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Adult-Adult and Adult-Child/Adolescent Online Sexual Interactions: An Exploratory Self-Report Study on the Role of Situational Factors

Emilia Bergen^a, Anna Ahto^a, Anja Schulz^{b,c}, Roland Imhoff^d, Jan Antfolk^a, Petya Schuhmann^b, Katarina Alanko^a, Pekka Santtila^a & Patrick Jern^e

^a Department of Psychology and Logopedics, Abo Akademi University

^b Department of Forensic Psychiatry, University of Regensburg

^c Institute of Clinical Psychology and Psychotherapy, Dresden

^d Department of Psychology, University of Cologne

^e Department of Psychology, University of Turku

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Adult-Adult and Adult-Child/Adolescent Online Sexual Interactions: An Exploratory Self-Report Study on the Role of Situational Factors

Emilia Bergen and Anna Ahto

Department of Psychology and Logopedics, Abo Akademi University

Anja Schulz

Department of Forensic Psychiatry, University of Regensburg and Institute of Clinical Psychology and Psychotherapy, Dresden

Roland Imhoff

Department of Psychology, University of Cologne

Jan Antfolk

Department of Psychology and Logopedics, Abo Akademi University

Petya Schuhmann

Department of Forensic Psychiatry, University of Regensburg

Katarina Alanko and Pekka Santtila

Department of Psychology and Logopedics, Abo Akademi University

Patrick Jern

Department of Psychology, University of Turku

Alcohol intoxication, sexual arousal, and negative emotional states have been found to precede certain sexual behaviors. Using data from an online self-report survey distributed to adults (N = 717; 423 men and 304 women), we compared adults with adult online sexual interactions (n = 640; 89.3%) to adults with interactions with a child or an adolescent (n = 77; 10.7%) on how much they reported being affected by the following factors surrounding the time of the interactions: alcohol intoxication, sexual arousal, sadness, boredom, stress, and shame. We found that those with a child or adolescent contact reported higher sexual arousal and more shame before the interaction, compared with those with an adult contact. In addition, the levels of negative emotional states varied when levels before the interactions were compared with levels after the interactions, suggesting that engaging in online sexual interactions alleviated negative emotional states, at least temporarily. The alleviatory effects, however, were accompanied by higher levels of shame after the interactions. Overall, adults that engage in online sexual interactions have remarkably similar perceptions of the situation surrounding these activities, independent of the age of their online contacts. Limitations of the study are discussed.

In recent years, technological innovations and the widespread accessibility of computer-aided communication have had a tremendous impact on human life (Charness & Boot, 2009; Ono & Tsai, 2008), including one of the most fundamental drives for human interaction: sex (Barraket & Henry-Waring, 2008). The rise of the Internet and its different communication channels

has introduced a number of new phenomena in human sexual interactions, such as “sexting” (Strassberg, McKinnon, & Sustaíta, & Rullo, 2013) and online sexual solicitation or grooming (Mitchell, Finkelhor, & Wolak, 2007).

The body of research concerning online sexual solicitation (encouraging someone to do or talk about something sexual online independently of the other person’s will; Ybarra, Espelage, & Mitchell, 2007) and grooming (the process when an adult befriends an adolescent or child online for the purpose of committing sexual abuse

Correspondence should be addressed to Emilia Bergen, Department of Psychology and Logopedics, Abo Akademi University, Tehtaankatu 2, FIN-20500, Turku, Finland. E-mail: ebergen@abo.fi

either online, offline, or in both settings; Webster et al., 2012) has grown steadily during the past decade. Research methods have involved surveys directed toward adolescents who have experienced grooming or grooming attempts (Mitchell et al., 2007), law enforcement agents' accounts on cases of online sexual solicitation (Mitchell, Finkelhor, Jones, & Wolak, 2010; Shannon, 2008), and information from convicted perpetrators through interviews, assessment instruments, and the analysis of chat logs (Briggs, Simon, & Simonsen, 2011; Malesky, 2007; Marcum, 2007; Seto, Wood, Babchishin, & Flynn, 2012; Webster et al., 2012). Quasi-experimental approaches, where researchers have posed as children and adolescents on online forums, have also been used (Bergen, Antfolk, Jern, Alanko, & Santtila, 2013).

Although individuals convicted of this sort of offense constitute a heterogeneous group (Briggs et al., 2011), there are some common factors: They are most often men (Briggs et al., 2011; Wolak, Finkelhor, & Mitchell, 2009), and they are often 10 to 20 years older than the solicited adolescent (Shannon, 2008). The solicited adolescents are often female and 14 years old or older (Jones, Mitchell, & Finkelhor, 2012; Livingstone, Haddon, Görzig, & Ólafsson, 2011). In addition, the solicited adolescent is often aware of the sexual intentions and the age of the adult (Wolak, Finkelhor, & Mitchell, 2004). Interviews and investigations with convicted perpetrators have provided valuable information about both the motivations and online behaviors of the perpetrators. However, to date, we know very little about situational factors that might be associated with engaging in online sexual interactions.

It has been suggested that many of the adults who solicit adolescents online may not be exclusive in their age preferences of the persons they target, targeting both adults and adolescents (Briggs et al., 2011). Also, most of the adults who have solicited adolescents have reportedly been aware of the fact that their behavior is criminal and condemned by society, and some reported feeling ashamed of their conduct (Webster et al., 2012). What then is the immediate situation like, in which an adult solicits a child or an adolescent online? Does it differ from the situation in which an adult "solicits" an adult online? Little is known about whether the adults who sexually solicit others online, for example, had been intoxicated by alcohol, sexually aroused, or in a specific emotional state during the online sexual interaction. In the present study we sought to explore situational antecedents of initiating sexual contact with children or adolescents online by comparing these with situational antecedents of sexual contact with adults. Our sample also included women, who are rarely included in previous research (probably mostly because almost all convicted groomers have been men). We also investigated how the levels of different situational factors changed as an effect of the time surrounding the

interactions (i.e., before, during, and after). Based on previous research findings (as will be explained), we were specifically interested in the levels of the following situational factors during different phases of the interaction: alcohol intoxication, sexual arousal, and levels of sadness, boredom, stress, and shame.

