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Implicitly Measured Cognitions of Child Molesters

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Implicitly Measured Cognitions of Child Molesters

Kevin L. Nunes

Thesis submitted to the School of Graduate Studies and Research of the University of Ottawa in partial fulfillment of the requirements for the degree of Doctor of Philosophy

School of Psychology

University of Ottawa

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Abstract

Although many theoreticians have posited that cognitions concerning self, children, and other adults play a central role in the etiology and maintenance of child sexual abuse, knowledge in the area remains incomplete due, in part, to reliance on self-report measures, which are generally restricted to consciously accessible thoughts and susceptible to presentation bias. In the current study, the primary goal was to test for the existence of differences between the cognitions of child molesters and non-molesters using an implicit measure called the Implicit Association Test (IAT). To that end, 6 IATs were designed to measure the domains of evaluation, social power, and sexual attractiveness in self and in children (relative to adults). Participants were incarcerated men who had either been convicted of sexual offences against extrafamilial children under 14 years of age ($N = 30$) or who had not admitted to, been charged with, or been convicted of any sexual offences ($N = 31$). As expected, child molesters viewed children (relative to adults) as significantly more sexually attractive than did the non-sex offenders, as measured by the sexy child IAT. Among the child molesters, a greater number of sexual offences was significantly associated with a view of self as less powerful and less sexually attractive, as measured, respectively, by the powerful self IAT and the sexy self IAT. These results remained even after a number of potential confounding variables were statistically or otherwise controlled. Although only partial support for the hypotheses was found, this study demonstrated that the IAT has much promise as a tool with which to study cognitions associated with child sexual abuse.

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Implicitly Measured Cognitions of Child Molesters

In current sex offender treatment programs, much effort is directed at remedying child molesters' problematic cognitions concerning themselves, their victims, and adults (Marshall, Anderson, & Fernandez, 1999). Although many theoreticians have posited that these cognitions play a central role in the etiology and maintenance of child sexual abuse (Finkelhor, 1984; Hall & Hirschman, 1992; Marshall & Barbaree, 1990), knowledge in the area remains incomplete due, in part, to reliance on self-report measures, which are generally restricted to consciously accessible thoughts and susceptible to presentation bias. In the current study, the primary goal was to test for the existence of differences between the cognitions of child molesters and non-molesters using an implicit measure called the Implicit Association Test (IAT; Greenwald, McGhee, & Schwartz, 1998). To that end, a series of IATs were designed to measure the domains of evaluation, social power, and sexual attractiveness in self and in children (relative to adults).

Child sexual abuse is a serious ethical transgression that affects a significant minority of children and is associated with negative outcomes for victims. Reviewing the literature on the prevalence of child sexual abuse, Finkelhor (1994) estimated that 20% of girls and 5 to 10% of boys are sexually abused. Finkelhor (1984) and Abel, Becker, and Cunningham-Rathner (1984) have convincingly argued that sexual contact between an adult and child constitutes abuse primarily because children are incapable of consenting to such activity. In addition, child sexual abuse appears to have a negative impact on many victims. More specifically, reviewers have found that, compared to non-victims, sexual abuse victims are more likely to experience a variety of problems, such as post-traumatic stress disorder, depression, suicide, and sexual disturbances (Beitchman et al., 1992; Browne & Finkelhor, 1986; Paolucci, Genuis, & Violato, 2001). Much

work has been done by theoreticians and researchers to identify factors that cause and maintain child sexual abuse, which ultimately informs strategies for the reduction of such abuse.

Theories of Child Sexual Abuse

Three major multifactor explanations of child sexual abuse developed over the last 20 years have implicated cognitive representations of self, children, and adults in the etiology and maintenance of child sexual abuse. These are Finkelhor's (1984; Finkelhor & Araji, 1986) four factor model of pedophilia, Marshall and Barbaree's (1990) integrated theory of the etiology of sexual offending, and Hall and Hirschman's (1992) quadripartite model of sexual aggression against children. These theoreticians suggest that a man may be more likely to begin and continue sexually abusing children if he: a) evaluates himself negatively, b) views himself as low on dominance or social power, c) views himself as sexually unattractive, d) evaluates children positively relative to adults, e) views children as low on dominance or social power relative to adults, and f) views children as sexually attractive relative to adults. For example, in these theories, child molesters have been described as: a) having low self-esteem, b) lacking self-confidence, c) preferring the company of children rather than adults, d) viewing children as a safe and non-threatening alternative to adults, and e) being sexually attracted to children. If these cognitions play a causal role in child sexual abuse, then they should not be present, or present to a lesser degree, in men who do not molest children.

Finkelhor's Four Factor Model of Pedophilia

Building on previous theories and data, Finkelhor (1984; Finkelhor & Araji, 1986) formulated a four-factor model to explain child sexual abuse. The four factors are emotional congruence, sexual arousal, blockage, and disinhibition. Emotional congruence refers to an adult's perception that his emotional needs fit well with children's characteristics and, thus, are

best satisfied by children. For example, an immature man with low self-esteem and feelings of inadequacy may experience a sense of power and efficacy from sexually abusing children. Further, there may be an idealized view of children in which children are evaluated more positively than adults. In both cases, the person derives some general enjoyment or satisfaction from being in the company of children. Sexual arousal refers to sexual attraction to children. Blockage refers to the presence of obstacles to obtaining satisfaction of one's emotional and sexual needs from other adults; consequently, one turns to children in an attempt to satisfy those needs. For example, a man may turn to children because his shyness, fear of rejection, and poor social skills may block him from relationships with other adults. Finally, once the motivation to abuse a child is present, internal inhibitions must be circumvented. For example, intoxication may reduce one's inhibitions against acting on one's sexual attraction to children.

