

# Correlates and Moderators of Child Pornography Consumption in a Community Sample

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## Abstract

This study compares pornography users who report child pornography (CP) consumption with those who do not on demographic characteristics (age, ethnicity, and education level), psychological characteristics (e.g., loneliness, attachment style, anxiety, and sensation seeking), frequency of pornography use, and intentions to engage in contact sexual abuse. Participants were recruited on the Internet to complete an online anonymous survey about “problematic pornography use.” Approximately, one fifth of the recruited male pornography users (21%,  $n = 37$ ) reported consuming CP. The two groups were similar on all demographic and psychological characteristics. However, the probability of CP consumption was the greatest among men scoring high on a measure of sensation seeking who reported frequent pornography use (i.e., statistical moderation). CP consumers also reported a greater interest in engaging in sexual contact with a minor than non-CP consumers.

## Keywords

pornography, child pornography, personality, child sexual abuse, sensation seeking, Internet

## Introduction

Child pornography (CP)<sup>1</sup> has become a global concern because of its proliferation with the advent of the Internet (Beech, Elliott, Birgden, & Findlater, 2008; Taylor & Quayle, 2003; Wolak, Finkelhor, Mitchell, & Jones, 2011). Not only has the Internet

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increased the production and dissemination of CP, but it has also enabled its consumption. The anonymity, accessibility, and affordability of the Internet have created a context that is conducive to illegal behavior, including CP consumption (Cooper, 1998). As a result, individuals may engage in CP consumption that otherwise would have been deterred. An important line of inquiry is the identification of risk factors and correlates to CP consumption. It is possible that individuals with certain personality traits may be more prone to engage in CP under certain circumstances. Thus, not only is it important to identify individual characteristics that are uniquely associated with CP consumption but also to examine how such traits interact with the situational and contextual factors associated with the Internet to explain CP consumption. Research, however, has yet to examine whether such interactions exist and the role they might play in CP consumption.

Another important, yet controversial, line of inquiry is the extent to which CP consumption is associated with contact sexual abuse (CSA). A common approach to addressing this question has been to examine the overlap between CP consumption and CSA. A considerable body of research has identified heterogeneity among CP offenders with respect to overlap with CSA (Seto, Hanson, & Babchishin, 2011). However, the majority of this research focuses on CP and CSA offenders detected by law enforcement. Few studies have examined the association between CP consumption and CSA in an undetected, community sample.

The current study attempts to address these gaps in the literature by examining a community sample of self-identified pornography<sup>2</sup> consumers recruited using an online survey methodology. There are three aims that the current study attempts to address: (1) to examine whether there are demographic characteristics and personality traits that distinguish between pornography consumers who do not report CP consumption from those who do self-report CP consumption; (2) to examine whether certain personality characteristics (i.e., antisocial personality disorder [ASPD], sensation seeking) interact with the frequency of pornography consumption to statistically predict the likelihood of CP consumption; and (3) to assess the extent to which pornography consumers who self-report CP consumption are more likely to report intentions to engage in CSA compared with those who do not.

### *Psychological Characteristics and CP Consumption*

Recently, research has attempted to identify unique psychological profiles common to CP offenders compared with CSA offenders. These studies suggest that CP consumers are a heterogeneous population with regard to the possible etiological underpinnings of their CP behaviors. For instance, different risk factors for CP consumption have been identified, such as emotional and intimacy deficits (e.g., depression, loneliness, and anxiety) as well as antisocial cognitions (Middleton, Elliott, Mandeville-Norden, & Beech, 2006). A considerable amount of research has compared CP and CSA offenders on emotional and intimacy deficits. However, findings across studies have been somewhat mixed regarding differences between the two groups. To illustrate, Babchishin, Hanson, and Hermann (2011) conducted a meta-analysis of 27 studies

(two of which were community samples) to examine differences between CP and CSA offenders on psychological characteristics and found that the two offending groups were similar on loneliness and self-esteem. Since the meta-analysis was published, Elliott, Beech, and Mandeville-Norden (2013) compared a group of convicted CSA offenders with a group of convicted CP offenders and found no significant differences between them on measures of loneliness, under-assertiveness, or self-esteem. Alternatively, L. E. Marshall, O'Brien, Marshall, Booth, and Davis (2012) found that incarcerated CP offenders scored higher on loneliness and obsessive compulsiveness compared with incarcerated CSA offenders but found no significant differences between the two groups on social anxiety.

Findings from research comparing CSA and CP offenders on antisocial characteristics (e.g., impulsivity, lack of victim empathy) have also been fairly mixed. Those studies that appear to identify better functioning among CP offenders find that they report fewer antisocial traits including aggression, dominance, psychopathy, and attitudes supportive of assault (Magaletta, Faust, Bickart, & McLearn, 2012; Tomak, Weschler, Ghahramanlou-Holloway, Virden, & Nademin, 2009; Webb, Craissati, & Keen, 2007) and score higher on measures of victim empathy (Babchishin et al., 2011) than CSA offenders. Other studies report more similarities than differences between the two groups on antisocial characteristics. For instance, Elliott et al. (2013) found that the two types of offenders scored similarly on measures of empathic concern and impulsivity. With respect to more global measures of personality, Reijnen, Bulten, and Nijman (2009) found no significant differences between the two offending groups on personality profiles assessed using the *Minnesota Multiphasic Personality Inventory-2* (MMPI-2; Butcher, Dahlstrom, Graham, Tellegen, & Kaemmer, 1989), including the Psychopathic Deviate scale. Likewise, Webb et al. (2007) found no group differences on the *Millon Clinical Multiaxial Inventory-III* (MCMI-III; Millon, Millon, & Davis, 1994), and the antisocial personality scale (i.e., impulsiveness, acting out, and interpersonal irresponsibility) in particular.