Associations Between Alcohol Intoxication and Sexual Behaviors

According to the theory by Steele and Josephs (1990), an individual who is both alcohol intoxicated and sexually aroused is likely to focus attention on positive and encouraging sexual cues rather than on negative ones. Indeed, studies have identified an additive effect of sexual arousal and alcohol intoxication on decreased capacity to read cues, for example, misperceiving negative or neutral cues as sexually encouraging (McFall, 1990; Wilson, Calhoun, & McNair, 2002). Further, it has been found that alcohol intoxication impairs the ability to inhibit sexual feelings and behaviors (George & Stoner, 2000). Even in the absence of acute arousal, alcohol intoxication increases sexual risk taking (Conner, Sutherland, Kennedy, Grearly, & Berry, 2008; MacDonald, MacDonald, Zanna, & Fong, 2000). It has also been found that expected effects of alcohol on sexual disinhibition are even larger than the pharmacological effects (Briddell et al., 1978). Participants who thought they had consumed alcohol showed greater sexual arousal to cues of force being used to achieve sexual intercourse than participants who thought they had not consumed alcohol (the actual level of alcohol consumption did not differ; Briddell et al., 1978).

If an alcohol-induced disinhibition also leads to less hesitancy to engage in sexual behavior with children (Nuñez, 2003), it could be argued that adults who engage in online sexual interactions with children or adolescents would report higher levels of alcohol intoxication compared with adults with only adult online contacts. There are several reasons to expect such an association: for example, alcohol may decrease the individual's ability to perceive risks in their behavior; it may diminish perception of negative cues; or it may serve as blame attribution (i.e., remove the feeling of responsibility; Abbey, Zawacki, Buck, Clinton, & McAuslan, 2004; George & Stoner, 2000) for the individual if the behavior engaged in is ego-dystonic.

Associations Between Sexual Arousal and Sexual Behaviors

Alcohol is not the only factor that reduces sexual inhibitions. In a seminal study on the effect of sexual arousal on decision making, Ariely and Loewenstein (2006) showed that sexually aroused men (using a

condition where sexual arousal was induced through masturbation) judged themselves much more likely to engage in a variety of deviant (e.g., having sex with a 12-year-old), sexually unsafe (e.g., not using contraception), and manipulative (e.g., deliberately trying to get a person drunk to increase sexual opportunities) behaviors than did nonaroused control participants. Later, a study with improved experimental control replicated these results with the important addition that this effect was found for both men and women (Imhoff & Schmidt, 2014). Sexually aroused individuals not only fail to predict the effect of sexual arousal on their judgments and decisions; they also, in a nonaroused state, report aversion when shown the stimuli that was found sexually arousing in an aroused state (Ariely & Loewenstein, 2006; Borg & de Jong, 2012; Quayle & Taylor, 2002). In sum, sexual arousal broadens the perception of what is sexually arousing and reduces aversion to otherwise repellent stimuli (Ariely & Loewenstein, 2006; Borg & de Jong, 2012; Quayle & Taylor, 2002). It is thus conceivable that arousal also constitutes a pathway to sexual interactions with children and adolescents online.

Associations Between Emotional States and Sexual Behaviors

A final factor measured in the present study that might increase the likelihood of engaging in sexual interactions with children or adolescents is emotional state. This idea builds on the notion that sexual behaviors (Howells, Day, & Wright, 2004; Quayle, Vaughan, & Taylor, 2006) and fantasies (Gee, Ward, & Eccleston, 2003) can be instrumental in the regulation of mood and negative emotions. In this view, sexual activities are actively sought to suppress or alleviate negative emotional states. For example, it has been shown that negative emotions are associated with increased frequency of masturbation among rapists and heterosexual pedophiles (Proulx, McKibbin, & Lusignan, 1996). Considering widespread reporting on the triggering effect of negative emotions (e.g., Cooper, Putnam, Planchon, & Boies, 1999; Howells et al., 2004; Quayle et al., 2006), it is surprising that no attention has been paid to whether online sexual interactions are instrumental and successful in regulating negative emotions and, if so, how effective this regulation is. We thus aimed to explore whether negative emotions are associated with increased likelihood of initiating sexual interactions with children and adolescents, and whether sexual interactions alleviated negative emotional states.

Aims and Hypotheses

We collected a sample of individuals who self-reported to have engaged in online sexual contact with a stranger

during the past year. We conducted all analyses by comparing two groups of participants within each gender based on the age of their online contacts: participants with an adult contact (participants who exclusively interacted with adults) and participants with a child or adolescent contact (participants that had at least one underage contact). Based on the reasoning outlined above, we then

1. tested whether online sexual interaction with a child or adolescent followed states of greater alcohol intoxication, more prior sexual arousal, and more pronounced negative emotions compared to online sexual interactions with adults;
2. investigated, separately for men and women, whether there would be an effect of the age of the contact on the levels of situational factors collapsed over the phases of the interactions (before, during, and after); and
3. explored whether participants in the two groups effectively regulated their arousal and negative emotions by planned comparisons of the levels of these factors before and after the interactions.

Method

Sampling Procedure

Participants were recruited online to take part in an online self-report survey. The sampling was conducted by circulating the link leading to the survey on Facebook, Twitter, and other online social discussion forums (concerning, e.g., lifestyles, hobbies, interests, or forums maintained by radio channels) in Sweden, Finland, and Germany, and through e-mail lists for students at universities and vocational universities. In addition, participants were recruited through two German online information forums for persons with a pedophilic sexual interest. All participants had to be at least 18 years old, report to be regular Internet users, and speak Finnish, German, or Swedish fluently. Participants were informed that the survey would include questions about their online activities, online social contacts, and their sexuality online.

Participants were invited to participate in a lottery of 30 (10 per country) Amazon.com vouchers worth €20 each. Participants who wanted to take part in the lottery could click on a link that led them to a separate Web site where they could give their e-mail address without risking any association between their e-mail address and their responses in the survey. The research plan received approval from the ethical review boards of both Regensburg University in Germany and Abo Akademi University in Finland. The final page of the survey contained information on where to seek help in each country for those who had a pedophilic or hebephilic sexual interest, as well as information regarding national legislation concerning grooming and child sexual abuse.

