Research article

A linguistic analysis of grooming strategies of online child sex offenders: Implications for our understanding of predatory sexual behavior in an increasingly computer-mediated world[☆]

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A B S T R A C T

There is a large body of evidence to suggest that child sex offenders engage in grooming to facilitate victimization. It has been speculated that this step-by-step grooming process is also used by offenders who access their underage victims online; however, little research has been done to examine whether there are unique aspects of computer-mediated communication that impact the traditional face-to-face grooming process. This study considered the similarities and differences in the grooming process in online environments by analyzing the language used by online offenders when communicating with their victims. The transcripts of 44 convicted online offenders were analyzed to assess a proposed theory of the online grooming process (O'Connell, 2003). Using a stage-based approach, computerized text analysis examined the types of language used in each stage of the offender–victim interaction. The transcripts also were content analyzed to examine the frequency of specific techniques known to be employed by both face-to-face and online offenders, such as flattery. Results reveal that while some evidence of the strategies used by offenders throughout the grooming process are present in online environments, the order and timing of these stages appear to be different. The types (and potential underlying pattern) of strategies used in online grooming support the development of a revised model for grooming in online environments.

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With the continued growth and use of the Internet as a tool for communication worldwide, the manner in which people interact with one another is in a state of constant evolution. Although individuals from every generation are spending a substantial amount of time online, it has become particularly socially acceptable for younger individuals to form friendly and intimate relationships with strangers online (Visser, Antheunis, & Schouten, 2013; Wolak, Mitchell, & Finkelhor, 2003). A critical and very real concern with this, still relatively new, manner of forming relationships is that youth may be unknowingly forming bonds and sharing personal information with individuals with devious intentions, such as those hoping to identify potential victims for sexual assault (e.g., Lenhart, Purcell, Smith, & Zickuhr, 2010; Mitchell, Wolak, & Finkelhor, 2008). Approximately 80% of Canadian households have Internet access and 95% of American teens are using the Internet

(PewInternet, 2013; Statistics Canada, 2011), creating a large population of youth who are at risk of becoming victims of online crimes, including those that are sexual in nature.

The issue of online sexual predation has increasingly become the focus of research over the past decade (Mitchell, Jones, Finkelhor, & Wolak, 2013; Wright, 2009). A survey conducted in the United States revealed that as far back as 2001 (relatively early in the use of widespread online communication) approximately one in five youth were already being solicited for sex online annually (Mitchell, Finkelhor, & Wolak, 2001). Further, 3% reported receiving messages requesting offline contact and 5% had received a solicitation that made them feel very afraid or upset. A follow-up study five years later revealed that since the initial assessment, there was a 21% increase in the number of offenders arrested for soliciting sex from youth online (Mitchell, Finkelhor, Jones, & Wolak, 2010). These concerning numbers appear to be getting progressively worse, with more than 700,000 registered online sex offenders in the United States as of June 2010 (National Center for Missing & Exploited Children, 2010).

The most common victims of online sexual solicitation (and subsequent offline offending) are adolescents aged 13–17 years (Katz, 2013; Wolak, Finkelhor, & Mitchell, 2004). Although only a small percentage of these teens will ultimately be physically sexually assaulted, the consequences of both sexual abuse and forming a relationship with an offender online can be severe. Not only does such sexual abuse incur physical harm, it also can adversely impact a child's cognitive, emotional, academic, and psychological development (Dombrowski, Ahia, & McQuillan, 2003; Young & Widom, 2014). For these reasons, among others, it is crucial to understand the manner in which offenders target and pursue their victims to ensure that offenders are identified and intercepted as quickly as possible, before any abuse can occur.

Considering face-to-face predation, the process employed by many offenders to target and entrap victims is most commonly referred to as "grooming" (Finkelhor, 1984; Knoll, 2010; Lang & Frenzel, 1988; Sullivan, 2009). Grooming involves a specific set of steps that an offender employs with the intention of committing a sexual offence against a child, with specific goals including secrecy, compliance and ultimately gaining access to the child (Craven, Brown, & Gilchrist, 2006). Offenders use specific strategies (such as flattery) to coerce their victim into a sexual relationship and then use different strategies (such as threats or intimidation) to ensure that their victim remains complicit and keeps the nature of their relationship a secret (Craven et al., 2006; Knoll, 2010; Lang & Frenzel, 1988).

Although these particular tactics are used to lure victims in face-to-face offending, less is known about their use and effectiveness in computer-mediated offending. Of the early attempts to study this process in online settings, the most frequently cited model of grooming was proposed by O'Connell (2003) who posited a five-stage process that includes (1) friendship forming, (2) relationship forming, (3) risk assessment, (4) exclusivity, and (5) sexual stages. In the *Friendship Forming Stage*, the offender makes contact with, and gets to know, the target. They use small talk to subtly gather information about the target's life such as their age, gender, and interests. This stage may be re-visited numerous times depending on the level of contact the offender maintains with the victim. In the *Relationship Forming Stage*, the offender forms a bond with the target by discussing his/her friends, family, school and social life. The offender acts compassionate and understanding to attempt to gain the trust of the target. The *Risk Assessment Stage* is when the offender begins to inquire about the target's location, schedule, and the target's parent's schedule, using this information to determine the likelihood of being caught. The offender may begin to introduce sexual topics in this stage to assess whether the target will be likely to engage in sexual activity (Harms, 2007). In the *Exclusivity Stage* the offender attempts to establish a trusting but exclusive relationship with the target. They encourage the target to not disclose the nature of their relationship to others, and ensure the target's silence with various techniques such as playing on the target's guilt. Finally, in the *Sexual Stage*, when it is clear to the offender that the victim trusts them, they become more explicit about their intentions with the target. The offender may send the target pornography, ask about the target's past sexual experiences, and detail the sexual acts that he wishes to perform on him/her (e.g., McFarlane, Bull, & Reitmeijer, 2000). It is in this final stage that they will begin to discuss traveling to meet the target.