Although informative, research comparing convicted CP offenders with CSA offenders on relevant psychological characteristics is limited in at least two respects. First, it may not generalize to the broader population of CP consumers who are not involved with the criminal justice system, because those that have been detected by law enforcement may differ in important ways from those who have managed to evade detection. Second, comparisons between CP and CSA offenders on such traits do not speak to important differences that may exist between CP offenders and non-CP offenders. A few studies, however, have compared CP offenders with normative groups on the *Personality Assessment Inventory* (PAI; Morey, 1991). Laulik, Allam, and Sheridan (2007) found that CP offenders, compared with PAI norms, had higher mean levels of antisocial and borderline features, depression, schizophrenia, suicidal ideation, and stress but significantly lower mean scores on aggression, dominance, warmth, mania, and treatment-rejection scales. Similarly, Magaletta et al. (2012) found that CP offenders scored higher on borderline features, depression, stress, and treatment-rejection scales but had lower aggression and dominance mean scores relative to normative PAI scores. While informative, these studies still focus solely on detected CP offenders.

Few studies have examined personality traits that might characterize CP consumers among undetected samples. Neutze and her colleagues examined self-reported behaviors (i.e., CP consumption and CSA) and psychological characteristics among a sample of self-identified treatment-seeking pedophiles and hebephiles. They found that individuals reporting CP consumption scored similarly to individuals who self-reported CSA on a variety of antisocial personality traits as well as victim empathy (Neutze, Seto, Schaefer, Mundt, & Beier, 2011), although individuals reporting CSA scored significantly higher on a measure of perceived risk for reoffending compared with CP consumers. Neutze, Grundmann, Scherner, and Beier (2012) compared undetected CP consumers with those detected by the criminal justice system and found that they scored similarly on measures of offense supportive attitudes and cognitive and emotional victim empathy. The focus of these studies on treatment-seeking individuals may limit the generalizability of their findings because those who are concerned about their pedophilic or hebephilic tendencies may differ from the general population of CP consumers. These studies also did not compare CP consumers with non-offenders or non-CP consumers.

One notable exception compared CP consumers with non-CP consumers in a non-treatment-seeking, community sample. In this study, Seigfried, Lovely, and Rogers (2008) found no differences between self-reported CP consumers and non-CP consumers on the Big Five personality traits (conscientiousness, agreeableness, extraversion, neuroticism, and openness); however, CP consumers scored higher on measures of manipulation. While the latter finding may be an artifact of the illegal nature of CP consumption, this finding does suggest that CP consumers are more dishonest and exploitative compared with non-CP consumers. They also found that CP consumers scored lower on a measure of internal moral choice (i.e., personal values of right and wrong) compared with non-CP consumers; the two groups did not differ significantly on hedonistic or external (i.e., socially derived moral values) scales. It is clear that more research is needed to compare undetected CP consumers with non-CP consumers on theoretically and empirically relevant traits.

### *Frequency of Pornography Consumption, Personality, and CP Consumption*

Although greatly beneficial, the Internet has qualities that are inherently conducive to criminal behavior, particularly CP consumption. In addition to the anonymity, accessibility, and affordability that the Internet provides (Cooper, 1998), Quayle, Erooga, Wright, Taylor, and Harbinson (2006) highlight the decreased social risk, removal of inhibitions, and ability to alter mood states as aspects of the Internet that make it conducive to criminal behavior. Theoretical explanations suggest that these characteristics of the online environment might interact with individual factors (e.g., impulse control, risk seeking) to increase the likelihood of CP consumption, especially among particular “types” of consumers (see Elliott & Beech, 2009). For instance, this explanation may be most applicable to those labeled “periodically prurient offenders.” This group is said to occasionally engage in CP consumption out of curiosity, as part of a

general indulgence in pornography. While the majority of individuals who consume pornography online, whether problematic or not, do not consume CP, a small percentage may do so. One possibility is that these individuals are predisposed to consume CP due to certain personality traits (e.g., impulsivity, sensation seeking) and that these traits interact with the situational factors associated with the Internet and Internet pornography use.

To date, no such study has examined the interaction of personality traits and Internet use to explain CP consumption. However, research on general antisocial behavior as well as CSA highlight the importance of examining such mechanisms. For example, Longshore (1998) found that low self-control (e.g., risk taking, impulsiveness) interacted with criminal opportunity to explain criminal behavior among a sample of adult justice-involved offenders. LaGrange and Silverman (1999) also found that risk taking interacted with opportunity to explain self-reported delinquency among a community sample of youth. It has also been proposed that stable individual characteristics may moderate the association between other risk factors and sexual aggression or deviance (Williams, Cooper, Howell, Yuille, & Paulhus, 2009). For example, research finds that sexual promiscuity and hostile masculinity interact with pornography consumption to predict sexual aggression (Malamuth, Addison, & Koss, 2000; Malamuth, Heavey, & Linz, 1996).

Psychopathy is another individual characteristic that moderates the association between pornography use and deviant sexual behavior (Williams et al., 2009). In a similar vein, personality traits may moderate the association between opportunity and CP consumption. For example, higher levels of antisocial traits (e.g., ASPD and sensation-seeking traits) may increase an individual's risk for CP consumption, particularly when pornography is consumed at a high frequency—that is, frequent pornography use may create more opportunities for exposure to CP, and the crime-conducive nature of the Internet may influence its consumption particularly among individuals who score higher on sensation-seeking and antisocial traits.

### *CP and Contact Sexual Offending*

As previously mentioned, another objective of this study is to look at the overlap between CP consumption and CSA in a non-criminal sample. An important conceptual and practical question is whether CP consumption is a risk factor for CSA. For the most part, research has attempted to address this question by examining the overlap between CP offending and CSA. In a recent meta-analytic study of 21 samples, Seto et al. (2011) found that approximately one in eight CP offenders also had a CSA offense according to official records; however, this proportion increased to 55% when relying on the six studies in which self-report was used. However, they also found that only about 2% of CP offenders subsequently had criminal charges or convictions for CSA, suggesting that CP consumption is not a strong risk factor, in and of itself, for CSA. Only one published study to date has examined the link between CP and CSA against a child in a non-adjudicated sample; this study found that 57% of CP users also reported a history of CSA (Neutze et al., 2011); however, because participants in this

sample were seeking therapy for their sexual interests and/or behavior, they may be unrepresentative of the CP consumer population. In addition, the research in this area focuses on past CSA offenses and, for the most part, does not examine whether CP consumption is a risk factor for future CSA against a minor.