Participants

The sample consisted of 717 participants, of whom 304 were female ($M_{age} = 27.9$, $SD_{age} = 9.0$) and 413 were male ($M_{age} = 30.3$, $SD_{age} = 10.4$) ($t [715] = 3.23$, $p < .05$). All participants included in the present study reported that they had engaged in online sexual behaviors and/or sexual conversations with a stranger during the past year. The participants were separated into those with online sexual interactions with adults ($n = 640$) (18-year-olds and older), and participants ($n = 77$) with interactions with at least one child (13-year-olds or younger) or adolescent (14- to 17-year-olds) (see Table 1 for information about the combinations of online contacts within this group). Participants were included in the latter group only if they met the criterion of being at least five years older than their contact (i.e., at least 19 years old if their contact was 13 or younger; at least 23 years old if their contact was 14 to 17 years old). This was done to exclude online sexual interactions between adolescents of similar age, as the objective of the study was to investigate adults' interactions with minors. This resulted in the exclusion of 59 participants aged 18 to 22. The mean age of the participants (of both genders) with an adult contact was 29.3 ($SD = 10.1$) and those with a child or adolescent contact was 29.8 ($SD = 7.9$) ($t [715] = .449$, $p = .030$). The final sample of the present study was derived from a total of 7,733 accesses to the survey. In total, 4,778 of these cases were either incomplete (i.e., to be regarded as complete the respondent had to complete the survey at least to the 189th page out of 203) or replied with a systematic response pattern and were therefore excluded. In addition, 20 respondents were excluded because they reported an age under 18, and 13 were removed for reporting an age over 90 and their candor to other questions was questionable. Based on the targeted sample for this study, respondents who did not report having any online interactions with a stranger during the past year ($n = 1,408$) and participants who had not engaged in any online sexual interactions with a stranger during the past year ($n = 738$) were also excluded.

Measures

Participants were asked whether they had engaged in online sexual conversations or other online sexual interactions with a stranger during the past year. Participants

then reported the age (*18 or older*, *14 to 17*, *13 or younger*) and gender (*male*, *female*) of the online contacts. The question concerning whether they had engaged in online sexual interactions was as follows: "Did you have a conversation about something sexual with the person? A sexual conversation refers to dialogues during which you or the other person flirted or during which you made sexual advances or discussed pornography or sexual activities." If the response to this question was negative, the respondent was still included if he or she later in the survey replied in the affirmative to the following questions concerning the specific online contact: "Did you engage in cybersex?"; "Did you send or share sexual pictures?"; or "Did you send or share pornography?"

The questions regarding situational factors during the interactions also focused on this one specific person with whom they had interacted online. Participants were instructed to respond to these questions for the youngest age group (out of adults, adolescents, or children) they had reported as online sexual contacts. If the participant had engaged in online sexual interactions with several persons of the target age group, they were requested to reply to the questions regarding the person with whom they had kept in touch with for the longest duration. The survey was translated from English to German, Swedish, and Finnish by professional translators and then back-translated to English by the researchers. Language discrepancies were then discussed and any modifications needed made by the researchers.

Situational Factors

The questions concerning the situational factors read: "Please indicate how well the following statements *most often* applied to the situation when you had online contact with this person: I was drunk; I was sexually aroused; I was sad; I was bored; I was stressed; I was ashamed." The response alternatives were *Not at all* (1), *Somewhat* (2), *Pretty well* (3), and *Very well* (4). Each statement was answered for three different time phases of the interaction: before the contact began, during the contact, and after the contact.

Statistical Analyses

As we considered the time phases of the interaction (before, during, or after the interaction), a measure

Table 1. Combinations of Contact Age Groups Among the Participants Belonging to the Child or Adolescent Contact Group

Group	Adolescents % (N)	Children % (N)	Adults and Adolescents % (N)	Adults and Children % (N)	Adolescents and Children % (N)	All Age Groups % (N)	% (N)
Total	13.0 (10)	3.9 (3)	54.5 (42)	6.5 (5)	1.3 (1)	20.8 (16)	100 (77)
Men	13.8 (8)	5.2 (3)	50.0 (29)	6.9 (4)	1.7 (1)	22.4 (13)	100 (58)
Women	10.5 (2)	—	68.4 (13)	5.3 (1)	—	15.8 (3)	100 (19)

Note. Percentages and *ns* (within parentheses) are reported for each combination group. All categories were exclusive.

repeated within each respondent, we used the general linear model regression procedure in SPSS 21.0 for the main analyses (for all analyses, SPSS 21.0 was used; SPSS, 2012). Because the dependent variables of interest (alcohol intoxication, sexual arousal, sadness, boredom, stress, and shame) were not highly correlated, we conducted separate univariate analyses for each dependent variable. Due to the explorative nature of the study, we chose to conduct pairwise and planned comparisons even when no significant main or interaction effect was found. To explore whether a curvilinear trend would fit the variances in the reported levels in addition to a linear trend, a hierarchical regression analyses was conducted. Furthermore, we chose to report and discuss the results using unadjusted p values on a .05 significance level to decrease the risk of type II error. The p value threshold adjusted for multiple comparisons was $p < .008$ (Bonferroni correction). Correction for multiple testing, especially stringent controlling measures such as Bonferroni correction, inevitably causes loss of statistical power, more so in cases where the predictor variables are correlated (Nakagawa, 2004). In other words, the risk of false negatives (type II error) is increased when correction for multiple testing is applied. For this reason, we opted to report the alpha threshold for a very stringent (Bonferroni) correction as well as unadjusted p values. This way, readers can decide for themselves how to interpret our results. Missing values were imputed using the MVA module of SPSS which utilizes the expectation maximization procedure. Although the percentages of missing values were high (median percentage was 19.5) for the items measuring situational factors, the Little MCAR test indicated that the missing data were completely random ($\chi^2[1594] = 1232.850$, $p = 1.00$).