This theory of online grooming, developed using subjective and qualitative data collection methods, has not yet been empirically tested. However, there have been a number of attempts to differentiate online from offline offenders, including a comparison of their demographic and clinical characteristics (Mitchell, Finkelhor, Jones, & Wolak, 2010; Seto, Wood, Babchishin, & Flynn, 2012; Walsh & Wolak, 2005). For example, Babchishin, Hanson, and Hermann (2011) found online offenders to be younger, more likely to be single, and to feel greater empathy for their victims than their offline counterparts. Further, compared to face-to-face offenders there are arguably a wider variety of "types" of online offenders, including child pornographers, contact-driven offenders (offenders who groom for the purpose of offline sexual contact) and fantasy-driven offenders (offenders that are satisfied with keeping the relationship online; Seto et al., 2012). The needs and motivations of each of these offenders are diverse in ways that may be facilitated through online communication, from the profit driven offender who sells child pornography to online customers, to the fantasy-driven offender who is satiated by simply discussing taboo sexual topics with a minor online (Briggs, Simon, & Simonsen, 2011; Marcum, 2007). The current study focuses on the behavior of contact-driven offenders whose goal is to meet a target online with the intent to ultimately offend against the child in an offline setting. Despite identifying some potential similarities and differences between online and offline offenders, the previously discussed research does not speak directly to the manner in which offenders identify and groom potential victims.

Other studies have more specifically attempted to determine the manner in which online and offline offenders target their victims (e.g., see Whittle, Hamilton-Giachritsis, Beech, & Collings, 2013). However, these studies have had a number of limitations including relying on the self-report of both the offenders (e.g., Leclerc, Wortley, & Smallbone, 2011) and the adolescent victims (e.g., Katz, 2013), and the vast majority have also had to rely on small sample sizes (e.g., Katz, 2013;

Marcum, 2007). Despite these drawbacks, these studies have begun to identify a number of potential strategies that online offenders employ when identifying and interacting with potential victims. For example, preliminary research has shown that online interactions involve the building of rapport (with strategies such as showering targets with love and affection), introducing sexual topics to desensitize the target, and gauging their potential victim's interest and willingness to engage in sexual activity (Katz, 2013; Leclerc et al., 2011; Marcum, 2007). Additionally, Wolak, Finkelhor, Mitchell, and Ybarra (2010) identified that the most commonly reported strategy for locating online victims was to frequent chat rooms created specifically for adolescents, choose a target, and begin to build up rapport with him/her.

The limited results reported above suggest that online offenders do employ a number of observable strategies to increase the likelihood of a face-to-face interaction with the target (e.g., Katz, 2013; Leclerc et al., 2011; Marcum, 2007). Further, there is certainly some overlap in the strategies that online and offline offenders use, with some studies suggesting a progression that appears to be similar to face-to-face grooming (Katz, 2013; Leclerc et al., 2011; Marcum, 2007; Wolak et al., 2010). However, online offender's strategies have not, to date, been empirically assessed using a large enough sample that would allow for more confidence in the generalizability of the results, or provide any insights into the grooming pattern within these online environments. There is also a dearth of studies systematically examining the type of language used by online offenders. The current study sought to analyze a large dataset of online interactions between an offender and potential victim, rather than relying on the introspection and self-report of the offenders or victims themselves.

When evaluating the similarities and differences between the online and offline grooming process, it is important to consider specific features of online communication. While it has been noted that the use of the Internet does not necessarily change the fundamental manner in which humans behave and interact (e.g., Yzer & Southwell, 2008), there is evidence to suggest that the Internet influences the manner in which people communicate and develop relationships (Jiang & Hancock, 2013; Walther, 2010). For example, the Internet can, in some cases, afford both the offender and the target anonymity, potentially leading them to feel less inhibited and cautious about sharing personal information (McKenna, Green, & Gleason, 2002). There is also some evidence that this anonymity may result in individuals becoming more intimate in a shorter amount of time (McKenna & Bargh, 2000; Walther, 1996), or in divulging a large number of personal details about themselves to a complete stranger (e.g., Jiang, Bazarova, & Hancock, 2011; Joinson, 2001). Further, computer-mediated communication reduces many of the barriers (also known as "gate features") that individuals experience in face-to-face settings such as appearance, and possible stigmas that might prohibit a relationship from forming. If individuals are interacting in an online environment where there is an absence of nonverbal cues, some of these gate features are easily overcome (McKenna & Bargh, 1999).

Considering online grooming in particular, anonymity may also allow for offenders to develop intimate relationships with their targets more quickly, potentially allowing them to move through the stages of the grooming process more expediently, resulting in increased opportunities for sexual offending. Further, the lack of "gate features" also is an advantage for online offenders as they are able to access their targets directly without having to worry about the stigma of being seen in public with an underage target or the target's parents being as likely to interfere.

Although the results of previous research suggests that online sex offenders also engage in grooming behavior when choosing and interacting with victims, the potential progression and nature of these interactions have not been empirically tested, with no previous research examining O'Connell's (2003) proposed model of online grooming. Further, only a small number of studies (e.g., Bogdanova, Rosso, & Solorio, 2012; McGhee et al., 2011; Pendar, 2007; Rahman Miah, Yearwood, & Kulkarni, 2011) have examined the online interactions between offenders and potential victims using automated language analysis tools. To date, these studies have employed linguistic algorithms to create computer programs to identify online offenders, and not to study the psychological underpinnings and strategies that can be derived from the language used in the transcripts. As such, the purpose of the current study is to, for the first time, examine the proposed model of online grooming on a relatively large sample using linguistic analysis, and also, to assess whether the specific strategies and grooming stages that are used by face-to-face offenders (such as flattery and intimidation) are also employed by online offenders. It is hypothesized, based on existing limited research that objective analysis of the offender–victim interactions will reveal that online offenders employ the grooming strategies (e.g., flattery, risk assessment, intimidation) used by face-to-face offenders and theorized by O'Connell (2003). However, considering the unique features of the Internet, it is proposed that there may be some variation and idiosyncratic aspects of the online grooming process. For example, based on previous studies on relationship forming in online environments, language denoting relationship development and the building of rapport may be present, but in an expedited manner due to the communication medium.