A study by Seto, Cantor, and Blanchard (2006) suggests that CP consumption may be an important indicator of sexual attraction toward children. They found that CP offenders showed greater sexual arousal toward children compared with contact sexual offenders, suggesting that CP consumption is a valid diagnostic indicator of pedophilia. However, their study was based on a sample of convicted CP offenders. Research has yet to address this question among a community sample. The current study attempts to fill this important gap in the literature by examining the association between CP consumption and interest in engaging in sexual contact with a minor, among a non-treatment-seeking community sample of self-identified pornography consumers.

### *The Present Study*

Using a community sample of Internet users, our first aim was to test whether pornography consumers who self-report CP consumption differ significantly from those who do not on several risk factors and correlates identified by prior research: emotional and intimacy deficits (i.e., attachment avoidance, attachment anxiety, and loneliness), personality traits associated with antisociality (i.e., sensation seeking, ASPD), and frequency of pornography use. On the basis of prior research, we hypothesized that those pornography consumers who self-report CP consumption would score significantly higher on each correlate compared with those who do not report CP. For descriptive purposes, these groups were also compared on the sociodemographic variables of age, race/ethnicity, relationship status, and educational achievement. Our second aim was to test whether more frequent pornography use was associated with a greater likelihood of self-reported CP consumption in the presence of antisocial personality traits and sensation seeking (i.e., statistical moderation). We hypothesized that men scoring high on antisocial traits and sensation seeking would be more likely to consume CP if their frequency of pornography consumption was high. Our third aim was to test whether pornography consumers with CP reported significantly greater interest than pornography consumers without CP in engaging in sexual contact with a minor if presented with the opportunity. Given prior research demonstrating high rates of CSA among detected and treatment-seeking CP offenders (Neutze et al., 2011; Seto et al., 2011), we hypothesized that CP consumers would have a greater interest in sexual offending with a child than non-CP consumers.

## **Method**

### *Procedure*

Participants were recruited via online advertisements to complete a 30-min Internet-based survey about “problematic pornography use.” The recruitment period spanned

approximately 10 months, from April 2009 to January 2010. Recruitment targeted individuals who admitted to ever using the Internet to view, download, and/or trade pornography and did not exclude those who believed that their pornography use was not problematic. For recruitment purposes, a variety of websites and Internet outlets (e.g., newsgroups and forums) were identified through Internet searches or were selected based on knowledge from prior CP research (e.g., Craiglist.org, newsgroups, boychat.org; Seigfried et al., 2008; Taylor & Quayle, 2003). Specifically, the advertisement was posted on four study share websites: Online Psychology Research (onlinepsychresearch.co.uk), Psychological Research on the Net (psych.hanover.edu), IRB Approved Study Share (IRBapproved.blogspot.com), and The Web Experiment List (genpsylab-wexlist.unizh.ch). The advertisement was also posted on three websites for Internet and sexual addiction (newlifehabits.com, netaddiction.com, and sexualrecovery.org); two Internet pornography sites (sublimedirectory.com, pornhub.com); multiple newsgroups focused on sex and pornography (e.g., alt.binaries.pictures.erotica, alt.binaries.multimedia.erotica.teen, alt.binaries.erotica.fetish, and alt.binaries.erotica.teens) using the newsreader software Mozilla Thunderbird 3.0 (<http://www.mozilla.org>); a community forum for the discussion of pedophilia (boychat.org; the moderators of girlchat.org did not give us permission to post our study invitation), and community forums (bisexuality, personal, psych, kink & bdsm, m4m, queer, w4w) and classifieds for large U.S. cities (Atlanta, Chicago, Houston, Los Angeles, Miami, New York, Philadelphia, Phoenix, San Diego, and Tampa) on Craigslist.org. Many of these sites were selected to target individuals who use pornography on the Internet or who might have an interest in atypical sexual content. The study link was posted on a total of 12 unique Internet media.

Potential participants who responded to the advertisement by clicking on the provided link were redirected to a study information page, which described the study in more detail. The information page explicitly listed only one inclusion criterion (i.e., that individuals must be between the ages of 18 and 65); however, it was also assumed that participants could read English and it was implicit that they had access to the Internet. A link was provided at the bottom of the study information page that redirected them to the survey through an anonymizing proxy server hosted in Europe. Participants were informed that clicking on the link was an indication that they had read and understood the study description, met the inclusion criterion, and voluntarily agreed to participate. The survey was developed and administered using Qualtrics survey software ([www.qualtrics.com](http://www.qualtrics.com)). This software tracks the number of surveys started (i.e., the number of individuals who enter the survey and finalize their responses by clicking submit at the end of the survey) and those who start the survey by responding to at least one question but do not “submit” their response at the end of the survey) and the number of surveys completed (i.e., only those that were submitted). Qualtrics software records responses that are partial or submitted but does not record the number of individuals who enter the survey and do not “start” by responding to any questions. The number of “surveys started” and the number of “surveys completed” are reported below as an estimate of response rate. The survey included demographic questions and several brief self-report questionnaires described below.

## Participants

During the survey period, 318 individuals began and 297 completed the survey, for a 93% completion rate. Individuals who did not meet the inclusion criterion (i.e., respondents who did not report their age or reported that they were under age 18;  $n = 44$ ) responded inconsistently across survey items ( $n = 4$ ), did not respond to the question regarding CP consumption ( $n = 3$ ), or denied ( $n = 32$ ) or did not respond to questions ( $n = 28$ ) asking whether they viewed pornography within the past 6 months<sup>3</sup> were removed from the analysis, resulting in a sample of 186 respondents. In addition, because of the small number of female respondents ( $n = 11$ ), only data from male respondents was analyzed, for a final sample of 175 adult male respondents. The final sample had a mean age of 31.1 ( $SD = 10.97$ ) years and the majority was Caucasian (76%), with a smaller representation of ethnic minority groups (24%). Most respondents reported some college-level education (82.3%), 17.1% had either a high school diploma or equivalent, and 1% of the sample had less than a high school education. Sixty-five percent reported currently being in an intimate relationship.