Results

Descriptive Statistics

Men were significantly more likely to report a child or adolescent contact than women were (Table 2). Also, the online contact of the participant was more likely to be male within the adult contact group (i.e., a higher number of women with a male contact and also men with a male contact) compared with the child or adolescent contact group. Educational degree, employment status, relationship status, and sexual orientation, on the other hand, had no association with having had contact with any age group (Table 2). As a post hoc test we analyzed whether there was a difference in the prevalence of having engaged in sexual interactions with an adult contact or a child or adolescent contact and the language in which the participants had filled out the survey. The reason for this was to explore whether the national variations in the legal age of consent (i.e., 14 in Germany, 15 in Sweden, and 16 in Finland) would be associated

Table 2. Descriptive Statistics for the Two Groups of Participants Based on Age of Online Contact

Participant Characteristics	Adult Contact ($n = 640$), % (n)	Child or Adolescent Contact ($n = 77$), % (n)	χ^2
Participant gender			11.1**
Men	55.5 (355)	75.3 (58)	
Women	44.5 (285)	24.7 (19)	
Contact gender			14.64***
Male	59.1 (364)	35.6 (26)	
Female	40.9 (252)	64.4 (47)	
Highest educational degree			3.18
Secondary school	11.7 (60)	19.7 (12)	
Occupational/high school	53.2 (273)	47.5 (29)	
Vocational university/university	35.1 (180)	32.8 (20)	
Employment status			2.91
Employed by other/self	39.4 (203)	45.9 (28)	
Without work/seeking work	8.5 (44)	11.5 (7)	
Studying/in school	46.6 (240)	36.1 (22)	
Homemaker/senior citizen	3.5 (18)	3.3 (2)	
Unable to work due to disability	1.9 (10)	3.3 (2)	
Relationship status			1.23
Single	52.5 (336)	54.5 (42)	
In a relationship, cohabiting	18.0 (115)	13.0 (10)	
In a relationship, living separately	22.5 (144)	24.7 (19)	
Married/registered partnership	7.0 (45)	7.8 (6)	
Sexual orientation			5.3
Heterosexual	68.4 (393)	51.5 (39)	
Homosexual	11.1 (66)	18.4 (13)	
Bisexual	20.5 (114)	30.2 (16)	

Note. Total sample, $N = 717$. Many of the questions were not obligatory, hence the variance in *ns*. Sexual orientation = Participants' response to a question on whom they felt sexual attraction to (men, women, or both). Employment status was a multiple-choice question. ** $p < .005$; *** $p < .001$.

with self-reported sexual interactions with contacts of different age groups. For this purpose a χ^2 test was conducted between the three languages, but no such association was found ($\chi^2[2] = .820$, $p = .664$). The subsample from the two German forums directed toward individuals with a pedophilic sexual interest was excluded from this analysis.

Next, we investigated associations (with Spearman correlation) between all the situational factors for each time phase of the interaction (before, during, and after the interaction). The purpose of these analyses was to see whether the factors were independent enough of one another to warrant further analyses. Overall, we found moderate correlations between sadness, boredom, stress, and shame in each phase and for both men and women. Other correlations were low or not significant. The correlation between the factors before the interactions had a mean of 0.20 ($SD = 0.14$ and ranged between 0.05 and 0.49). During the interactions the correlation mean was 0.19 ($SD = 0.19$ and ranged between 0.00 and 0.52). The mean correlation for after the interactions

was 0.21 ($SD = 0.19$ and ranged between 0.00 and 0.60). Hence we decided that they were independent enough from one another to proceed with further analyses.

Test of Hypotheses

Next, we conducted separate univariate analyses, using each measure of a situational factor as the dependent variable. Thus, for alcohol intoxication, sexual arousal, sadness, boredom, stress, and shame, we analyzed whether there was an effect of the time surrounding the interaction (before, during, and after) and the age of contact (i.e., an adult contact or a child or adolescent contact), and whether they interacted. All analyses were, again, initially conducted separately for male and female participants.

Differences Between Contact Age Groups in Reported Levels of Situational Factors Preceding Online Sexual Interactions

Our first aim was to investigate whether participants with a child or adolescent contact would report higher levels of situational factors preceding online sexual interactions, compared with those with an adult contact. Between-group comparisons were conducted separately for men and women. The only nominally significant difference found was within women on the reported level of shame. The level of shame reported before the interaction was higher within women with a child or adolescent contact compared with those with an adult contact (Table 3). An almost nominally significant effect of greater sexual arousal in men who interacted with a child or an adolescent compared with men with an adult contact was found. No other even nominally significant differences were found.

To increase statistical power, we decided to collapse participant gender and rerun the analyses. We found

that the level of arousal was higher within participants with a child or adolescent contact ($M = 1.82$, $SD = 0.92$), compared with participants with an adult contact ($M = 1.64$, $SD = 0.71$), $t(715) = 2.01$, $p < .045$. The level of shame reported by participants with a child or adolescent contact was also higher preceding the interaction ($M = 1.29$, $SD = 0.58$) compared with those with an adult contact ($M = 1.16$, $SD = 0.42$) $t(715) = 2.36$, $p < .05$. However, these results did not withstand an adjustment for multiple testing. No other differences were found in level of situational factors preceding the interaction.

Associations Between Age of Contact and Situational Factors Collapsed over Different Phases Surrounding Interactions

Our second aim was to investigate whether the age of the contact would be associated with different levels of intoxication, arousal, or negative emotions when we collapsed the three different phases of the interactions (before, during, and after). We found surprisingly few differences overall between participants divided into groups based on the age of their contact. This was the case for both men and women. The only significant overall effect of the age of the contact was found on the level of shame within men $F(1, 411) = 6.420$, $p = .012$, $\eta_p^2 = .015$. Men with a child or adolescent contact reported higher overall levels of shame compared with men with an adult contact.