Method

Participants/Materials

Offender Transcripts Database. The transcripts were extracted from the *Perverted Justice* (www.perverted-justice.com) website. The Perverted Justice Foundation (PJF) is a non-profit organization committed to catching and exposing online sexual offenders in the United States. PJF trains volunteers ("decoys") to enter online chat rooms posing as adolescents in an effort to attract and subsequently ensnare sexual offenders. Decoys wait for sexual offenders to initiate conversation and if the conversation turns sexual the decoy plays along and agrees to meet the individual (now "offender"), often inviting them to his/her house. The decoy then contacts the police to make the arrest upon the offender's arrival. Once the offender has been

convicted, PJF makes the chat transcripts available to the public on their web page. For the current study, the conversations of 44 offender-decoy pairs were randomly selected and downloaded for analysis. All of the 44 offenders included in the current study are men whose ages range from 25 to 54 years who believed that they were conversing with an adolescent male or female (aged 12–15 years) and who were convicted in the USA for the crimes incurred within the transcripts. Specifically, the sample is comprised of 38 offenders who believed they were conversing with underage females and 6 who attempted to prey on underage males. The pairs engaged in an average of 5.14 conversations (*SD* = 5.26) on an average of 4.36 (*SD* = 4.61) individual days. Overall, the online relationships lasted for an average of 8.75 days (*SD* = 11.06), with a range from 1 to 47 days.

Linguistic Inquiry Word Count. The transcripts were analyzed using the computer program Linguistic Inquiry and Word Count (LIWC). The LIWC program scans transcripts word for word and compares each word to its dictionary, resulting in a total percentage of use for each word category relative to the total word count of the transcript (Tausczik & Pennebaker, 2010). Dictionaries in LIWC contain compilations of words that represent popular and psychologically significant word categories; this program has been used to examine facets such as: attention, emotion, individual differences, relationships, and thinking styles (Tausczik & Pennebaker, 2010) and has been employed in studies to assess the cognitions of offender samples (e.g., Hancock & Woodworth, 2013; Hancock, Woodworth, & Porter, 2013).

Content Analysis of Strategies. The transcripts were also analyzed using a manual coding procedure to identify specific types of strategies used throughout the communications. Each of the transcripts was coded for the presence, and frequency of use, of strategies derived from each of the stages of O'Connell's theory of online grooming. The strategies that were coded for include the use of flattery (friendship forming), inquiring about the target's parents' schedule (risk assessment), asking the target whether he/she was an undercover police officer or probing if there was a possibility that it was a sting (risk assessment), remarking that his behavior/the relationship was inappropriate to gauge the target's reaction (risk assessment), and mentioning the dangers of communicating with others on the Internet to assess the child's degree of suspiciousness (risk assessment), expressing love and trust (exclusivity), the broaching of the target's past sexual experience to gauge interest in engaging in sexual behavior (sexual stage), and the assessment of the possibility of travel to meet the child (sexual stage). Following this, the first author along with an undergraduate student coded all 44 transcripts for the presence, and frequency of, each of these strategies. Inter-rater reliability correlations ranged from .34 to .96 for frequency of use of each category and kappa values ranged from .72 to .95 for presence of strategy.

Procedure

Once downloaded, the offender's speech was isolated from the decoys' for LIWC and content analysis. In order to analyze offender discourse across the theorized stages of the grooming process (see O'Connell, 2003) each transcript was divided into five parts based on the total word count, following other established methods for segmenting online discourse into stages by word count (e.g., Danescu-Niculescu-Mizil et al., 2013). Segmenting the text files into five equal parts allowed for a high-level quantitative testing of the five phases of the predatory process and to test if the offender–decoy interactions follow the predicted patterns based on the theoretical grooming process.

Once parsed apart, the transcripts were run through the LIWC program. Several specific language categories from the LIWC dictionary were used to represent the different phases of grooming based on the purpose of the particular stage (see Table 1 for the specific word types chosen to represent each stage of the grooming process and examples of words found within those categories). Following the LIWC analysis, the transcripts also underwent a content analysis.

Results

LIWC Coding

A multi-level analysis was used, in which each of the five segments was nested within offender using a MIXED model. Five models were computed, one for each language type (friendship, relationship, risk assessment, exclusivity, and sexual-contact terms) and each was entered as the dependent variable with "grooming process stage" as the independent variable. Descriptive statistics are presented in Table 2.

An analysis to determine whether stage-relevant terms would be used by offenders in their corresponding stage of grooming was conducted. Results revealed that friendship terms were not used more in the first stage of the grooming process $F(4, 158) = 0.78$, $p = .54$, and that relationship terms were not used more in the second stage of the grooming process, $F(4, 171) = 0.48$, $p = .75$. The third analysis revealed that risk assessment terms were employed more frequently in some stages than others, $F(4, 129) = 2.43$, $p = .05$, and post hoc pairwise comparisons revealed that both stages one ($p = .01$) and two ($p = .02$) had significantly more risk assessment related words than stage three. The fourth analysis also was significant, $F(4, 168) = 2.88$, $p = .02$, with post hoc comparisons revealing that offenders use more exclusivity terms in stages three ($p = .01$) and four ($p = .003$) than during the first stage.

Finally, the analysis of the sexual terms only approached significance, $F(4, 169) = 2.24$, $p = .067$. To further explore the relationship between the word categories and the fifth stage in the grooming process, the word categories were broken

Table 1
LIWC word categories chosen for each stage of the grooming process.

LIWC word categories	Language examples
Friendship forming stage	
You	You
Friend	Friend, boyfriend, girlfriend, lover
Social	Adult, anyone, personal, party, outsider, fight, story, mentions, dating, helpful, phone, private, public, gossip
Work	Homework, office, school
Leisure	Art, bands, game, hangout, sport, television, movie
Relationship forming stage	
Positive emotion	Cares, casual, cherish, comfort, cute, nice, LMAO
Achieve	Best, better, confidence, control, important, work
Money	Income, store, value, rich, wealth, compensate
Religion	Church, God, heaven, hell, sacred, paradise
Risk assessment stage	
Family	Daughter, mother, husband, aunt
Home	Apartment, kitchen, family
They	They, their, they'd
Negative emotion	Crap, cry, difficult, hate, heartbreak, tough, unimportant, punish, sad, lose
Anxious	Worried, fearful, nervous
Exclusivity stage	
Negate	Needn't, neither, no, never, nope, nothing, shouldn't, wasn't, won't
We	We
Quantitative	Greatest, lots, part, same, somewhat, single, several
Discrepancy	Could, couldn't, desire, hope, need, normal, ought, prefer, rather, want, wish, would, wouldn't
Exclusive	But, without, exclude
Sexual stage	
Feel	Caress, feel, grab, hot, rough, rub, squeeze, touch, wet
Biology	Erection, jizz, sex, foreplay, nipple, fucked, hug, condom
Body	Anal, ass, breast, chest, cock, dick, pussy, horny, tit, vagina
Time	After, anytime, date, early, evening, fast, hurry, immediately, whenever, today, tomorrow, tonight, soon, now
Motion	Appear, arrive, car, change, coming, drive, go, going, leaving, visit
Space	Anywhere, around, near, everywhere, street, map, where
Relative sexual	Anytime, city, close, far, heading, rush, whenever, weekend Horny, love, incest

down in to a "sexual terms" and "meeting terms" category to better represent the two important aspects of this stage. The hypothesis that sexual terms would be more prevalent in stage five was not supported, $F(4, 164) = 2.85$, $p = .03$, as post hoc comparisons revealed that stage three had significantly more "sexual terms" than stage one ($p = .004$) and stage four ($p = .006$) and that stage 5 did not have a significantly higher number of sexual terms. Stage 5 also did not have more meeting terms, $F(4, 171) = 1.47$, $p = .22$.