Of the 175 respondents, 37 (21.1%) admitted consuming CP, comprising the “CP consumer” group. The remaining 138 individuals who denied CP consumption comprised the “pornography consumer” group. Participants responding affirmatively to CP use were also asked about the perceived developmental stage of individual/s depicted in those images and their preference for body type (i.e., prepubescent, teen, or no preference; see measures section for item description). Of the 37 self-reported CP consumers, 19 (51.4%) reported viewing images of prepubescent children. However, 23 (62.2%) out of the 37 CP consumers reported a preference for viewing images of teens, 4 (10.8%) reported a preference for images of prepubescent children, and 9 (24.3%) reported no preference (one individual who answered affirmatively to CP use did not respond to this question).

## Measures

### Dependent variables

**CP consumption.** A question was designed for the current study to assess whether participants had ever consumed CP; respondents were asked to respond yes or no to the question, “*Have you ever viewed child pornography or images/videos of individuals who appear to be less than 18?*” In addition, those who responded affirmatively to viewing CP were asked whether any of the images they viewed were of prepubescent children (yes or no) and what types of images they preferred (teens, prepubescent, or no preference).

**Interest in sexual contact with a minor.** Self-reported interest in sexual contact with a minor was assessed by asking participants to respond dichotomously (yes or no) to the following question, “*Would you have sex with a minor if you knew you could get away with it?*”

### Independent variables

**Demographics.** Participants responded to demographic questions about age, gender, race/ethnicity, educational achievement, and relationship status (i.e., whether they were currently in a romantic relationship).

**Frequency of pornography use.** An open-ended question was designed for use in the current study to assess the frequency of pornography use. Participants reported how many hours per week on average they spent actively engaging in viewing pornography over the past 6 months.

**Experiences in close relationships—Short form (ECR-S).** The ECR-S (Wei, Russell, Mallinckrodt, & Vogel, 2007) is a 12-item self-report measure derived from the original 36-item ECR scale (Brennan, Clark, & Shaver, 1998) to capture two aspects of adult attachment: anxiety (e.g., *I do not often worry about being abandoned*) and avoidance (e.g., *I am nervous when partners get too close to me*). Participants indicate their level of agreement with each statement using a 7-point Likert-type scale (1 = *disagree strongly* to 7 = *agree strongly*). Scores on the ECR-S have demonstrated good one-month test-retest reliability (anxiety = .89 and avoidant = .82) and convergent validity (Wei et al., 2007), and scores on the Avoidance and Anxiety subscales showed acceptable internal consistency in the current study ( $\alpha$ s = .84 and .74, respectively).

**University of California Los Angeles (UCLA) Loneliness Scale (ULS-10).** The ULS-10 (Russell, 1996) is a 10-item self-report instrument that measures variations in loneliness within everyday life and the ability to be appropriately intimate with other adults. Participants rate how often they experience feelings depicted in each statement (e.g., *How often do you feel left-out*) on a 4-point Likert-type scale (1 = *never*; 4 = *always*). Higher scores indicate greater feelings of emotional loneliness. Scores on the ULS-10 demonstrated high internal consistency in prior research ( $\alpha$  = .89; Russell, 1996) as well as the current study ( $\alpha$  = .90).

**The Antisocial Scale of the Personality Diagnostic Questionnaire-4 (PDQ-4).** The Antisocial Scale of the PDQ-4 (Hyler, 1994) was used to assess antisocial personality traits. The PDQ-4 is a self-report measure of personality disorders consistent with *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.; *DSM-IV*; American Psychiatric Association [APA], 1994) criteria. The Antisocial Scale consists of 22 true-false items (e.g., *I have difficulty paying bills because I don't stay at one job for very long; lying comes easily to me and I do it often; before age 15 I was considered a bully*) that correspond to each of the *DSM-IV* ASPD criteria. Higher scores indicate greater levels of Antisociality. PDQ scores correlated strongly with the ASPD component of the Structured Interview for *DSM-IV* Axis II disorders (SCID-II;  $r$  = .67; Guy, Poythress, Douglas, Skeem, & Edens, 2008) and demonstrated good internal consistency ( $\alpha$  = .80) in the current study. Guy et al. (2008) reported a mean total ASPD score of 7.98 ( $SD$  = 4.65) among a sample of offenders, whereas Hicklin and Widiger

(2005) reported a mean of 2.0 ( $SD = 2.40$ ) among a college sample, which is more comparable to the obtained mean score in the current sample ( $M = 3.06$ ,  $SD = 3.12$ ).

*The non-sexual experience seeking scale (NESS).* The NESS (Kalichman et al., 1994) is an 11-item self-report scale developed to measure one's affinity for new and exciting activities (e.g., I sometimes like to do things that are a little frightening; I can see myself seeking pleasures around the world with "exciting" people). Items are rated on a 4-point Likert-type scale from 1 (*not at all like me*) to 4 (*very much like me*). Item responses are summed to compute a total score where higher scores indicate greater sensation seeking. NESS scores demonstrated convergent validity and good test-retest reliability ( $\alpha = .80$ ) in prior research (Kalichman et al., 1994), as well as good internal consistency ( $\alpha = .80$ ) in the current study. Scores from the NESS were fairly normally distributed in the current sample ( $M = 28.08$ ,  $SD = 7.43$ ) and the mean score was comparable to that reported in a male college sample ( $M = 30.81$ ,  $SD = 7.23$ ; Gaither, Sellbom, & Meier, 2003).

