). *Racial/ethnic variations in substance-related disorders among adolescents in the United States*. *Archives of General Psychiatry*, 68(11), 1176–1185. <https://doi.org/10.1001/archgenpsychiatry.2011.120>
- Yang, J. C., Lin, M. Y. D., & Chen, S. Y. (2018). *Effects of anxiety levels on learning performance and gaming performance in digital game-based learning*. *Journal of Computer Assisted Learning*, 34(3), 324–334. <https://doi.org/10.1111/jcal.12245>
- Yazdi-Feyzabadi, V., Mehrolhassani, M. H., Zolala, F., Haghdoost, A. A., & Oroomiei, N. (2019). *Determinants of risky sexual practice, drug abuse and alcohol consumption in adolescents in Iran: A systematic literature review*. *Reproductive Health*, 16(1), 1–10. <https://doi.org/10.1186/s12978-019-0779-5>
- Ybarra, M. L., & Thompson, R. E. (2018). *Predicting the emergence of sexual violence in adolescence*. *Prevention Science*, 19(4), 403–415. <https://doi.org/10.1007/s11121-017-0810-4>
- Zhai, Z. W., Hoff, R. A., Howell, J. C., Wampler, J., Krishnan-Sarin, S., & Potenza, M. N. (2020). *Differences in associations between problematic video-gaming, video-gaming duration, and weapon-related and physically violent behaviors in adolescents*. *Journal of Psychiatric Research*, 121, 47–55. <https://doi.org/10.1016/j.jpsychires.2019.11.005>

# CULTURE REFRAMED

SOLVING THE PUBLIC HEALTH CRISIS OF THE DIGITAL AGE