Content Analysis

The results of the LIWC analysis indicated that there are differences in the types of word use across stages, particularly for those related to risk assessment. To further explore the role of risk assessment and other strategies used by online offenders, the transcripts also were manually content analyzed. First, the total number of techniques that each offender used was recorded (see Fig. 1 for the frequency that each of the trends was employed). Assessing the target's location and attempting to make plans to meet, using flattery and compliments, and assessing for the target's parent's work schedule were used most often. The mean number of techniques used by each offender was 4.63 ($SD = 1.43$). All offenders used at least one of the identified strategies, and 4.5% of offenders used seven of the eight techniques.

Table 2
Means and standard estimates for stage-related terms across each stage.

| Language type	Stage				
	Stage 1: friendship M (SE)	Stage 2: relationship M (SE)	Stage 3: risk assessment M (SE)	Stage 4: exclusivity M (SE)	Stage 5: sexual M (SE)
Friendship related terms	9.92 (.966)	10.27 (.968)	9.78 (.968)	10.52 (.968)	9.76 (.967)
Relationship related terms	10.66 (.555)	10.99 (.557)	10.31 (.557)	10.67 (.557)	11.12 (.556)
Risk assessment related terms	26.21 (.948)	25.95 (.950)	23.35 (.950)	24.19 (.950)	24.97 (.949)
Exclusivity related terms	17.94 (.661)	19.29 (.662)	20.15 (.662)	20.27 (.662)	19.22 (.661)
Sexual contact related terms	30.77 (1.156)	31.93 (1.160)	33.51 (1.160)	31.04 (1.160)	33.50 (.1.158)
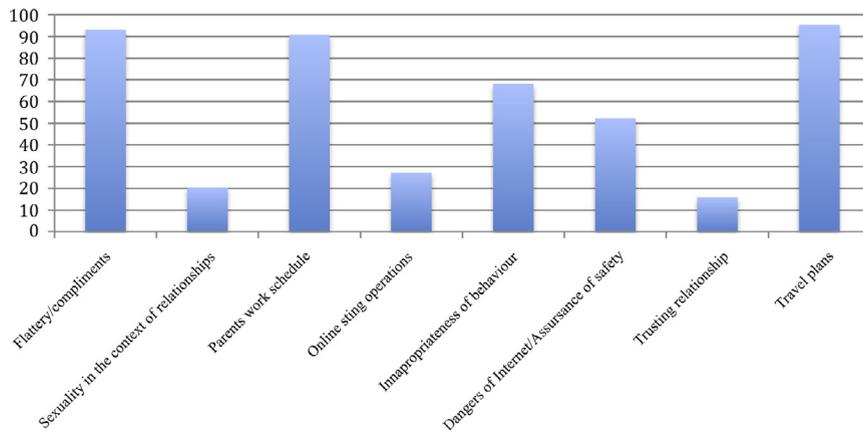
Fig. 1. The frequency of manipulation techniques used by online sexual offenders.

Subsequently, these specific strategies were compared within each stage using chi-square analyses to approximate the analyses run with the results of the LIWC analysis. The stage in which the strategy was first used was identified, and then stage at first use for each strategy was compared (see Table 3). The strategies related to risk were analyzed first. The chi-square analysis for first time assessing the target's parents' schedule in a particular stage was significant ($\chi^2 = 20.01$, $df = 4$, $p < .001$), revealing that almost half (15 of 37) employed this strategy in the first stage, and 68% of the sample had enquired about parent's schedule by the second stage. Acknowledging the possibility of the target being a decoy was not significant ($\chi^2 = 4.58$, $df = 4$, $p = .33$), though those who did employ this strategy were more likely to have mentioned it in the first three stages (11 of the 13). The mention of their behavior being inappropriate was used significantly more in the first stage ($\chi^2 = 28.89$, $df = 4$, $p < .001$), as was the discussion of the dangers of communicating with strangers over the Internet ($\chi^2 = 13.57$, $df = 4$, $p = .009$).

The remaining strategies that were analyzed also revealed interesting patterns. The chi-square for the analysis of the first strategy was significant ($\chi^2 = 114.50$, $df = 4$, $p < .001$), revealing that of the 39 offenders who employed the use of flattery, 32 first used it in the first stage. The analysis for "broaching sex in the context of relationships" was significant ($\chi^2 = 41.86$, $df = 4$, $p < .001$), revealing that of the 29 offenders who employed this strategy, 18 first mentioned it in the first stage. The declaration of love and trust for the target was not significant ($\chi^2 = 2.94$, $df = 4$, $p = .57$), though an analysis of the trends in the data reveals that it was first mentioned most often in stages 2 (the relationship building stage) and 4 (the exclusivity stage). Finally, all 44 offenders asked questions pertaining to the target's address and potential for travel, and the topic was broached most often in the first stage (52%).

Discussion

The current work examining whether convicted online sexual offenders communicate in a manner that is readily iden-tifiable and congruent with the five-stage process of online grooming proposed by O'Connell (2003) revealed a number of informative trends. For example, while elements of each of the stages of grooming were present in these online interactions, the strategies employed did not occur in the linear step-by-step fashion proposed by O'Connell.

Discourse indicative of the risk assessment stage, which is assumed to most typically occur after a relationship has been established in offline sexual predation, was most prevalent in the initial stage of the conversation. In fact, analysis revealed that most risk assessment words, such as mother, father, worry, nervous, and home, were used significantly more frequently in the first and second segments of the transcripts, suggesting that the offender's assessment of risk is advanced in online contexts relative to face-to-face grooming. The follow-up content analysis of strategies also supported this finding, showing that, in the first 20% of the conversation, offenders were most likely to ask about the parents' schedule and other potential

Table 3
Results of first use of strategies chi-square analyses.