From Finkelhor's model it would be expected that child molesters view self, children, and adults differently than do men who do not sexually abuse children. Emotional congruence suggests a view of self as negative and low in social power, and positive evaluation of children relative to adults. A man who can feel positively about himself and feel socially powerful only by interacting with children likely evaluates himself negatively and views himself as low in social power. An idealized view of children implicates positive evaluation of children relative to adults. Sexual arousal suggests a view of children as sexually attractive. Finally, blockage suggests a view of self as negative, weak, and sexually unattractive; and a view of children (relative to adults) as positive and weak. Such cognitions about the self, children, and adults would be expected to hinder one's ability to secure romantic relationships with adults and to encourage one to turn instead to children.

Marshall and Barbaree's (1990) Integrated Theory of the Etiology of Sexual Offending

Marshall and Barbaree (1990) proposed a biopsychosocial explanation of sexual offending. They argued that biological, developmental, sociocultural, and transitory situational factors can create a proclivity to sexually offend. Concerning the biological contribution, Marshall and Barbaree argued that sexual and aggressive propensities overlap considerably because they involve the same brain structures and sex steroids. Thus, the default position for men is the fusion of sex and aggression. If a boy's childhood experiences and culture do not teach him to inhibit aggression in the context of sexuality, the onset of puberty will increase the likelihood of sexual offending.

Although this is the default biological position, Marshall and Barbaree (1990) argued that environmental factors are the primary determinants of whether or not one becomes a sexual offender. Negative childhood experiences, such as abuse and neglect from caregivers, lead to insecure childhood attachment and provide models of aggressive and self-centred antisocial behaviour. Consequently, the child enters puberty without the social skills and self-confidence required to establish relationships with peer-aged partners. Inability to secure intimate relationship with peer-aged partners may then lead a young man to turn his sexual attention to children, who are viewed as less rejecting and intimidating than peers, or to sexually aggress against peers. This may occur first in his masturbation-accompanied fantasies, which would condition arousal to children or violence, and then occur in actual sexual offending.

Marshall and Barbaree argued that sociocultural messages and situational factors may interact with a vulnerable predisposition to increase or decrease the likelihood of sexual offending against children or peers. For example, media messages promoting male dominance may be more readily accepted by an inadequate young man because they bolster his sense of

masculinity and, thus, increase his likelihood of sexual offending. Transitory situational factors interact with predispositions and can either inhibit or facilitate sexual aggression. For example, a person who is sexually interested in children or who is incapable of obtaining appropriate sexual partners, may choose to sexually abuse a child only when he is sufficiently disinhibited due to intoxication or when he is experiencing negative affect (e.g., stress, anxiety). The biological, childhood, sociocultural, and transitory situational factors are thought to interact with one another to produce varying levels of propensity for sexual offending.

In Marshall and Barbaree's (1990) theory, there is again a suggestion that cognitive representations of self, children, and adults play an etiological role in child sexual abuse. Specifically, the child molester is characterized by insecure attachment and low self-confidence, which would suggest a view of self as socially weak and, possibly, as negative. He is also described as viewing children as more accepting and non-threatening than adults, which implicates a view of children (relative to adults) as positive and weak. In addition, some degree of sexual attraction to children may be present, which suggests the possibility of a view of children as sexually attractive.

Hall and Hirschman's (1992) Quadripartite Model of Sexual Aggression Against Children

Hall and Hirschman (1992) proposed a quadripartite model to explain child sexual abuse. In their model, child molestation is motivated by physiological, cognitive, affective, and personality factors. The physiological component concerns sexual arousal to children. The cognitive component involves cognitions that justify sexual abuse, such as a distorted belief that children are sexually motivated, capable of consenting to sexual activity with adults, desirous of sexual contact with adults, and unharmed by such activity. The affective component is described primarily as a negative affective state, the reaction to which is sexual abuse of a child. The final

component, personality, refers to developmentally related personality problems, which can manifest as emotional difficulties or poor social skills. Although this personality component is vague, it appears to be similar to Marshall and Barbaree's (1990) suggestion that negative childhood experiences lead to relatively enduring negative views of self and others (e.g., insecure attachment), which in turn result in limited ability to attain appropriate romantic relationships (cf. Ward, 2001). For the purposes of the present paper, the most relevant components of Hall and Hirschman's (1992) model are sexual arousal to children and personality. Sexual arousal to children suggests a view of children as sexually attractive. The personality component appears to involve insecure attachment and problems in establishing romantic relationships with adults, which may implicate a view of self as negative and weak and a view of children (relative to adults) as positive and weak.

Taken together, these three theories suggest that certain cognitive representations concerning evaluation, social power, and sexual attractiveness may be involved in the etiology and maintenance of child sexual abuse. More specifically, men who sexually abuse children would be expected to: a) view self as negative, socially weak, and sexually unattractive; and b) view children (relative to adults) as positive, socially weak, and sexually attractive. With regard to maintenance, these cognitions would be expected to be most pronounced in child molesters who persist with their offending, compared to those who desist.

Inferences from the Empirical Literature

Researchers have found some data supportive of the expectations derived from theory. Many studies, however, yielded mixed results that are difficult to interpret within the cognitive framework introduced above. The relevant empirical literature is reviewed below. Included in the review are studies in which child molesters were compared to non-molesters and sexual

recidivists were compared to non-recidivists on measures that appeared to be representative of the cognitions of interest. Measures were judged by the author for relevance to cognitions regarding evaluation, social power, or sexual attractiveness of self, children, or adults.