Emotional Regulation Through Online Sexual Interactions

First, we explored whether a curvilinear trend would explain more of the variance in the reported levels of situational factors in addition to the linear one. We conducted analyses separately for male and female

Table 3. Comparisons Between Groups of Participants Based on Age of Contact Within Each Gender of Participants on Levels of Different Situational Factors Preceding Online Sexual Interactions

Situational Factor	Male Participants					Female Participants				
	Adult Contact ($n = 355$)		Child or Adolescent Contact ($n = 58$)		p	Adult Contact ($n = 285$)		Child or Adolescent Contact ($n = 19$)		p
	M	SD	M	SD		M	SD	M	SD	
Intoxication	1.183	.457	1.118	.339	.307	1.114	.384	1.242	.706	.188
Arousal	1.714	.716	1.918	.990	.060	1.540	.702	1.507	.570	.837
Sadness	1.405	.657	1.460	.644	.556	1.421	.680	1.192	.331	.147
Boredom	1.817	.743	1.786	.771	.769	1.881	.830	1.544	.585	.083
Stress	1.525	.675	1.547	.670	.820	1.504	.656	1.371	.550	.389
Shame	1.182	.458	1.264	.486	.210	1.137	.356	1.353	.808	.023

Note. How well does the following statement *most often* apply to the situation when you engaged in the sexual interactions with this specific person (e.g., “I was sexually aroused”)? 1 = *Not at all*, 2 = *Somewhat*, 3 = *Pretty well*, 4 = *Very well*. Intoxication = Alcohol intoxication. Arousal = Sexual arousal. Level of shame preceding the interactions in female participants was the only situational factor that was significantly different between the two groups of participants. The result was not significant after a Bonferroni adjusted p value ($p < .008$).

participants and according to the age group of the contact. Due to small cell sizes in the child or adolescent contact group (especially in female participants) only the peak in arousal during the interactions yielded a significant result within female participants. Also, in male participants with a child or adolescent contact, there was a peak in arousal during the interactions. In addition, the level of boredom was lower during and after compared to before the interactions within this group (Table 3). In male and female participants with adult contacts sexual arousal peaked during the interactions. In both genders with an adult contact, the levels of sadness and boredom were lowest during the interactions. The levels of stress reported in these groups were lower during the interaction than before and even lower after the interactions. However, the reported levels of shame were higher during than before, and even higher after, compared with during the interactions in both male and female participants with an adult contact.

Next, we explored whether engaging in online sexual interactions might be functional in alleviating negative emotional and other states (see Table 4 for group means and standard deviations for each situational factor, separated into age groups of contacts for each time phase). For this purpose, we conducted planned comparisons

within the participant groups. By comparing reported levels of the situational factors before the interactions with reported levels after the interactions, we found that there were several changes. However, no significant interaction effects of the between-subjects factors (i.e., the gender of the participant and the age of the contact) and within-subjects factors (i.e., reported levels before versus after the interactions) were found for any of the situational factors. An effect of time was found for all situational factors except for sadness. We therefore compared all participants without any separation between men or women or between those with an adult contact and those with a child or adolescent contact. Results revealed that online contacts may have served the purpose of alleviating negative and amplifying positive emotions, as the level of sexual arousal increased (Wilks' $\lambda = .891$, $p < .001$, $\eta_p^2 = .109$), whereas the levels of reported sadness (Wilks' $\lambda = .994$, $p = .046$, $\eta_p^2 = .006$), boredom (Wilks' $\lambda = .717$, $p < .001$, $\eta_p^2 = .283$), and stress (Wilks' $\lambda = .892$, $p < .001$, $\eta_p^2 = .108$) decreased. These alleviatory effects on negative emotions did not come without costs. The down-regulation of the aforementioned negative emotions was countered by an accompanying increase in shame (Wilks' $\lambda = .930$, $p < .001$, $\eta_p^2 = .070$), suggesting that this kind of emotion

Table 4. Comparison Between a Linear and a Quadratic Model on the Variations in Situational Factors Within Male and Female Participants Within Each Age Group of Contacts

	Male Participants															
	Adult Contact, $n = 355$								Child or Adolescent Contact, $n = 58$							
	Before		During		After		L_t	Q_t	Before		During		After		L_t	Q_t
	M	SD	M	SD	M	SD			M	SD	M	SD	M	SD		
Intoxication	1.183	.457	1.211	.477	1.221	.494	0.435	0.286	1.118	.339	1.159	.419	1.196	.518	0.160	0.023
Arousal	1.714	.716	2.329	.944	1.946	.836	9.602***	9.170***	1.918	.990	2.520	.939	2.065	.805	3.681***	3.594***
Sadness	1.405	.657	1.226	.459	1.377	.607	4.430***	4.381***	1.46	.644	1.309	.568	1.532	.698	1.713	1.818
Boredom	1.817	.743	1.294	.468	1.406	.612	9.079***	7.895***	1.786	.771	1.343	.607	1.343	.570	2.602*	2.104*
Stress	1.525	.675	1.331	.532	1.312	.519	2.984**	2.307*	1.547	.670	1.324	.506	1.347	.606	1.519	1.276
Shame	1.182	.458	1.208	.391	1.319	.534	0.837	1.413	1.264	.486	1.357	.553	1.522	.713	0.036	0.375
	Female Participants															
	Adult Contact, $n = 285$								Child or Adolescent contact, $n = 19$							
	Before		During		After		L_t	Q_t	Before		During		After		L_t	Q_t
	M	SD	M	SD	M	SD			M	SD	M	SD	M	SD		
Intoxication	1.114	.384	1.14	.396	1.135	.424	0.620	0.538	1.242	.706	1.301	.723	1.355	.808	0.077	0.011
Arousal	1.54	.702	2.178	.977	1.868	.881	8.150***	7.579***	1.507	.570	2.27	1.268	1.773	.851	2.484*	2.384*
Sadness	1.421	.680	1.216	.476	1.311	.579	3.828***	3.544***	1.192	.331	1.259	.705	1.287	.525	0.205	0.130
Boredom	1.881	.830	1.272	.509	1.317	.587	8.267***	6.871***	1.544	.585	1.218	.496	1.075	.149	1.169	0.718
Stress	1.504	.656	1.266	.513	1.257	.494	3.563***	2.838**	1.371	.550	1.274	.524	1.272	.404	0.424	0.339
Shame	1.137	.356	1.24	.415	1.278	.536	1.562	1.029	1.353	.808	1.213	.492	1.401	.796	.778	0.816

Note. How well does the following statements most OFTEN apply to the situation when you engage in sexual interactions with this specific person, (e.g., I was sexually aroused). 1 = Not at all, 2 = Somewhat, 3 = Pretty well, 4 = Very well. Intoxication = Alcohol intoxication. Arousal = Sexual arousal. L_t = t -values for the Linear trend, Q_t = t -values for the curvilinear trend.