## Results

### *Aim 1: Comparison of Pornography Consumers and CP Consumers on Demographic and Personality Characteristics*

Descriptive statistics for the main study variables in the full sample and for each group are reported in Table 1, along with group comparisons. CP consumers did not differ significantly from pornography consumers on most demographic variables, including age, minority status, and education. Although CP consumers reported spending more hours per week on average viewing pornography ( $M = 12.85$ ,  $SD = 23.99$ ) compared with pornography consumers ( $M = 7.05$ ,  $SD = 9.63$ ), this difference was not significant ( $p = .16$ ). Compared with pornography consumers, CP consumers were significantly less likely to report being in an intimate relationship,  $\chi^2(1, N = 175) = 5.62$ ,  $p = .018$ ,  $\Phi = .18$ . The two groups did not differ significantly on the measures of attachment avoidance/anxiety, loneliness, or sensation seeking. CP consumers did score higher on the PDQ-4 Antisocial scale compared with pornography consumers,  $t(161) = -2.26$ ,  $p = .03$ , 95% confidence interval [CI] =  $[-2.52, -.17]$ ,  $d = -.36$ . It is important to note that after correcting family-wise error (i.e., Bonferroni correction), none of the comparisons were significant.

### *Aim 2: Testing Whether Antisocial Traits Moderate the Association Between Frequency of Pornography Use and CP Consumption*

To address aim two, we examined the interaction between the frequency of pornography consumption and the PDQ-4 Antisocial scale in statistically predicting CP consumption. This analysis was repeated for the interaction with sensation-seeking scores as a moderator. Because of the dichotomous nature of the CP consumption measure,

**Table 1.** Descriptive Statistics for the Full Sample and MP and CP Groups Separately.

	Full sample			MP			CP			Group comparison
	Valid n	M/%	SD	Valid n	M/%	SD	Valid n	M/%	SD	
Age	175	31.14	10.97	138	31.72	10.72	37	28.97	11.78	$d = .21, p = .18$
Minority status										$\phi = .14, p = .06$
White	133	76.4	—	109	79.6	—	24	64.9	—	
Minority	41	23.6	—	28	20.4	—	13	35.1	—	
Education	175	4.55	1.10	138	4.59	1.06	37	4.41	1.26	$d = .14, p = .36$
Relationship status										$\phi = .18, p = .02$
Yes	114	65.14	—	96	69.6	—	18	48.6	—	
No	61	34.86	—	42	30.4	—	19	51.4	—	
Frequency of use	175	8.27	14.07	138	7.05	9.63	37	12.85	23.99	$d = -.34, p = .16$
Loneliness	165	24.98	6.04	131	25.09	5.93	34	24.56	6.52	$d = .09, p = .65$
ECR										
Anxiety	158	24.16	7.40	125	24.10	7.31	33	24.39	7.81	$d = -.04, p = .84$
Avoidant	158	19.83	7.73	125	19.61	7.81	33	20.67	7.33	$d = -.14, p = .49$
PDQ-4 ASPD	163	3.06	3.12	129	2.78	3.01	34	4.11	3.36	$d = -.36, p = .03$
NESS	161	28.08	7.43	127	27.57	7.40	34	30.00	7.32	$d = -.27, p = .09$

Note. For all continuous variables, the Levine’s test indicated that equal variances could be assumed. Bonferroni correction for multiple comparisons at the  $\alpha = .05$  is  $\alpha = .005$ . MP = mainstream pornography; CP = child pornography; Freq. of Use = Frequency of Pornography Use measured in hrs/week; ECR = Experiences in Close Relationships; PDQ-4 = Personality Diagnostic Questionnaire-4; ASPD = antisocial personality disorder; NESS = Non-sexual Sensation-seeking Scale.

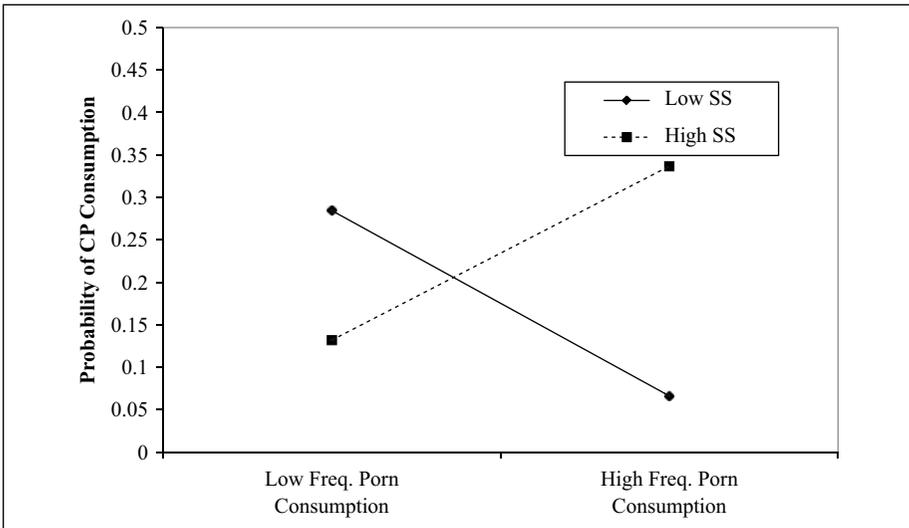
moderation was tested using hierarchical binary logistic regression, following steps suggested by Jaccard (2001) using the MODPROBE macro for SPSS version 19 (Hayes & Matthes, 2009). Above-reported main effects found to be significant at  $p < .05$  were also included as covariates in the first step of the model—relationship status and PDQ Antisocial scale—along with the predictor and moderator variables. In each model, the interaction term (i.e., Frequency of pornography use  $\times$  PDQ-4 Antisocial/NESS) was stepped into the model after mean-centering both the variables prior to the creation of their interaction term, to avoid multicollinearity. As reported in Table 2, the results indicated a significant interaction effect between the frequency of pornography consumption and NESS, but not PDQ-4 Antisocial scale scores. Post-hoc probing was conducted to explicate the nature of the significant interaction (see Hayes & Matthes, 2009; Holmbeck, 2002). The results, depicted in Figure 1, revealed that the effect of frequent pornography consumption on the probability of CP consumption was significantly higher for those with scores on the NESS one or more standard deviations above the mean (i.e.,  $\geq 34.75$ ;  $b = .11, SE = .04, p < .05$ ); this association was negative, although not statistically significant, for those with low scores on the NESS—that is, for individuals scoring high on sensation seeking, the risk of viewing pornographic images of children increased with the number of hours spent viewing pornography online.