Evaluation

As noted above, evaluation of self, children, and other adults purportedly plays a role in the etiology and maintenance of child molestation. Researchers, however, have found mixed results, which generally provide only partial support for these hypotheses. Available data relevant to this domain have been limited to self-reports gathered through paper-and-pencil measures or interviews. A variety of constructs were judged to reflect evaluation, such as adult attachment style, self-esteem, and social anxiety. In Bartholomew and Horowitz's (1991) conceptualization of adult attachment, different attachment styles reflect a view of self and others as either positive or negative. More specifically, *secure* attachment involves a positive view of self and of others. *Preoccupied* attachment is characterized by a negative view of self but a positive view of others. In *fearful* attachment, both self and others are viewed negatively. Finally, *dismissive* attachment involves a positive view of self but a negative view of others. Clearly, evaluation of self and others is central to attachment.

The adult attachment literature suggests that child molesters may have a more negative view of themselves, but not of other adults, compared to non-sex offenders. Researchers have generally found that child molesters were less secure (positive self, positive other), more preoccupied (negative self, positive other), and more fearful (negative self, negative other) than were non-sex offenders (Jamieson & Marshall, 2000; Ward, Hudson, & Marshall, 1996). Thus, compared to non-sex offenders, child molesters were more likely to endorse an attachment style in which the self is viewed negatively but they were not more likely to endorse a style in which

others were viewed negatively. The differences concerning self-evaluation ranged from small to medium in magnitude. Where possible, effect size estimates (correlation coefficient; *r*) were recorded or computed from the studies in order to provide an indication of the magnitude of the differences. Absolute values of effect sizes are reported; thus, the values indicate the magnitude, but not necessarily the direction, of the effect. According to Cohen (1992), correlations of .10 or greater are small, .30 or greater are medium, and .50 or greater are large.

There is also some evidence from more traditional paper-and-pencil measures of self-esteem and social anxiety that child molesters may view themselves and other adults more negatively than do non-sex offenders. Katz (1990) found that, compared to non-sex offenders, child molesters had lower self-esteem, as measured by the Coopersmith Self-Esteem Inventory (r = .21). In terms of social anxiety, effects have generally ranged from very small to medium, with greater social anxiety seen in child molesters than in non-sex offenders. Katz found that child molesters were more socially anxious than non-sex offenders, as measured by the Survey of Heterosocial Interactions (SHI) and the Social Avoidance and Distress (SAD) scale (respectively, r = .32 and .23). Similarly, Hayashino, Wurtele, and Klebe (1995) found less social anxiety in child molesters than in non-sex offenders as measured by the Fear of Negative Evaluation (FNE) scale, but this difference was very small (r = .08). Segal and Marshall (1985) also found greater social anxiety in child molesters compared to non-sex offenders. Although it is very likely that paper-and-pencil measures of social anxiety do not exclusively tap evaluation, it does not seem unreasonable to expect that a negative view of self is an integral part of social anxiety. Social anxiety also suggests negative evaluation of other adults; it is possible, for example, that other adults are viewed as malevolent. To the extent that this is the case, the data

above suggest that child molesters may view both themselves and other adults more negatively than do non-sex offenders.

With regard to maintenance, researchers have also compared child molesters who sexually reoffend to those who do not on self-report measures of self-esteem and social anxiety. Thornton, Beech, and Marshall (2004) found that child molesters with lower self-esteem were more likely to sexually recidivate than were child molesters with higher self-esteem ($r = .20$). Hudson, Wales, Bakker, and Ward (2002), however, found no relationship between recidivism in child molesters and social anxiety ($r = .06$ and -.04). The evidence is partially supportive of the theory-based hypothesis that maintenance of child sexual abuse is associated with a negative view of self. The data, however, do not suggest that a negative view of other adults is associated with maintenance.

Fisher, Beech, and Browne (1999) used the paper-and-pencil questionnaire format to assess emotional congruence with children, which may partly reflect evaluation of children. Fisher et al. compared child molesters to newly recruited prison guards who did not have children on the Emotional Congruence scale of the Children and Sex Cognitions scale. Some of the items in this scale appear to reflect evaluation of children, such as "I prefer to spend my time with children" and "Children are special for me". They found a small difference ($r = .12$), with child molesters reporting a more positive view of children than the guards. Fisher et al.'s finding suggests that child molesters may have a slightly more positive view of children than do non-molesters. In terms of maintenance, Hanson and Morton-Bourgon (2004) quantitatively reviewed the literature and found that emotional congruence with children was predictive of sexual recidivism (average $r \approx .21$, in 3 studies, $N = 419$). This suggests that child molesters who

maintain their sexual offending may view children more positively than child molesters who desist.

Data consistent with the findings for self-esteem and social anxiety presented above have been obtained in interviews with child molesters and non-sex offenders. From information gathered through interviews, Ward, McCormack, and Hudson (1997) found that child molesters were significantly more sensitive to rejection in intimate relationships than were non-sex offenders. As with the paper-and-pencil measures of social anxiety, sensitivity to rejection in intimate relationships appears quite broad in focus but likely incorporates evaluation of self and other adults to some degree. If this is the case, Ward, McCormack et al.'s finding suggests that child molesters may view themselves and other adults more negatively than do non-sex offenders.

In two of the studies reviewed, the self-report measures were much more specific in focus than most of the measures reported above. Horley and Quinsey (1994; Horley, Quinsey, & Jones, 1997) used the *semantic differential* (Osgood, Suci, & Tanenbaum, 1957), which involves rating a concept (e.g., self) on a series of bipolar adjective scales (e.g., bad-good). Horley and Quinsey performed a principal components analysis of the 21 bipolar scales they had administered to 57 child molesters and 50 nonsexual offenders, and found three components, one of which reflected evaluation.