*** $p < .001$, ** $p < .005$, * $p < .05$.

regulation comes with a rebound effect on other negative emotions. We conducted analyses to see whether the relationship status of the participants was associated with higher levels of shame but did not find support for this.

Discussion

The main goal of the study was to explore the associations between reported levels of situational factors and the age of the online contact among adults with experiences of online sexual interactions with a stranger during the past year. The main finding of the present study was that situational factors reported by the participants surrounding the online interactions were not highly associated with the age of the contact (i.e., when adult contacts were compared to either 13-year-olds or younger, or 14- to 17-year-olds). Our results, however, indicated that engaging in online sexual interactions was associated with alleviated negative emotional states after the interactions (at least temporarily) compared to before the interactions. When collapsing both genders and both age groups of contacts, the results showed an increase in shame after the interactions.

Reported Levels of Situational Factors Preceding the Interactions

Four out of five participants who had interacted sexually with a child or an adolescent had also interacted in similar fashion with adults. The first aim of the study was to explore whether participants with a child or adolescent contact would report higher levels of alcohol intoxication, sexual arousal, or negative emotional states preceding the interaction, compared with those who had an adult contact. Most of our results did not support this notion. Participants with an adult contact reported remarkably similar levels of the situational factors preceding the interactions as those reported by participants with a child or adolescent contact when the analyses were conducted separately for male and female participants. We found only one minor difference between these two groups: a gender-specific effect, suggesting that women with a child or adolescent contact reported higher levels of shame compared with women with an adult contact only. Because this difference was not significant after adjusting for multiple testing, this effect must be replicated in future studies.

When we collapsed over participant gender and reran the analyses for between-group comparisons on the levels of situational factors preceding the interactions, differences between participants with an adult contact and those with a child or adolescent contact emerged. Participants with a child or adolescent contact reported significantly higher levels of sexual arousal, as well as perceived level of shame, compared with those with an

adult contact. The higher level of arousal in participants with child or adolescent contacts suggests that sexual arousal may increase the proclivity of some adults to engage in online sexual interactions with youth that may be otherwise inhibited through reflections of social and legal norms and reprimands. The higher levels of shame reported by the participants with child or adolescent contacts, compared with those with adult contacts, could indicate awareness of the inappropriateness of this behavior. However, these results did not withstand the adjustment for multiple testing and should therefore be regarded as indicative at most.

Association Between Age of Contact and Reported Levels of Situational Factors

Overall, the levels of situational factors had weak or no associations with the age of the contact in both men and women. The results indicate that adults who interact sexually with strangers online were very similar in how affected they perceived themselves to be by alcohol, arousal, and most of the negative emotional states investigated. An association between the age of the contact and the reported levels of situational factors was found only within the group of men. Men with a child or adolescent contact reported significantly higher levels of shame than men with an adult contact (again, this association did not withstand a Bonferroni adjustment). Previous research (Ariely & Loewenstein, 2006; Borg & de Jong, 2012; Quayle & Taylor, 2002) has found that when individuals were faced with stimuli that they found appealing in an aroused state, they felt distaste and disgust for some of the stimuli when they were not aroused. Because almost all of the men who had interactions with a child or an adolescent reported being sexually aroused during the interaction, the high reported level of shame after the interactions might be at least partly due to this. It is also possible that such high levels of shame might be due to their knowledge that they had engaged in a morally—and, in many countries, legally—condemned activity.

Emotional Regulation Through Online Sexual Interactions

Previous research suggests that some individuals have tendencies to engage in sexual behaviors or fantasies for the purpose of alleviating negative emotional states (Gee et al., 2003; Howells et al., 2004; Quayle et al., 2006). However, whether these sexual activities or interactions have the desired effect remains unknown. First, we analyzed the variance by using trend analyses. Due to small cell sizes in participants with a child or adolescent contact, only participants with adult contacts were sufficient in numbers for these analyses. The low levels of sadness and boredom during the interactions in men and women with an adult contact could indicate a momentary alleviation in these negative emotions, conceivably through

the distraction of the interactions. The lowest level of stress after the interactions could suggest a possible alleviation through online sexual interactions on this negative emotion. However, the peak in shame after the interactions suggested that online sexual interactions may have also negative emotional consequences.

To explore whether engaging in online sexual interactions was associated with an alleviation of negative emotional states, we compared reported levels of situational factors before the interactions with reported levels after the interactions. Because we found no significant differences between men or women or participants with different aged contacts, we analyzed all participants together. There was a difference in the reported levels in most of the situational factors. This might be due to actual changes, but it cannot be conclusively ruled out that these associations may be artifacts of the retrospective reporting employed in the present study. Retrospective self-report on immediate situational factors is demanding, and reporting perceived levels for three different time phases surrounding the interactions perhaps especially so. Robinson and Clore (2002) argued that when a person is asked to recall experienced emotions retrospectively, both random as well as systematic biases are probable (e.g., remembering emotions concerning only one part of an event, influenced by the frequency of the event occurring and how far back in time it occurred). It should be mentioned, however, that it would be difficult to study these behaviors in a more controlled fashion (observationally in real time) as this would likely affect the participants' online behaviors. Nonetheless, the results should thus be interpreted as the participants' perceptions of the interactions and the situation surrounding the interactions rather than direct observations.