**Table 2.** Binary Logistic Regression Analysis Examining the Interaction Between Frequency of Pornography Use and SSASPD on CP consumption.

	Frequency pornography use × NESS			Frequency pornography use × PDQ-4 ASPD		
	B	SE	OR (Exp B)	B	SE	OR (Exp B)
In relationship	-1.03*	.42	0.36	-1.08*	.42	0.34
PDQ-4 ASPD	.13*	.07	1.14	0.09	.07	1.09
Frequency of pornography use	-.05	.12	0.95	-0.05	.12	0.95
NESS	.03	.03	1.03	0.04	.03	1.04
Frequency × NESS	.04*	.02	1.04	—	—	—
Frequency × PDQ-4 ASPD	—	—	—	0.06	.03	1.07
Nagelkerke R <sup>2</sup>		.17			.13	

Note. CP use dichotomously coded as 0 = No and 1 = Yes. SS = sensation-seeking; CP = child pornography; PDQ-4 = Personality Diagnostic Questionnaire-4; ASPD = antisocial personality disorder; NESS = Non-sexual Sensation-Seeking scale.

\*p < .05.



**Figure 1.** The interaction between sensation-seeking and frequency of pornography use in predicting the probability of CP consumption.

Note. SS = sensation-seeking; CP = child pornography.

### Aim 3: Comparison of Pornography Consumers and CP Consumers on Interest in Sexual Contact With a Minor

Table 3 presents the results of chi-square analyses comparing pornography consumers and CP consumers on their interest in sexual contact with a minor. Results revealed that CP consumers were significantly more likely to report that they would engage in

**Table 3.** Cross-Tabulations Comparing Pornography Users Admitting and Denying CP Consumption in Their “Interest” in Sexual Contact With a Minor.

	<i>n</i>	Interest	
		Yes (%)	No (%)
Pornography users	134	10 (7.5)	124 (92.5)
CP users	37	12 (32.4)	25 (67.6)
Total	171	22 (12.9)	149 (87.1)
Pearson $\chi^2$ (Phi)		16.13** (.31)	

Note. Frequencies do not match sample sizes for some variables because of missing values. CP = child pornography.

\*\* $p < .001$ .

sexual activity with a minor if they knew they could get away with it, compared with pornography consumers (odds ratio [OR] = 5.95, 95% CI = [2.32, 15.28]). Community-based Internet users who self-reported CP consumption had almost six times the odds of reporting an interest in engaging in sexual contact with someone under the age of 18 than did pornography consumers.

## Discussion

The findings from the current study provide insight into the characteristics of those who report CP consumption compared with those who do not among a community sample of self-identified pornography consumers. To our knowledge, this is the first study to compare the personality traits of pornography consumers with and without CP consumption and to examine the association between CP consumption and interest in sexual contact with a minor in a non-treatment-seeking community sample. Roughly, one in five pornography consumers who responded to the survey admitted CP consumption (21.1%); this is not a prevalence estimate of CP consumption among online pornography consumers, however, because we did not recruit a representative sample; instead, we specifically targeted pedophilia forums and sexual addiction forums where (help-seeking) CP consumers might be more prevalent than websites focusing on more general interests such as news, sports, and entertainment or general study recruitment sites. As a point of comparison, Seto et al. (2010) reported that approximately 4% to 5% of their nationally representative sample of young Scandinavian men reported viewing pornography depicting adult-child sex. The age of children in the images was unspecified in the Seto et al. (2010) survey; presumably, like the current study, more men preferred (and viewed) pornography depicting underage teens than pornography depicting prepubescent children. This notion is consistent with the evidence that some sexual attraction to postpubescent teens is normative among adult men (see Wakefield, 2012).

Demographically, CP consumers were similar to pornography consumers in age, minority status, and educational status. While CP consumers were significantly less likely to report being in an intimate relationship compared with pornography consumers, the strength of this association was weak. This finding is somewhat inconsistent

with prior research. For example, Seigfried et al. (2008) found significant differences between CP consumers and non-CP consumers on race and gender, suggesting that those who consume CP are more likely to be male minorities. To increase the homogeneity of our sample, we excluded the 11 women who responded to the survey. Similarities between the two groups in the current study may be due in part to the nature of the sample—that is, although online samples were used in the current study and by Seigfried et al., only pornography consumers were included in the current study. It is likely that pornography attracts individuals with more similar demographic characteristics, creating a more homogeneous group than a broader online sample.

Despite the weak association between relationship status and CP consumption, it is worth noting that this finding is consistent with research identifying intimacy deficits as a risk factor for contact sexual offending (e.g., Seidman, Marshall, Hudson, & Robertson, 1994). It is possible that difficulties in achieving intimacy with consenting adults may lead some individuals to CP consumption, in much the same way as it has been proposed to explain CSA against children (W. L. Marshall, 1989); however, this explanation is not consistent with the finding in the current study that CP consumers did not differ from pornography consumers on personality characteristics associated with emotional and intimacy deficits, namely, loneliness and adult attachment styles (i.e., avoidant and anxiety). It is possible that these traits are more characteristic of general problematic Internet use. For instance, Odaci and Kalkan (2010) found that loneliness and dating anxiety were associated with problematic Internet use. In addition, Whang, Lee, and Chang (2003) found that Internet addicts had higher levels of loneliness and depression compared with non-addicts. Thus, given the methodology used to recruit the current sample (i.e., online survey) and the nature of the sample (i.e., pornography users), this finding is somewhat unsurprising. More research is needed to better understand the role of adult relationships and intimacy deficits in CP consumption.