With regard to self-evaluation, Horley and Quinsey (1994) found mixed results. Most differences were very small ($r < .10$) and the few effects that were greater than .10 varied in direction. Surprisingly, however, on the bipolar scales that appear to best correspond to the notion of evaluation, such as *pleasant-unpleasant*, child molesters rated themselves *more* positively than did the non-sex offenders ($r = .19$). In a second study, Horley et al. (1997) again

used the semantic differential and reported results similar to those found in their earlier study; however, they did not provide descriptive statistics to permit examination of the direction or magnitude of difference on the various scales. Of the few significant differences, child molesters rated themselves more positively than did the non-sex offenders (Horley et al., 1997).

Turning to evaluation of other adults, Horley and Quinsey (1994) found that child molesters, on average, did not rate women more or less positively than did non-sex offenders. On the pleasant-unpleasant semantic differential, for example, child molesters' and non-sex offenders' ratings of women were virtually identical ($r = .03$). Horley and Quinsey did not find significant differences on evaluative ratings of men. Similarly, Horley et al. (1997) found no significant differences on evaluative ratings of women. In this second study, however, they did find that men were rated significantly more positively by the child molesters than by the non-sex offenders on a few of the scales. On average, the data from the semantic differential suggest that child molesters do not view themselves or other adults more negatively than do non-sex offenders.

Horley and Quinsey also used the semantic differential to assess evaluation of children. Horley et al. (1997) found that child molesters rated boys significantly more positively than did non-sex offenders on a few of the rating scales. For many of the scales, however, the differences were not significant. Horley et al. did not find significant differences on ratings of girls, and Horley and Quinsey (1994) did not find significant differences on ratings of boys or girls. Although limited, this evidence suggests that child molesters may view children similarly or perhaps slightly more positively than do non-sex offenders.

Taken together, the research reviewed above can lead one to a number of conclusions, some of which are contradictory. In terms of self-evaluation, findings for attachment style, self-

esteem, social anxiety, and sensitivity to rejection were consistent with the notion that child molesters view themselves more negatively than do non-sex offenders. Researcher using the semantic differential, however, did not find that child molesters viewed themselves more negatively than did non-sex offenders. Concerning evaluation of other adults, the social anxiety and sensitivity to rejection findings suggested that child molesters view other adults more negatively than do non-sex offenders. The attachment literature and the semantic differential studies, however, suggested that the groups may not differ in their evaluation of other adults. With regard to evaluation of children, child molesters appeared to view children more positively than did non-sex offenders on a measure of emotional congruence, but generally did not differ on the semantic differentials. In light of these mixed results, it remains unclear whether child molesters do in fact differ in their evaluation of self, other adults, and children. Turning to maintenance, there is some evidence that suggests that, compared to child molesters who desist from their sexual offending, those who persist may have a more negative view of themselves and a more positive view of children but may not differ in their evaluation of other adults.

Social Power

In theory, child molesters have often been described as shy, unassertive, and generally intimidated by adult relationships, which suggests a view of self as socially weak, other adults as socially powerful, and children as socially weak. Again, the social anxiety measures are relevant, as they may tap into social power as well as evaluation. Specifically, social anxiety likely involves a view of self as weak and a view of other adults as powerful. As noted above, researchers have found that child molesters were more socially anxious than non-sex offenders (Hayshino et al., 1995; Katz, 1990; Segal & Marshall, 1985). Similarly, Ward, McCormack et al. (1997) found that child molesters were more sensitive to rejection in intimate relationships. In

addition, Overholser and Beck (1986) found that child molesters were less assertive than non-sex offenders, as measured by the Rathus Assertiveness Inventory (r = .33). Segal and Marshall (1985) also found child molesters to be less assertive than non-sex offenders. These results suggest that child molesters, more so than non-sex offenders, may view themselves as socially weak and other adults as socially powerful. The results are less impressive for maintenance, however, with no relationships between sexual recidivism and social anxiety (r = .06 and -.04) and only a small association with unassertiveness (r = .11; Hudson et al., 2002). There is little evidence to suggest that child molesters who maintain their sexual offending differ from those who desist on their view of self and other adults in terms of social power.

Horley and Quinsey (1994) found a component within their semantic differential scales that may reflect social power, which they labeled "activity". Although activity may not completely correspond to power (Osgood et al., 1957), some of the rating scales making up this component were clearly related to power (e.g., dominance-submissive). Consistent with the social anxiety and assertiveness findings, Horley et al. (1997) found that child molesters rated themselves as less powerful than did the non-sex offenders. Regarding other adults, however, the semantic differential results suggested that child molesters may actually view other adults as *less* powerful than do non-sex offenders. Horley and Quinsey (1994) found that child molesters rated women as less dominant than did non-sex offenders. Similarly, Horley et al. found that child molesters rated men as less dominant than did non-sex offenders. With regard to children, ratings of boys and girls on the activity dimension were not significantly different between the child molesters and non-sex offenders (Horley & Quinsey, 1994; Horley et al., 1997). In sum, the semantic differential results suggest that, compared to non-sex offenders, child molesters view

themselves and other adults as less powerful, but may not differ in their view of children on power.