The level of arousal was higher after the interaction compared to before the interaction. This could be a sign only that the time interval was too short to measure an alleviation effect of arousal. It has been found that one-fourth of men and half of women who engage in online sexual activities masturbate only after the interaction is over (Cooper, Morahan-Martin, Mathy, & Maheu, 2002). Hence, the reason for engaging in sexual interactions online in our sample may have been to become aroused. Also, the time surrounding the interactions was subjectively interpreted by the participants (e.g., "after" the interaction could have been interpreted as immediately after the interaction was over by some and as hours afterward by others). The results indicate that negative emotional states such as feeling sad, bored, and stressed were alleviated through the sexual interactions because the reported levels were higher before the interactions compared with after. However, nothing can be said about how long-lasting these effects were. The reported levels of shame were higher after the interactions compared to before. There were no significant differences in the level of shame reported in either contact age group between either men or women who were in a relationship

compared to those who were single. A possible explanation for the higher level of shame reported after could be that the participants interacted in such a way or discussed a topic that made them feel ashamed or interacted with such a person that they later felt was inappropriate.

Limitations

The results of the present study should be interpreted bearing in mind several limitations. First, the sampling frame and the response rate were unknown, as we could not know who and how many came across the link to the survey in the different online settings. An equally important limitation is that the results were based on retrospective self-reports, and the responses are therefore possibly influenced by recollection bias. An additional dilemma is that the responses to some of the items in the present study had a comparatively high proportion of missing values. Also, the lack of differences between male and female participants could be due to insufficient statistical power to detect some effects. For example, only 19 women reported an interaction with children or adolescents, and therefore some cell sizes were small, especially within the group of female participants. Another issue which should be addressed is that we did not receive knowledge of the exact age (as perceived by the participants) of the online contacts or where the participants resided during the interactions. One could assume that the variations in the national legislations on the age of consent could have been associated with different levels of, for example, shame and stress reported by the participants.

With these limitations in mind, we argue that the present study highlights a previously overlooked comparison, that is, between adult-adult online sexual interactions and adult-child or adult-adolescent interactions. The most significant finding in the study was that most individual and situational factors were shared by participants, regardless of the age of the contact. In other words, our results suggest that adult-adult and adult-child or adult-adolescent online sexual interactions appear to be quite similar in most aspects. This, in turn, would indicate that these factors may be inherently linked to persons engaging in online sexual interactions independent of the age of the contact. We argue that future research on the topic should not overlook the control group of adult-adult interactions as this may lead to an overestimation of the role of certain behaviors that may be shared and not specific to adult-child or adult-adolescent interactions.