Stage	Strategy				
	1	2	3	4	5
Parents' schedule	40.5%	27.0%	16.2%	16.2%	0%
Online stings	23.1%	30.8%	30.8%	15.4%	0%
Inappropriate behavior	57.1%	17.9%	7.1%	7.1%	10.7%
Danger of Internet	53.8%	7.7%	30.8%	0%	7.7%
Flattery	82.1%	7.7%	5.1%	2.6%	2.6%
Sex in relationships	62.1%	24.1%	6.9%	3.4%	3.4%
Love/trust	15.4%	30.8%	15.4%	30.8%	7.7%
Possibility of travel	52.3%	29.5%	13.6%	4.5%	0%

logistical impediments, such as "so are you by yourself?" and "what hours do your parents work?" and if the target was a decoy planted by the police. Further, they asked a number of questions meant to gauge the youth's level of knowledge about the risk of Internet interactions, such as, blatantly stating that their behavior was inappropriate, such as "I'd go to jail for 20 years if I touched you" and discussing the dangers of the Internet more generally.

The early introduction of risk assessment type words and questions online may occur for a number of reasons specifically related to the computer-mediated interaction. This includes awareness of the frequency of online stings, increased anonymity, and an attempt to determine whether the target is worth investing their time into as a potential victim. In the current study, 27% of offenders brought up the possibility of online sting operations, commenting on the possibility that the target was an undercover decoy, asking them whether they were a police officer or decoy for a sting operation, and commenting that their relationship would warrant an appearance on Dateline's "*To Catch a Predator*." Online offenders have cause to be concerned about the presence of online stings as they are becoming more prevalent, with both police officers and volunteer groups like PJF putting decoys on the Internet. Indeed, in a recent study of convicted online sexual offenders, 90% of the sample had been apprehended due to an online sting (Briggs et al., 2011). Due to the popularity of these stings, and the anonymity inherent to some Internet interaction (Cooper, 1998), offenders cannot confirm with whom they are conversing and want to ensure quickly and efficiently that they will not be caught. However, while a number of offenders did ask whether the target was a decoy, a single negative response from the target appeared to be enough to assure that offenders that they were safe. Ironically, as mentioned earlier, all of the individuals in the current study were, in fact, caught as part of a law enforcement operation.

Differences in risk assessment are potentially related to another difference between online and offline predatory relationships, familiarity. While, the vast majority of online sexual offender relationships are formed between an adult and an adolescent who are strangers, many face-to-face predatory relationships occur between an adult and a child who are acquainted. As such, risk is more easily evaluated and can inform whether the offender will even attempt to make contact. This advantage is not afforded to online offenders, who must be more direct in their calculation of risk.

Offenders may also assess the risk for conversing with a specific target at an earlier stage (compared to face-to-face interactions) in an attempt to determine whether the target is worth pursuing. Unfortunately, online offenders have access to a seemingly endless number of potential targets on the Internet. In fact, there is evidence that online offenders often are in more than one chat room at a time and may be engaging in grooming more than one victim at any given time (Briggs et al., 2011). Offenders may begin to assess risk much earlier in their interactions in an attempt to ensure that there is a high likelihood they will be successful in initiating contact with the victim before investing too much time and effort. Indeed, the strategy-based analysis revealed that an overwhelming number of offenders broached the subject of sex with their targets even within the first analyzed stage of grooming (e.g., within the first 20% of contact time with the victim). This expedited introduction of sexual topics in an online environment (compared to face-to-face) also demonstrates how quickly offenders are introducing very blunt and explicit sexual comments and enquiries in their computer-mediated communication. For example, offenders in the current study asked questions such as "are you a virgin?" and "do you like to mess around? Like sexually?" The target's response is likely to inform their decision regarding whether they should continue pursuing a relationship. Offenders may feel that if they are unlikely to receive sexual gratification from one child, there are many other vulnerable children available with whom they may have a better chance of manipulating. This expedited sharing of personal and sensitive information, and the speed at which relationships develop in computer-mediated environments has been found in previous studies examining relationship forming online (Hancock & Woodworth, 2013; Hancock & Dunham, 2001; Walther, 1996, 2010), and appears to also occur in predatory relationship forming.

The majority of offenders also inquired about the child's location and living situation almost immediately upon beginning a conversation with the potential target. These queries were often about either the exact location of the child (such as "what town do you live in?" or "what is your address?"), or could be more subtle, or relate to the logistics of offending, (such as "do you live near [insert town name]?", "do you live near a mall?", or "do you have nosy neighbors?"). With most of these questions it is apparent that the offender is attempting to determine whether they will have relatively easy access to the child, and how logistically challenging it will be to commit the offence. In cases where it quickly becomes apparent that it will be difficult to access the child, the assumption would be that they would seriously consider moving on to another more convenient target who lives closer. However, it should be noted that in some cases even when the potential victim lived a substantial distance away, a number of offenders traveled long distances to reach their potential victims (in some cases even across state lines), demonstrating their level of motivation to offend.

Despite finding that many of the strategies involved in the grooming process were introduced at an early stage of online communication, "exclusivity" related terms were employed significantly more in the third and fourth segments of the transcripts. This was demonstrated by both the LIWC and content analysis, and is in line with both face-to-face and O'Connell's proposed model of online grooming. It would appear that even in online environments, offenders hold off on expressing affection, love and trust for the target until after they have developed sufficient rapport. However, only 13 of the 44 offenders in this sample actively attempted to use exclusivity strategies, such as commenting on the "loving" nature of their relationship with the target, to keep their relationship a secret. Further, offenders in the current study did not employ threats or other forms of intimidation as a strategy to ensure that the target kept their online relationship a secret.