Synthesizing these findings, the results were consistent with the expectation that child molesters view themselves as less powerful than do non-sex offenders, but it is less apparent that there are differences in how adults and children are viewed on power. The findings that child molesters, compared to non-sex offenders, rated themselves as weaker and were more socially anxious, less assertive, and more sensitive to rejection strongly suggest that the groups differ in their view of themselves on social power. In terms of other adults, however, the results were mixed. Although the findings for social anxiety, assertiveness, and sensitivity to rejection suggested that child molesters may view other adults as more powerful than do non-sex offenders, differences in the opposite direction were found on the semantic differentials. Concerning children, the limited evidence from the semantic differential studies suggests that child molesters and non-sex offenders may not differ in their view of children on power. Thus, the literature suggests that child molesters do view themselves as less powerful than do non-sex offenders, but it remains unclear whether other adults and children are viewed differently on power.

Sexual Attractiveness

Theoreticians have hypothesized that child molesters, compared to non-sex offenders, view themselves and other adults as sexually unattractive and view children as sexually attractive. Researchers have found support for these hypotheses. With regard to the self, data on social anxiety and sensitivity to rejection may reflect a view of self in terms of sexual attractiveness as well as evaluation and social power. Anxiety in social situations and fear of rejection may be due, in part, to a view of self as unattractive. As reported above, child molesters

have been found to be more socially anxious and more sensitive to rejection than were non-sex offenders (Hayashino et al., 1995; Katz, 1990; Segal & Marshall, 1985; Ward, McCormack et al., 1997). Horley and Quinsey (1994) found consistent results on the semantic differentials that comprised a component they labeled "sexual evaluation". For example, child molesters rated themselves as less seductive (r = .27), less sexy (r = .24), and less beautiful (r = .20) than did non-sex offenders. Horley et al. (1997) obtained similar results. These data indicate that child molesters may view themselves as less sexually attractive than do non-sex offenders. In terms of maintenance, however, social anxiety has not been found to be associated with sexual recidivism among child molesters (Hudson et al., 2002).

Horley and colleagues (Horley & Quinsey, 1994; Horley et al., 1997) used the semantic differential to assess how adults and children were viewed on sexual attractiveness. With regard to adults, Horley and Quinsey found small differences, with child molesters rating women as slightly less sexually attractive than did non-sex offenders (r = .05 to .14). Similarly, Horley et al. found that child molesters rated women as significantly less *sexy* than did non-sex offenders. Men, however, were rated as significantly more *seductive* by the child molesters than by the non-sex offenders (Horley et al., 1997). In this latter study, however, most of the semantic differential scales tapping sexual attractiveness did not reach statistical significance. Suprisingly, differences on the ratings of children on sexual attractiveness did not reach statistical significance (Horley & Quinsey, 1994; Horley et al., 1997). The semantic differential results suggest that, compared to non-sex offenders, child molesters may view women as slightly less sexually attractive.

On the Sexual Fantasy Questionnaire, O'Donohue, Letourneau, and Dowling (1997) found that, compared to non-offenders, child molesters reported fewer sexual fantasies involving adult partners (r = .15) but more sexual fantasies involving children (r = .49). Hanson, Gizzarelli,

and Scott (1994) found that child molesters viewed children as more sexually attractive than did non-sex offenders, as measured by the Sexy Children scale of the Hanson Sex Attitudes Questionnaire (r = .23).

In addition to the self-report measures reported above, researchers have utilized other techniques, such as penile plethysmography (PPG) to assess sexual interests. PPG involves the physiological measurement of penile tumescence (erection) during the presentation of various stimuli. Although PPG is not typically conceptualized as a measure of cognitions, sexual arousal undoubtedly involves underlying cognitions (e.g., sexual preferences; Ward & Siegert, 2002). The procedures, issues, and controversies concerning the use of PPG to assess the sexual interests of sex offenders have received much attention in the literature (e.g., Lalumière & Harris, 1998; Marshall & Fernandez, 2000; Pithers & Laws, 1995). Briefly, the most common procedure involves measuring changes in the circumference of the penis with a strain gauge, or a similar device, while the man is presented visual or aural stimuli depicting non-deviant or deviant stimuli. Non-deviant stimuli most typically consist of pictures of adults or descriptions of consenting sexual acts between adults. Some examples of deviant stimuli are pictures of children or descriptions of child sexual abuse. Often, researchers report peak arousal exhibited to each type of stimulus and, in some cases, also present the level of arousal to one type of stimulus as a function of another type. Whereas the former provides an indication of the absolute arousal exhibited to a given stimulus, the latter provides a measure of relative sexual interest. For example, a difference score could be computed by subtracting peak arousal to child stimuli from peak arousal to adult stimuli. The value of this difference score would indicate how much more or less a person was aroused by children than by adults.

The PPG studies have yielded evidence consistent with the self-report data. Looman and Marshall (2001) found that, compared to rapists, child molesters were less aroused by women (r = .32), similarly aroused by men (r = .02), more aroused by girls (r = 31), and more aroused by boys (r = .32). Other researchers reported difference scores or ratios, in which arousal to adults and children are subtracted or divided, providing an indication of arousal to children relative to arousal to adults. These researchers have consistently found that child molesters have more deviant indexes or ratios than do non-offenders (Barsetti, Earls, Lalumière, & Bélanger, 1998, r = .55; Marshall, Barbaree, & Christophe, 1986, r = .39) and rapists (Baxter, Marshall, Barbaree, Davidson, & Malcolm, 1984, r = .38). Quinsey and Chaplin (1988) also examined sexual arousal to children in child molesters and non-molesters and found that the child molesters were significantly more aroused by the female child stimuli than by the female adult stimuli (r = .88). The non-molesters, however, did not differ significantly in their arousal to child and adult stimuli. This evidence suggests that, compared to non-molesters, child molesters view women as less sexually attractive and children as more sexually attractive. In addition to distinguishing between child molesters and non-molesters, PPG assessed sexual interest in children is associated with maintenance of child sexual abuse. In their meta-analytic review, Hanson and Morton-Bourgon (2004) found that phallometrically (PPG) assessed sexual interest in children was significantly associated with a greater likelihood of sexual recidivism (average $r \approx .16$, in 10 studies, N = 1,278).