With regard to antisocial characteristics, the two groups were similar on both Sensation Seeking and the Antisocial scale of the PDQ-4. Again, these may be traits that are associated with the consumption of online pornography in general. One alternative explanation is that the current study lacked the power to detect meaningful differences. This could also be attributed to the approach taken in the current study to identify comparison groups (i.e., pornography consumers and CP consumers)—that is, simply asking whether they had ever viewed CP does not differentiate groups based on motivations (e.g., accidental, curiosity, and sexual interest in children). Thus, research is needed that identifies and compares more homogeneous groups (e.g., mainstream pornography consumers, CP consumers only, and CSA offenders only).

Although no main effect was found for sensation seeking on CP consumption, scores on the NESS moderated the relationship between frequency of pornography consumption and CP consumption; the effect of consumption frequency was significant only for those scoring high on the NESS. This finding is consistent with the idea that some individuals are more susceptible to the aspects of the Internet that are conducive to criminal behavior based on their level of sensation seeking. One possible explanation is that extensive pornography use is a proxy for exposure to the crime-enabling aspects of the Internet (e.g., decreased inhibition, supportive attitudes,

opportunity, and anonymity)—that is, among individuals who engage in excessive Internet use, those who are sensation seeking are more susceptible to its deviant influence and more likely to engage in illegal activities. An alternative explanation of this may be that individuals who are sensation seeking become bored with ordinary pornography, particularly after extensive use, and seek out more taboo and potentially illicit content such as CP (Koukounas & Over, 1993; O'Donohue & Geer, 1985; Zillman & Bryant, 1986). Although habituation was not directly measured in the current study, the findings suggest that sensation seeking may explain why some individuals habituate to pornography and that high levels of sensation seeking and extensive online pornography use may be important risk factors for CP consumption. Thus, future research is needed to disentangle whether and how extensive pornography use might lead to greater CP consumption.

Finally, our findings suggest that self-reported CP consumption may be a risk factor for sexual contact with a minor among self-identified pornography consumers, or at least an interest in engaging in such activity if it came at no cost. Approximately one third of those who self-reported CP consumption indicated being interested in sexual contact with a minor, which raises important and interesting questions about what distinguishes CP consumers who report interest in sexual contact with children from those who deny such interest, and finally, among those acknowledging interest in sexual contact with a minor, what distinguishes those who act on this interest from those who do not (see Seto, 2008, 2013)—that is, while CP consumption appears to be an important risk factor for contact sexual offending against a minor, it is not a certain indicator and should be considered in combination with other risk factors (Eke & Seto, 2012; Seto et al., 2011).

### *Limitations*

These findings must be considered within the context of several limitations, including the validity of self-report (see Ray, Kimonis, & Donoghue, 2010, for a more comprehensive discussion). Given the sensitive nature of the questions and potential for participants to respond in a socially desirable manner, reliance on self-reports of such behaviors may be problematic (Gudjonsson & Sigurdsson, 2000; Tan & Grace, 2008; Tierney & McCabe, 2001). However, previous research addressing this concern has been based on justice-involved samples that may have more of an incentive to “fake good” and, in general, self-reports have proven to be reliable and valid means for research purposes (e.g., Thornberry & Krohn, 2000). In addition, the anonymous nature of the current study and the Internet in general makes socially desirable responding of less concern here.

Another issue is the non-representative sample we recruited. By advertising the survey on a pedophilia forum and on sites for Internet and sexual addiction, we oversampled individuals who are likely to report CP use (compare our prevalence estimate with Seto et al., 2010, for example). Unfortunately, because of design decisions we made to guarantee the anonymity of respondents (not recording IP addresses and using anonymizing proxy servers), we could not determine how many respondents came to the survey from different sites and compare the responses of those recruited from these

sites versus more general sites. Obtaining more representative estimates of the prevalence of CP use would require larger sample recruitment from general sites. As research on CP offending accumulates, convergence across studies with diverse samples and methods will help elucidate personality traits and other characteristics associated with CP consumption.

Second, the current study included only a limited set of personality measures to reduce administration time and increase participant retention. Other individual differences associated with CP consumption that have been identified by prior studies (e.g., anxiety and depression; Laulik et al., 2007; Middleton et al., 2006) may also differentiate pornography consumers with and without CP consumption. Some CP offenders have claimed a compulsive or obsessive quality to their pornography use (e.g., Egan, Kavanagh, & Blair, 2005). Research also suggests that CP consumers tend to be more impulsive than non-CP consumers (Elliott, Beech, Mandeville-Norden, & Hayes, 2009; Henry, Mandeville-Norden, Hayes, & Egan, 2010) and have more cognitive biases (e.g., offense-supportive attitudes and beliefs about sex with children; Babchishin et al., 2011; Elliott et al., 2013; Elliott et al., 2009). Thus, future research should examine whether obsessive-compulsive traits, cognitive distortions, and impulsivity differentiate these groups. Given our aim of assessing more general antisocial traits, we employed a broader definition of sensation seeking and, thus, operationalized it as such (i.e., NESS). However, research may benefit from using more specific measures of sensation seeking such as a measure of sexual sensation seeking.

Third, the cross-sectional design of this study limits the causal inferences that can be made about the relationships between pornography consumption, personality traits, and CP consumption, as well as the temporal relationship between CP consumption and interest in sexual contact with a minor. It is important for future research to use longitudinal study designs that are able to test the temporal ordering of these behaviors. Of particular interest are studies that clarify the timing of pornography and CP consumption (e.g., does frequent or increasing pornography consumption lead to CP consumption, as some case reports suggest?; Quayle & Taylor, 2002) and that examine the ability of pornography and CP consumption recorded at one time point to predict subsequent pornography and CP consumption, as well as actual sexual contacts with minors.