This pattern differs from offline environments where strategies of exclusivity, including both expressions of love and overt threats, are one of the most commonly employed techniques to ensure the victim does not expose their relationship (Berson, 2003; Sullivan, 2009). Again, it may be due to the online environment in which the perpetrator/target are interacting

that eliminates the immediate need for such secrecy. The anonymity of the Internet, as well as increased confidence that the potential victims' caregivers are not actively monitoring their online interactions (see Briggs et al., 2011), may provide the offender with a false sense of confidence, removing the perceived level of necessity in ensuring the victim remains compliant. Intriguingly, in online settings, due to the absence of nonverbal cues, it maybe that offenders are less able to use tactics that reinforce and highlight their position as an adult (or someone in a position of authority), such as their size, to manipulate and control their targeted victim. Further, in face-to-face predatory relationships it is also likely that strategies such as overtly threatening the victim, often happen *after* a sexual offence has occurred and are intended to both keep the offence a secret and enable the offender to potentially offend against the victim again.

Finally, there were no differences in the use of friendship- and relationship-forming words across each of the stages in the word-category analysis. This likely is due to the multi-conversation nature of the transcripts; regardless of the stage in which the previous conversation left off, the beginning of each new conversation included discussion about the both the offender and the decoys' activities that particular day–both word types included in the friendship-forming stage. LIWC analysis revealed that friendship/relationship words were used frequently throughout all five segments of the transcripts. Further, the content analysis demonstrated that flattery, which is a strategy often used by offline offenders, was used by the majority of the offenders (89%), particularly in the first stage of conversation. This included statements such as "you are so pretty" and "you must be so smart", and often the flattery was used as an opening line, to increase the likelihood that the target would respond positively. As there are a substantial number of people to communicate with on the Internet, it is likely important for the offender to engage and keep the attention of their target long enough to begin to build rapport.

Limitations and Future Directions

The current study examined conversations between adult male offenders who believed that they were communicating with adolescents. As such, the results of this study should not be extrapolated to the grooming process used by female sex offenders. Research comparing the face-to-face grooming and offending processes of male and female sex offenders has revealed that there are notable and important differences between the two, which might translate to computer-mediated offending as well (Gannon, Rose, & Ward, 2008). Future research should assess whether male and female online offenders approach the grooming process differently. Further, differences in the approach to grooming adolescent males versus females should be explored.

A second limitation of the current study is that researchers were not privy to the entire conversation between offender and decoy, as they sometimes indicated in the transcripts that they had also communicated through other mediums such as the telephone. Generally, these communications were brief (approximately one minute long) and were a tool used by the offender to confirm that the target was not a decoy. Nonetheless, the current approach combining linguistic and content analysis approaches was still able to detect the relevant aspects of offender language as it pertains to the grooming process. As using a variety of communication modalities is common in online offending relationships (see Wolak et al., 2004), future studies should examine whether offenders behave differently, or employ different strategies, on the phone or through text messaging than they do in private conversations online.

A third limitation of the current study was the inclusion of transcripts of conversations with decoys and not real adolescent victims. As people speak differently throughout their lifespan in potentially identifiable ways, it is important to determine whether the decoys are accurately and convincingly portraying underage individuals and whether grooming strategies differ when being used on actual adolescents (Briggs et al., 2011; Urbas, 2010). Further, while the current study endeavored to closely examine the language of the perpetrators, a follow-up study should examine the language of both the offenders and the targets to reflect the dyadic nature of these interactions and to address the potential influence of language style matching.

Additionally, future research should consider using a larger sample of transcripts. The current study included 44 randomly selected transcripts in the analyses, approximately 10% of the available transcripts. Despite using a small percentage of transcripts, the results provided important insights into the process of, and strategies used in, online grooming. Increased sample size might allow for a more detailed understanding of the specific strategies used in the grooming process.

Conclusion

The results of the current study suggest that online offenders employ strategies consistent with the face-to-face grooming process, but that their strategies vary in some important ways from both face-to-face and O'Connell's (2003) proposed model of online grooming. Many of the strategies common in face-to-face grooming, such as discussing plans for travel, using flattery, assessing parent's work schedule, and broaching sexuality in the form of past relationships, are present in the transcripts. However, evaluation of specific language trends and the progression of the conversation suggest that the manner in which and timing of the strategies employed in online environments may differ from face-to-face encounters. Specifically, both LIWC analyses and the content analysis found that certain aspects of grooming, such as assessing risk, and assessing potential for victimization were observed more often within the first 40% of their computer-mediated communication. Indeed, a number of the key grooming tactics were present within even the first 20% of the transcripts.

While there was a general increase in overall sexual content toward the latter parts of the transcripts, the early introduction of sexual content in the transcripts highlights differences in the progression of the online grooming process. The current

data suggests that although online offenders use the majority of the strategies found to be involved in offline offending, they do so in a much expedited manner, assessing risk immediately, and also employing a number of strategies concurrently, interspersing flattery with subtle and not-so subtle risk assessment at the beginning of each interaction. Further, within a relatively short time (or sometimes within an extremely limited amount of time) they have built up their comfort level in these interactions to begin to introduce sexually explicit language and personal topics (see Webster et al., 2012; Whittle et al., 2013 for additional evidence that suggests online grooming is not a linear process).

As noted above, this lack of a linear process is likely influenced by some of the unique features of online communication, that presents both easier access as well as challenges (such as the lack of nonverbal cues) compared to a face-to-face environment. Indeed, O'Connell (2003) also acknowledged that online offenders' grooming patterns might not necessarily follow the exact same progression as face-to-face environments. In particular, the initial lack of certainty of whom they are interacting with in online environments provides the offender with unique challenges. While they may benefit from (perceived) anonymity, it is difficult for offenders to truly know with whom they are communicating. The transcripts revealed that despite an awareness of the prevalence of online sting operations, offenders continue to use this medium to find victims. Further, the Internet keeps a permanent record of everything that the offender communicates to their target, facilitating police investigations. Additionally, automated computer programs that will identify potential sexual offenders in real time based on their language use are currently being tested (see Bogdanova et al., 2012; McGhee et al., 2011; Pendar, 2007; Rahman Miah et al., 2011). The results of the current study suggest that regardless of the presence of these programs intended to catch online perpetrators, offenders will continue to pursue victims online. Fortunately, the results of this study can inform the creation of these programs by providing detailed information into the types of language, and strategies, that offenders use when seeking, and grooming, potential victims online.

The current study has demonstrated that while offenders do engage in many aspects of grooming, differences in the communication medium have implications on the timing and utilization of these strategies. An enhanced knowledge of the mechanics between online predation will better enable police to both identify offenders before they are able to offend against their target, as well as to gain important insights into the motivations and techniques fueling online predation.