More recently, visual reaction time (VRT) measures have also been used to assess the sexual interests of child molesters (e.g., Abel, Huffman, Warberg, & Holland, 1998; Glasgow, Osborne, & Croxen, 2003). In VRT, sexual interest in children is inferred from the amount of time one spends viewing pictures of, for example, children compared to the amount of time spent

viewing stimuli depicting adults. Although the use of VRT with sexual offenders is relatively new, the available evidence indicates that VRT procedures are convergent with PPG (Letourneau, 2002). Abel, Jordan, Hand, Holland, and Phipps (2001) compared the VRT profiles of child molesters and non-molesters. Abel et al. (2001) found that greater sexual interest in children distinguished child molesters from non-molesters.

The PPG and VRT findings appear consistent with the self-report results, all of which suggest that child molesters find children more sexually attractive than do non-molesters. Researchers using the PPG have consistently reported that child molesters are more sexually aroused by stimuli depicting children than are non-molesters. Similarly, VRT assessments have indicated that child molesters are more sexually interested in children than are non-molesters. Although neither PPG nor VRT directly assess the cognitions of interest in the current study, it seems reasonable to assume that they reflect underlying cognitions regarding the sexual attractiveness of children and adults (Ward & Siegert, 2002).

Considering evaluation, social power, and sexual attractiveness together, the self-report, PPG, and VRT literatures provide generally consistent evidence that, compared to non-molesters, child molesters may view: a) self as socially weak and sexually unattractive; and b) children (relative to adults) as sexually attractive. Unclear or insufficient support was found for the notion that child molesters, compared to non-molesters, view self as negative and children (relative to adults) as negative or weak. Although less data regarding maintenance of child sexual abuse were available, the literature suggests that, compared to child molesters who desist, child molesters who persist in their sexual offending may view self as less positive and children as more positive and more sexually attractive. Support was not found for the theory-based expectation that maintenance is associated with a view of self as weak and unattractive or a view

of children (relative to adults) as weak. In addition to the mixed and meager data, these conclusions are made even more tentative because they are based on, with the exception of PPG and VRT measures, offenders' self-reports. Although self-reports have many strengths (Westen & Weinberger, 2004), they may have limited validity as measures of the underlying cognitions purportedly associated with the etiology and maintenance of child sexual abuse.

Weaknesses of Self-Report Measures of Cognitions with Offenders

The adequacy of current self-report measures used to assess the cognitions of offenders has been called into question by many researchers (e.g., Andrews & Bonta, 2003; Beech, 1998; Horley, 2000; Marshall et al., 1999; Ward, Hudson, Johnston, & Marshall, 1997). These measures require respondents to access their cognitions through introspection and to report them accurately. However, some cognitive contents of interest, such as the aforementioned cognitions, may not be consciously accessible or, if they are accessible, may not be accurately articulated or reported honestly (Fazio & Olson, 2003; Ward, Hudson et al., 1997). There is evidence, for example, that offenders can and do purposefully modify their self-report responses (Gendreau, Irvine, & Knight, 1973; Kroner & Weekes, 1996; Walters, 1988). Anecdotally, clinicians working with sexual offenders report that problematic cognitions are clearly present but that valid tools with which to assess them are often lacking (Marshall et al., 1999).

Implicit and Explicit Cognition

Some researchers have argued that some cognitions are consciously accessible, whereas others are not. The latter have been referred to as *implicit cognitions* and the former as *explicit cognitions* (Greenwald & Banaji, 1995; Greenwald & Farnham, 2000). Implicit and explicit cognitions are often conceptualized as distinct but correlated constructs (Greenwald & Farnham, 2000). Implicit cognitions can be assessed with response latency (or reaction time) measures

(Greenwald & Banaji, 1995) and explicit cognitions are typically assessed through self-report measures (Dovidio, Kawakami, & Gaertner, 2002). Some evidence of the partial distinctiveness of implicit and explicit cognitions is available from numerous studies in which small (often non-significant) correlations have been found between implicit and explicit measures in a variety of domains (Asendorpf, Banse, & Mücke, 2002; Bosson, Swann, & Pennebaker, 2000; Dasgupta & Greenwald, 2001; Dasgupta, McGhee, Greenwald, & Banaji, 2000; Greenwald & Farnham, 2000; Monteith, Voils, & Ashburn-Nardo, 2001; Neumann & Seibt, 2001; Rudman, Ashmore, & Gary, 2001; Rudman & Glick, 2001; Rudman & Lee, 2002). A stronger test of the independence of implicit and explicit cognition was conducted by Greenwald and Farnham (2000, Experiment 1) who reported factor-analytic evidence consistent with a model of implicit and explicit self-esteem as two separate but correlated factors. Similar results for implicit and explicit gender self-concept were also reported (Greenwald & Farnham, 2000, Experiment 2). Hence, implicit measures may yield information about cognitions that is not tapped by self-report.