Fourth, the questions used to assess our outcomes of CP use and interest in sexual contact with a minor were potentially problematic. First, they leave it up to the perception of the individual to determine whether the images they viewed were of actual minors or of individuals who only looked like minors. Some legally produced pornography purposefully depicts actors who look like they might be minors (e.g., "teen" or "barely legal" pornography). Second, our questions do not take into account cultural/regional variations in age of consent laws; the age of consent is 16 in many American states, for example, and thus having sexual activity with a 16- or 17 year old would not be illegal even though the 16- or 17 year old would be a legal minor. Individuals responding "yes" to having sexual contact with a minor given the opportunity may not be indicating a willingness to engage in criminal behavior, depending on the jurisdiction in which they live. However, the question does imply social sanction given that it

asks “. . . if you knew you could get away with it.” It is also not clear whether “intentions” to engage in sexual contact with a minor can be translated into actual behavior. For example, Malamuth (1989) addresses several of the criticisms concerning the hypothetical assessment of engaging in rape. For instance, responding affirmatively to such questions may indicate a general tendency to respond in a deviant manner. Likewise, the lack of sanctions associated with hypothetical behavior may not reflect real-world intentions. In addition, this question does not assess the extent to which participants would act on their interests in the real world and may only be another indicator of their sexual interest in minors. Finally, the reliance on single items to assess CP and contact sexual offending may overlook the complex nature of CP and contact offending. Future research should use more specific and comprehensive methods for assessing CP and contact sexual offending (e.g., combining official and self-reports).

Fifth, it is also important to note that due to the anonymous nature of the survey and the use of an anonymizing proxy server to protect participants' privacy, there was no way to ensure that multiple entries by the same person did not occur (e.g., by reviewing IP addresses and selecting only unique entries). However, this criticism is somewhat attenuated by research demonstrating that repeated responding is not detrimental to the validity of web-based surveys (Gosling, Vazire, Srivastava, & John, 2004). In addition, unintentional duplication, such as those due to technical issues, was prevented by reviewing each case for duplicate start dates/times and response patterns.

Sixth, the current study was advertised online as a study about “problematic pornography use.” Advertising in such a way may have introduced bias, and it is not clear to what extent our findings will generalize to other samples. For example, it is possible that individuals who perceived their pornography consumption to be problematic may have been more inclined to participate compared with those who did not or those who did not consume pornography at all. This possibility may have resulted in a homogeneous sample with regard to the personality characteristics under consideration—that is, individuals concerned about their pornography consumption may be more similar on traits such as neuroticism, loneliness, and attachment anxiety/avoidance. This, in turn, may have attenuated the differences between the two groups. It is also likely that individuals with certain characteristics relevant to this study (e.g., sensation seeking) would be more likely to participate in the study. Future research should attempt to recruit a more representative sample of the online community.

The current study did not identify subgroups of CP or pornography consumers. For example, some pornography consumers may be attracted to more conventional forms of pornography while others consume more unconventional pornography (e.g., fetish, bestiality, bondage, discipline, sadism, and masochism (BDSM)). It is likely that CP consumers are more similar to the latter pornography consumers than to the former group in personality traits such as sensation seeking. In addition, participants who self-reported CP consumption were only asked whether the images they viewed were of prepubescent children and did not ask about other types of images (e.g., images of teens). In addition, while participants who self-reported CP consumption were asked to report the types of images that interested them (e.g., teen, prepubescent), the resulting

groups were too small to make comparisons. Future research could distinguish between individuals who consume images of teens, postpubescent children, or prepubescent children, as well as those who engage in sexual contact with children, young adolescents, or older adolescents (e.g., Blanchard et al., 2009). Accounting for heterogeneity among these groups may help to identify unique differences in personality. This kind of comparison would also allow researchers to examine the extent to which research on community CP users who predominantly prefer images of (underage) teens generalizes to research on clinical or criminal justice samples of CP users who predominantly seem to prefer images of prepubescent or pubescent children. Given evidence from self-report, anthropological, and psychophysiological studies showing that men typically show some sexual response to teens, even those who are under the legal age of majority, we would expect more CP users who prefer teens than CP users who prefer prepubescent or pubescent children. The over-representation of pedophiles and hebephiles in clinical and criminal justice samples likely reflects selection effects, whereby clinicians and law-enforcement officials focus on those who seek out images of younger children.

Finally, it is important to note that the relatively small sample size of the CP group ( $n = 37$ ) may have reduced power to detect statistically significant differences between groups. For example, group comparisons reported in Table 1 revealed small to medium effects for frequency of pornography use ( $d = .34$ ), antisocial traits ( $d = .36$ ), and sensation seeking ( $d = .27$ ) despite non-significant results.

### *Final Comments*

Despite these limitations, we believe that the current findings provide insight into a group of individuals who consume CP. In general, the findings from the current study suggest that there appear to be more demographic and personality similarities than differences between CP and other pornography consumers. Our findings also provide preliminary evidence that individuals high on sensation seeking who spend an average of 6 hr per week viewing online pornography may be at the greatest risk for CP consumption. There is also evidence that a significant portion of those reporting CP consumption had an interest in sexual contact with a minor. In sum, our findings suggest that there is considerable heterogeneity among CP consumers with regard to motivation—that is, some engage in CP consumption as a result of extensive exposure to online pornography and being predisposed to such behaviors, while others engage in CP consumption out of a general attraction or sexual interest in children.

We were successful at recruiting an understudied population—those who consume CP but have remained undetected by law enforcement—which suggests that Internet-based research may be an effective method for learning more about the correlates and mechanisms that place individuals at risk for this type of illicit behavior. The Internet is a promising medium for conducting future research that can inform theory and practice relevant to CP offending, given the abundance of pornography and CP available online.

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## Notes

1. Child pornography (CP) is defined as “. . . the visual depiction of a person under the age of 18 engaged in sexually explicit conduct” consistent with the U.S. Department of Justice (18 U.S.C. §§ 2256).
2. We define pornography as visual material (i.e., pictures and videos) for the purpose of sexual arousal.
3. Individuals who reported no pornography consumption in the past 6 months were removed from the analyses to have two homogeneous comparison groups (i.e., pornography consumers and CP consumers). While it is possible that those who denied use in the past 6 months could be considered lifetime users, the current study did not ask about lifetime use.

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