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References

Babchishin, K. M., Hanson, R., & Hermann, C. A. (2011). The characteristics of online sex offenders: A meta-analysis. *Sexual Abuse: Journal of Research and Treatment*, *23*, 92–123. http://dx.doi.org/10.1177/1079063210370708

Berson, I. R. (2003). Grooming cybervictims: The psychosocial effects of online exploitation for youth. *Journal of School Violence*, *2*, 5–18. http://dx.doi.org/10.1300/J202v02n01_02

Bogdanova, D., Rosso, P., & Solorio, T. (2012). Modelling fixated discourse in chats with cyberpedophiles. In *Proceedings of the EACL workshop on computational approaches to deception detection* (pp. 86–90).

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: Journal of Research and Treatment*, *23*, 72–91. http://dx.doi.org/10.1177/1079063210384275

Cooper, A. (1998). Sexuality and the Internet: Surfing into the new millennium. *Cyberpsychology & Behavior*, *1*, 187–193. http://dx.doi.org/10.1089/cpb.1998.1.187

Craven, S., Brown, S., & Gilchrist, E. (2006). Sexual grooming of children: Review of literature and theoretical considerations. *Journal of Sexual Aggression*, *12*, 287–299. http://dx.doi.org/10.1080/13552600601069414

Danescu-Niculescu-Mizil, C., West, R., Jurafsky, D., Leskovec, J., & Potts, C. (2013). No country for old members: User lifecycle and linguistic change in online communities. In *Proceedings of WWW*.

Dombrowski, S. C., Ahia, C. E., & McQuillan, K. (2003). Protecting children through mandated child abuse reporting. *The Educational Forum*, *67*, 76–85. http://dx.doi.org/10.1080/00131720308984549

Finkelhor, D. (1984). *Child sexual abuse: New theory and research*. New York, NY: The Free Press.

Gannon, T. A., Rose, M. R., & Ward, T. (2008). A descriptive model of the offense process for female sexual offenders. *Sexual Abuse: Journal of Research and Treatment*, *20*, 352–374. http://dx.doi.org/10.1177/1079063208322495

Hancock, J., & Woodworth, M. (2013). An "Eye" for an "I": The challenges and opportunities for spotting credibility in a digital world. In B. S. Cooper, D. Griesel, & M. Ternes (Eds.), *Applied issues in investigative interviewing, eyewitness memory, and credibility assessment.*. New York, NY: Springer Publishing Co.

Hancock, J. T., & Dunham, P. J. (2001). Impression formation in computer-mediated communication revisited: An analysis of the breadth and intensity of impressions. *Communication Research*, *28*, 325–347. http://dx.doi.org/10.1177/009365001028003004

Hancock, J. T., Woodworth, M. T., & Porter, S. (2013). Hungry like the wolf: A word-pattern analysis of the language of psychopaths. *Legal and Criminological Psychology*, *18*, 102–114. http://dx.doi.org/10.1111/j.2044-8333.2011.02025.x

Harms, C. M. (2007). Information-seeking tactics in social networking websites. *Sex Offender Law Report*, *8*, 49–60.

Jiang, L. C., Bazarova, N., & Hancock, J. T. (2011). From perception to behavior: Disclosure reciprocity and the intensification of intimacy in computer-mediated communication. *Communication Research*, *40*, 125–143. http://dx.doi.org/10.1177/0093650211405313

Jiang, L. C., & Hancock, J. T. (2013). Absence makes the communication grow fonder: Geographic separation, interpersonal media and intimacy in dating relationships. *Journal of Communication*, *63*, 556–577. http://dx.doi.org/10.1111/jcom.12029

Joinson, A. N. (2001). Self-disclosure in computer-mediated communication: The role of self-awareness and visual anonymity. *European Journal of Social Psychology*, *31*, 177–192. http://dx.doi.org/10.1002/ejsp.36

Katz, C. (2013). Internet-related child sexual abuse: What children tell us in their testimonies. *Children and Youth Services Review*, *35*, 1536–1542. http://dx.doi.org/10.1016/j.childyouth.2013.06.006

Knoll, J. (2010). Teacher sexual misconduct: Grooming patterns and female offenders. *Journal of Child Sexual Abuse: Research, Treatment, & Program Innovations for Victims, Survivors, & Offenders*, *19*, 371–386. http://dx.doi.org/10.1080/10538712.2010.495047

Lang, R. A., & Frenzel, R. R. (1988). How sex offenders lure children. *Annals of Sex Research*, *1*, 303–317. http://dx.doi.org/10.1007/BF00852802

Leclerc, B., Wortley, R., & Smallbone, S. (2011). Getting into the script of adult child sex offenders and mapping out situational prevention measures. *Journal of Research in Crime and Delinquency*, 48, 209–237. http://dx.doi.org/10.1177/0022427810391540

Lenhart, A., Purcell, K., Smith, A., & Zickuhr, K. (2010). Pew Internet and American Life Project. In *Social media and mobile internet use among teens and young adult.* (Pew Internet publication 202-419-4500), Retrieved from http://www.pewinternet.org/Reports/2010/Social-Media-and-Young-Adults.aspx

Marcum, C. D. (2007). Interpreting the intentions of Internet predators: An examination of online predatory behavior. *Journal of Child Sexual Abuse: Research, Treatment, & Program Innovations for Victims, Survivors, & Offenders*, 16, 99–114. http://dx.doi.org/10.1300/J070v16n04_06

McFarlane, M., Bull, S. S., & Reitmeijer, C. A. (2000). The Internet as a newly emerging risk environment for sexually transmitted diseases. *Journal of the American Medical Association*, 284, 443–446. http://dx.doi.org/10.1001/jama.284.4.443

McGhee, I., Bayzick, J., Kontostathis, A., Edwards, L., McBride, A., & Jakubowski, E. (2011). Learning to identify internet sexual predation. *International Journal of Electronic Commerce, 15*, 103–122.