Until very recently, implicit cognitions have received little attention in the sexual offender literature. Rather, most researchers have focused on explicit cognitions, as assessed by self-report measures. Given the concerns about the validity of self-report measures in assessing underlying cognitions, they likely do not permit adequate tests of theoreticians' hypotheses regarding the etiology and maintenance of child sexual abuse (c.f., Mihailides, Devilly, & Ward, 2004). Fortunately, more indirect assessment instruments are available, such as PPG and VRT procedures, that may tap implicit cognitions more so than do self-reports. In addition, researchers in social cognition have developed implicit measures that appear able to assess underlying cognitions regarding evaluation, power, and sexual attractiveness.

Implicit Association Test (IAT)

Concern over the reliance on self-report measures in the assessment of child molesters' cognitions has led some researchers to call for the application of more indirect measures that assess cognitions using response latencies or reaction times (e.g., Hanson & Morton-Bourgon, 2004; Ward, Hudson et al., 1997). A promising and relatively simple response latency measure is the Implicit Association Test (IAT; Greenwald et al., 1998). In the IAT, the strength of association between a concept in memory (e.g., child) and an attribute (e.g., sexual attractiveness) are inferred from response latencies on different categorization tasks. A simple illustration of the IAT procedure from Greenwald et al. is presented in Figure 1a and 1b. In the first computer screen shown in Figure 1a, the stimulus word is *MOSQUITO*. The task is to indicate the category in which *MOSQUITO* belongs by pressing either *d* with the left hand or *k* with the right hand on the computer keyboard. In this case, *k* would be pressed to indicate that *MOSQUITO* belongs in the *INSECT* category. Each categorization of a stimulus word constitutes one trial. The reaction time or response latency for each trial is recorded. A second trial is also shown in Figure 1a. In the second trial, *peace* belongs in the *pleasant* category and the participant indicates this by pressing *d*.

The rationale behind the IAT centres on the degree to which the configuration of the categories is congruent with the configuration of one's associations in memory. The configuration of categories in Figure 1a would likely be congruent with the configuration of associations within most participants' memories (Greenwald et al., 1998). More specifically, just as *FLOWER* and *pleasant* are associated with the same response key, they would also likely be associated in most people's memories; that is, most people think flowers are pleasant. Similarly, *INSECT* and *unpleasant* are associated with the same key and would also be expected to be

associated with each other in memory for many people; most people think insects are generally unpleasant. To the extent that this is the case, faster response latencies would be expected for the trials in Figure 1a. In other words, these categorization tasks would be easy because the categories that share the same response key are also linked in memory.

In contrast, the categorization tasks in Figure 1b would be expected to be more difficult because the configuration of the categories would not be congruent with most people's implicit cognitions. Although *FLOWER* and *unpleasant* are now indicated by the same response key, it is unlikely that *FLOWER* and *unpleasant* are strongly associated for most people. Similarly, *INSECT* and *pleasant* share the same response key, but most people probably do not think of insects as particularly pleasant. Thus, pairing *FLOWER* and *unpleasant* and pairing *INSECT* and *pleasant* would likely be at odds with the pairings stored in most people's memories. Accordingly, slower response latencies would be expected in the trials in Figure 1b than in Figure 1a.

Greenwald et al. (1998) presented this IAT to participants and found, as expected, that response latencies were indeed faster on trials similar to those in Figure 1a than on trials like those presented in Figure 1b. Greenwald et al. (1998) inferred that this pattern of response latencies indicated that participants more strongly associated *flower* with *pleasant* and *insect* with *unpleasant* than they did *flower* with *unpleasant* and *insect* with *pleasant*. In other words, they found flowers more pleasant than they did insects. A difference score was computed by subtracting average response latency in one block of trials from that in the other block of trials. This difference score was called an *IAT effect*. Thus, Greenwald et al. (1998) had created a relatively simple measure that appeared to indirectly assess cognitions.

Greenwald and colleagues went on to adapt the IAT to assess a number of other constructs. For example, to assess implicit self-esteem, the categories of *flower* and *insect* were replaced with *me* and *not me* (Greenwald & Farnham, 2000). The flower and insect stimulus words were replaced with *me* stimulus words (e.g., mine) and *not me* stimulus words (e.g., their). A participant who views him or herself in a fairly positive light would be expected to categorize words more quickly when the categories that share the same response key are congruent with his or her associations in memory (i.e., *me* with *pleasant* or *not me* with *unpleasant*). In contrast, slower response latencies would be expected when the configuration of the categories is incompatible with the associations in memory (i.e., *me* with *unpleasant* or *not me* with *pleasant*).

Some researchers have recently begun to apply the IAT procedure to studying the cognitions of sex offenders. Gray, Brown, MacCulloch, Smith, and Snowden (in press) created a version of the IAT to assess the degree to which children, relative to adults, were associated with sex and administered it to 18 men who had committed sexual offences against children and 60 men who had never been convicted of sexual offences against children, but who had committed other serious offences, such as violence and sexual assault of adults. The IAT categories were *child* vs. *adult* and *sex* vs. *not sex*. Examples of their stimulus words for each of the categories were *beard* for adult, *young* for child, *penis* for sex, and *arm* for not sex. Gray et al. found different response latencies between the child molesters and non-molesters on the trials in which *adult* and *sex* shared the same response key and the trials in which *child* and *sex* shared the same response key. Specifically, the child molesters had slower response latencies on the trials in which adult and sex shared the same response key than on the trials in which *child* and *sex* shared the same response key. In contrast, the non-molesters had faster response latencies on the

trials in which *adult* and *sex* shared the same response key than on the trials in which *child* and *sex* shared the same response key.