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References

- Abbey, A., Zawacki, T., Buck, P. O., Clinton, A. M., & McAuslan, P. (2004). Sexual assault and alcohol consumption: What do we know about their relationship and what types of research are still needed? *Aggression and Violent Behavior, 9*, 271–303. doi:10.1016/S1359-1789(03)00011-9
- Ariely, D., & Loewenstein, G. (2006). The heat of the moment: The effect of sexual arousal on sexual decision making. *Journal of Behavioral Decision Making, 19*, 87–98. doi:10.1002/bdm.501
- Barraket, J., & Henry-Waring, M. S. (2008). Getting it on(line): Sociological perspectives on e-dating. *Journal of Sociology, 44*(2), 149–165. doi:10.1177/1440783308089167
- Bergen, E., Antfolk, J., Jern, P., Alanko, K., & Santtila, P. (2013). Adults' sexual interest in children and adolescents online: A quasi-experimental study. *International Journal of Cyber Criminology, 7*(2), 94–111. Retrieved from <http://www.cybercrimejournal.com/bergenetalijcc2013vol7issue2.pdf>
- Borg, C., & de Jong, P. J. (2012). Feelings of disgust and disgust-induced avoidance weaken following induced sexual arousal in women. *PLoS ONE, 7*(9), e44111. doi:10.1371/journal.pone.0044111
- Briddell, D. W., Rimm, D. C., Caddy, G. R., Krawitz, G., Sholis, D., & Wunderlin, R. J. (1978). Effects of alcohol and cognitive set on sexual assault to deviant stimuli. *Journal of Abnormal Psychology, 87*(4), 418–430. doi:10.1037/0021-843X.87.4.418
- Briggs, P., Simon, W. T., & Simonsen, S. (2011). An exploratory study of Internet-initiated sexual offenses and the chat room sex offender: Has the Internet enabled a new typology of sex offender? *Sexual Abuse: A Journal of Research and Treatment, 23*(1), 72–91. doi:10.1177/1079063210384275
- Charness, N., & Boot, W. R. (2009). Aging and information technology use: Potential and barriers. *Current Directions in Psychological Science, 8*(5), 253–258. doi:10.1111/j.1467-8721.2009.01647.x
- Conner, M., Sutherland, E., Kennedy, F., Grearly, C., & Berry, C. (2008). Impact of alcohol on sexual decision making: Intentions to have unprotected sex. *Psychology and Health, 23*(8), 909–934. doi:10.1080/08870440701596551
- Cooper, A., Morahan-Martin, J., Mathy, R. M., & Maheu, M. (2002). Toward an increased understanding of user demographics in online sexual activities. *Journal of Sex and Marital Therapy, 28*(2), 105–129. doi:10.1080/00926230252851861
- Cooper, A., Putnam, D., Planchon, L., & Boies, S. (1999). Online sexual compulsivity: Getting tangled in the net. *Sexual Addiction and Compulsivity, 6*, 79–104. doi:10.1080/10720169908400182
- Gee, D., Ward, T., & Eccleston, L. (2003). The function of sexual fantasies for sexual offenders: A preliminary model. *Behaviour Change, 20*(1), 44–60. doi:10.1375/bech.20.1.44.24846
- George, W. H., & Stoner, S. A. (2000). Understanding acute alcohol effects on sexual behavior. *Annual Review of Sex Research, 11*(1), 92–124. doi:10.1080/10532528.2000.10559785
- Howells, K., Day, A., & Wright, S. (2004). Affect, emotions, and sex offending. *Psychology, Crime, and Law, 10*(2), 179–195. doi:10.1080/10683160310001609988
- Imhoff, R., & Schmidt, A. F. (2014). Sexual disinhibition under sexual arousal: Evidence from domain specificity in men and women. *Archives of Sexual Behavior*. Manuscript submitted for publication.
- Jones, L. M., Mitchell, K. J., & Finkelhor, D. (2012). Trends in youth Internet victimizations: Findings from three youth Internet safety surveys, 2000–2010. *Journal of Adolescent Health, 50*, 179–186.
- Livingstone, S., Haddon, L., Görzig, A., & Ólafsson, K. (2011). *Final report, EU kids online II*. Retrieved from <http://www2.lse.ac.uk/media@lse/research/EUKidsOnline/EU%20Kids%20II%20%282009-1129/EUKidsOnlineIIReports/Final%20report.pdf>
- MacDonald, T. K., MacDonald, G., Zanna, M. P., & Fong, G. T. (2000). Alcohol, sexual arousal, and intentions to use condoms in young men: Applying alcohol myopia theory to risky sexual behavior. *Health Psychology, 19*(3), 290–298. doi:10.1037/0278-6133.19.3.290
- Malesky, L. A. (2007). Predatory online behavior: Modus operandi of convicted sex offenders in identifying potential victims and contacting minors over the Internet. *Journal of Child Sexual Abuse, 16*(2), 23–32. doi:10.1300/J070v16n02_02
- Marcum, C. (2007). Interpreting the intentions of Internet predators: An examination of online predatory behavior. *Journal of Child Sexual Abuse, 16*(4), 99–114. doi:10.1300/J070v16n04_06
- McFall, R. M. (1990). The enhancement of social skills: An information-processing analysis. In W. L. Marshall, D. R. Laws, & H. E. Barbaree (Eds.), *Handbook of sexual assault: Issues, theories, and treatment of the offender* (pp. 311–330). New York, NY: Plenum.
- Mitchell, K., Finkelhor, D., Jones, L., & Wolak, J. (2010). Use of social networking sites in online sex crimes against minors: An examination of national incidence and means of utilization. *Journal of Adolescent Health, 47*(2), 183–190. doi:10.1016/j.jadohealth.2010.01.007
- Mitchell, K. J., Finkelhor, D., & Wolak, J. (2007). Youth Internet users at risk for the most serious online sexual solicitations. *American Journal of Preventive Medicine, 32*(6), 532–537. doi:10.1016/j.amepre.2007.02.001
- Nakagawa, S. (2004). A farewell to Bonferroni: The problems of low statistical power and publication bias. *Behavioral Ecology, 15*(6), 1044–1045. doi:10.1093/beheco/arh107
- Núñez, J. (2003). Outpatient treatment of the sexually compulsive ephobophile. *Sexual Addiction and Compulsivity, 10*, 23–51. doi:10.1080/10720160309047
- Ono, H., & Tsai, H.-J. (2008). Race, parental socioeconomic status, and computer use time outside of school among young American children, 1997 to 2003. *Journal of Family Issues, 29*(12), 1650–1672. doi:10.1177/0192513x08321150
- Proulx, J., McKibbin, A., & Lusignan, R. (1996). Relationships between affective components and sexual behaviours in sexual aggressors. *Sexual Abuse: A Journal of Research and Treatment, 8*, 279–289.
- Quayle, E., & Taylor, M. (2002). Child pornography and the Internet: Perpetuating a cycle of abuse. *Deviant Behavior, 23*, 331–361. doi:10.1080/01639620290086413
- Quayle, E., Vaughan, M., & Taylor, M. (2006). Sex offenders, Internet child abuse images, and emotional avoidance: The importance of values. *Aggression and Violent Behaviour, 11*(1), 1–11. doi:10.1016/j.avb.2005.02.005
- Robinson, M. D., & Clore, G. L. (2002). Belief and feeling: Evidence for an accessibility model of emotional self-report. *Psychological Bulletin, 128*(6), 934–960. doi:10.1037/0033-2909.128.6.934
- Seto, M. C., Wood, J. M., Babchishin, K. M., & Flynn, S. (2012). Online solicitation offenders are different from child pornography offenders and lower risk contact sexual offenders. *Law and Human Behavior, 36*(4), 320–330. doi:10.1037/h0093925
- Shannon, D. (2008). Online sexual grooming in Sweden—online and offline sex offences against children as described in Swedish police data. *Journal of Scandinavian Studies in Criminology and Crime Prevention, 9*, 160–180. doi:10.1080/14043850802450120
- Steele, C. M., & Josephs, R. A. (1990). Alcohol myopia: Its prized and dangerous effects. *American Psychologist, 45*(8), 921–933.
- Strassberg, D., McKinnon, R., Sustaíta, M., & Rullo, J. (2013). Sexting by high school students: An exploratory descriptive study. *Archives of Sexual Behavior, 42*(1), 15–21. doi:10.1007/s10508-012-9969-8
- Webster, S., Davidson, J., Bifulco, A., Gottschalk, P., Caretti, V., Pham, T., ... Craparo, G. (2012, March). *European Online Grooming Project: Final report*. Retrieved from <http://www.europeanonlinegroomingproject.com/wp-content/file-uploads/European-Online-Grooming-Project-Final-Report.pdf>

- Wilson, A. E., Calhoun, K. S., & McNair, L. D. (2002). Alcohol consumption and expectancies among sexually coercive college men. *Journal of Interpersonal Violence, 17*(11), 1145–1159. doi:10.1177/088626002237399
- Wolak, J., Finkelhor, D., & Mitchell, K. (2004). Internet-initiated sex crimes against minors: Implications for prevention based on findings from a national study. *Journal of Adolescent Health, 35*(5), 424.e11–424.e20. doi:10.1016/j.jadohealth.2004.05.006
- Wolak, J., Finkelhor, D., & Mitchell, K. (2009). Trends in arrests of online predators. Crimes Against Children Research Center. Retrieved from <http://www.unh.edu/ccrc/pdf/CV194.pdf>
- Ybarra, M. L., Espelage, D. L., & Mitchell, K. J. (2007). The co-occurrence of Internet harassment and unwanted sexual solicitation victimization and perpetration: Associations with psychosocial indicators. *Journal of Adolescent Health, 41*(6), 31–41. doi:10.1016/j.jadohealth.2007.09.010