McKenna, K. A., & Bargh, J. A. (1999). Causes and consequences of social interaction on the Internet: A conceptual framework. *Media Psychology*, 1, 249–269. http://dx.doi.org/10.1207/s1532785xmep0103_4

McKenna, K. A., & Bargh, J. A. (2000). Plan 9 from cyberspace: The implications of the Internet for personality and social psychology. *Personality and Social Psychology Review*, 4, 57–75. http://dx.doi.org/10.1207/S15327957PSPR0401_6

McKenna, K. A., Green, A. S., & Gleason, M. J. (2002). Relationship formation on the Internet: What's the big attraction? *Journal of Social Issues*, 58, 9–31. http://dx.doi.org/10.1111/1540-4560.00246

Mitchell, K. J., Finkelhor, D., Jones, L. M., & Wolak, J. (2010a). Growth and change in undercover online child exploitation investigations, 2000–2006. *Policing & Society*, 20, 416–431. http://dx.doi.org/10.1080/10439463.2010.523113

Mitchell, K. J., Finkelhor, D., Jones, L. M., & Wolak, J. (2010b). 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, 183–190. http://dx.doi.org/10.1016/j.jadohealth.2010.01.007

Mitchell, K. J., Finkelhor, D., & Wolak, J. (2001). Risk factors for and impact of online sexual solicitation of youth. *Journal of the American Medical Association*, 285, 3011–3014. http://dx.doi.org/10.1001/jama.285.23.3011

Mitchell, K. J., Jones, L. M., Finkelhor, D., & Wolak, J. (2013). Understanding the decline in unwanted online sexual solicitations for U.S. youth 2000–2010: Findings from three Youth Internet Safety Surveys. *Child Abuse & Neglect*, 37, 1225–1236. http://dx.doi.org/10.1016/j.chiabu.2013.07.002

Mitchell, K. J., Wolak, J., & Finkelhor, D. (2008). Are blogs putting youth at risk for online sexual solicitation or harassment? *Child Abuse & Neglect*, 32, 277–294. http://dx.doi.org/10.1016/j.chiabu.2007.04.015

National Center for Missing and Exploited Children. (2010). *Map of registered sex offenders in the United States*. Retrieved from http://www.ncmec.org/en_US/documents/sex-offender-map.pdf

O'Connell, R. (2003). *A typology of cyber sexploitation and online grooming practices*. Preston, England: University of Central Lancashire. Retrieved from http://www.uclan.ac.uk/host/cru/docs/cru010.pdf

Pendar, N. (2007). Toward spotting the pedophile telling victim from predator in text chats. In *Proceedings of the International Conference on Semantic Computing* (pp. 235–241). http://dx.doi.org/10.1109/ICSC.2007.32

PewInternet. (2013). *Teens and technology 2013*. Retrieved from http://www.pewinternet.org/Reports/2013/Teens-and-Tech.aspx

Rahman Miah, M. D., Yearwood, J., & Kulkarni, S. (2011). Detection of child exploiting chats from a mixed chat dataset as a text classification task. In *Proceedings of Australian Language Technology Association Workshop* (pp. 157–165).

Seto, M. C., Wood, J., 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, 320–330. http://dx.doi.org/10.1037/h0093925

Statistics Canada. (2011). *Canadian Internet Use Survey*. Retrieved from http://www.statcan.gc.ca/daily-quotidien/110525/dq110525b-eng.htm

Sullivan, J. (2009). *Professionals who sexually abuse the children with whom they work* (unpublished Ph.D. thesis). School of Psychology, University of Birmingham.

Tausczik, Y. R., & Pennebaker, J. W. (2010). The psychological meaning of words: LIWC and computerized text analysis methods. *Journal of Language and Social Psychology*, 29, 24–54. http://dx.doi.org/10.1177/0261927X09351676

Urbas, G. (2010). Protecting children from online predators: The use of covert investigation techniques by law enforcement. *Journal of Contemporary Criminal Justice*, 26, 410–425. http://dx.doi.org/10.1177/1043986210377103

Visser, M., Antheunis, M. L., & Schouten, A. P. (2013). Online communication and social well-being: How playing World of Warcraft affects players' social competence and loneliness. *Journal of Applied Social Psychology*, 43, 1508–1517. http://dx.doi.org/10.1111/jasp.12144

Walsh, W. A., & Wolak, J. (2005). Nonforcible Internet-related sex crimes with adolescent victims: Prosecution issues and outcomes. *Child Maltreatment*, 10, 260–271. http://dx.doi.org/10.1177/1077559505276505

Walther, J. B. (1996). Computer mediated communication: Impersonal, interpersonal, and hyperpersonal interaction. *Communication Research*, 23, 3–43. http://dx.doi.org/10.1177/009365096023001001

Walther, J. B. (2010). Theories of computer-mediated communication and interpersonal relations. In M. L. Knapp, & J. A. Daly (Eds.), *The handbook of interpersonal communication*. Thousand Oaks, CA: Sage.

Webster, S., Davidson, J., Bifulco, A., Gottschalk, P., Caretti, V., Pham, T., Grove-Hills, J., Turley, C., Tompkins, C., Ciulla, S., Milazzo, V., Schimmenti, A., & Craparo, G. (2012). *European Online Grooming Project – Final report*. Retrieved from the European Online Grooming Program website: http://www.europeanonlinegroomingproject.com

Whittle, H., Hamilton-Giachritsis, C., Beech, A., & Collings, G. (2013). A review of online grooming: Characteristics and concerns. *Aggression and Violent Behavior*, 18, 62–70. http://dx.doi.org/10.1016/j.avb.2012.09.003

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, 11–20. http://dx.doi.org/10.1016/j.jadohealth.2004.05.006

Wolak, J., Finkelhor, D., Mitchell, K. J., & Ybarra, M. L. (2010). Online "predators" and their victims: Myths, realities, and implications for prevention and treatment. *Psychology of Violence*, 1, 13–35. http://dx.doi.org/10.1037/2152-0828.1.S.13

Wolak, J., Mitchell, K. J., & Finkelhor, D. (2003). Escaping or connecting? Characteristics of youth who form close online relationships. *Journal of Adolescence*, 26, 105–119. http://dx.doi.org/10.1016/S0140-1971(02)00114-8

Wright, R. G. (2009). Internet sex stings. In R. G. Wright (Ed.), *Sex offender laws: Failed policies, new directions* (4th ed., pp. 117–158). New York, NY, USA: Springer Publishing Co.

Young, J. C., & Widom, C. S. (2014). Long-term effects of child abuse and neglect on emotion processing in adulthood. *Child Abuse & Neglect*, 38(8), 1369–1381. http://dx.doi.org/10.1016/j.chiabu.2014.03.008

Yzer, M. C., & Southwell, B. G. (2008). New communication technologies, old questions. *American Behavioral Scientist*, 52, 8–20. http://dx.doi.org/10.1177/0002764208321338