Gray et al. also reported and analyzed IAT effects. In this case, the IAT effect was computed by subtracting each participant's average response latency on the trials in which *adult* and *sex* shared the same response key from his average response latency on the trials in which *child* and *sex* shared the same response key. The average IAT effect for the child molesters was -80.5ms, whereas for the non-molesters it was 47.4ms. The magnitude of this difference was medium (r = .32). Thus, a medium sized difference was obtained with child molesters showing a stronger association between children and sex than did the offenders who had not sexually abused children.

Mihailides et al. (2004) also adapted the IAT to examine cognitions in child molesters. They compared 25 child molesters, 25 non-sex offenders, 25 male university students, and 25 female university students. Mihailides et al. examined the degree to which children were viewed as sexual beings. As did Gray et al. (in press), Mihailides et al. found a medium sized effect, with child molesters viewing children as more sexual than did non-sex offenders (r = .31). Although only two IAT studies were available, the evidence is consistent in suggesting that reasonably sized differences can be detected between child molesters and comparison groups with the IAT.

Present Study

The main purpose of the present correlational study was to examine differences that may exist between child molesters and non-sexual offenders in their views of self, children, and other adults along evaluative, power, and sexual attractiveness dimensions using the Implicit Association Test (IAT). In addition, for the entire sample, the association between the IAT effects, a self-report measure of social anxiety, and a measure of response bias were investigated.

Finally, within the group of child molesters, the association between the IAT effects and the maintenance of sexual offending (i.e., number of sexual offence charges and convictions) was examined. In light of the issues raised above, the self-report literature was not given much weight in the formulation of the hypotheses involving the IATs.

Hypotheses

Primary hypotheses. The primary hypotheses involve differences between child molesters and non-sex offenders on the IATs and a self-report measure of social anxiety. The following set of hypotheses concerns implicit cognitions concerning self (me vs. not me). It was expected that, compared to non-sex offenders, child molesters would view themselves as less positive, less powerful, and less sexually attractive. The next set of hypotheses involves implicit cognitions regarding children relative to adults. It was predicted that, compared to non-sex offenders, child molesters would view children as more positive, less powerful, and more sexually attractive. It was also expected that child molesters would be more socially anxious than the non-sex offenders, as measured by a self-report measure.

Secondary hypotheses. The secondary hypotheses concern correlations between the IAT effects, a self-report measure of social anxiety, social desirability, and sexual offence persistence (i.e., number of sexual offence charges and convictions). Given that the IAT and self-report measures may tap separate constructs, large associations between the two are uncommon in the literature. Consequently, a small to medium association (i.e., $r \approx .20$) was expected between the IAT effects and the self-report measure of social anxiety.

The following set of hypotheses involves IAT-assessed cognitions regarding self (me vs. not me). It was hypothesized that a more negative view of self would be associated with greater self-reported social anxiety. A view of self as less powerful was expected to be associated with

greater social anxiety. The degree to which self was viewed as sexually attractive was also expected to correlate negatively with social anxiety. The next set of hypotheses concerns IAT-assessed cognitions regarding children relative to adults. It was hypothesized that a view of children as more positive would be associated with greater social anxiety. A view of children as less powerful was also expected to be related to greater social anxiety. As in past research, non-significant small correlations were expected between the IATs and social desirability.

With regard to persistence of sexual offending, among the child molesters only, significant correlations between the IAT effects and the number of sexual charges and convictions were expected. More specifically, it was hypothesized that a greater number of sexual offences would be associated with a view of self as less pleasant, less powerful, and less sexually attractive. In addition, more sexual offences were expected to be associated with a view of children as more pleasant, less powerful, and more sexually attractive.

Method

Participants

Participants were 30 child molesters and 31 non-sexual offenders. All participants were inmates in federal penitentiaries in Ontario. Offenders were classified as child molesters if they had a) at least one index (i.e., current) conviction for a sexual offence or a sexually motivated crime (e.g., convicted of murder but files indicate sexual assault of victim) against an extrafamilial victim under 14-years of age or b) an index conviction against an extrafamilial victim between 14- and 16-years-old and at least one prior conviction for a sexual offence or a sexually motivated crime against an extrafamilial victim under 14-years of age. The rationale behind the latter inclusion criterion was to maximize the number of eligible participants, while maintaining focus on convicted sexual abusers of children under the legal age of consent (Canadian Criminal Code, 2004). Offenders were classified as non-sexual offenders if they a) had no prior or index charges or convictions for a sexual offence or a sexually motivated crime, b) denied ever being charged or convicted of a sexual offence, and c) denied ever committing an act of sexual aggression against a woman or man. Sexual aggression was operationally defined as any affirmative response on a modified version of the Sexual Experiences Survey - Male version (Koss & Oros, 1982), which is described below. In addition, inmates were only eligible to participate if they could read well enough to complete basic self-report questionnaires without assistance.

Participation was voluntary and informed consent was given (Appendixes A and B). Certification of ethical approval from the Social Sciences and Humanities Research Ethics Board of the University of Ottawa (Appendix C) and permission from Correctional Service of Canada (CSC) (Appendix D) to conduct the present research were granted.

Approximately 90 child molesters and 90 nonsexual offenders were asked to participate in the study. Thirty-five child molesters and 40 non-sexual offenders consented to participate; however, some of these 75 offenders were excluded. In total, data from five of the participants in the child molester group were excluded. One of the child molesters could not read well enough to complete the tasks, and his participation was discontinued. The other four were excluded from the child molester group because it was discovered, only after reviewing their files, that they did not meet the inclusion criteria. With regard to the non-sexual offenders, data from a total of nine participants in this group were excluded. Five of them did not return for the second testing session and an additional four did not meet the inclusion criteria.

Offence information was gathered from file information in the Correctional Service of Canada's (CSC) automated database, the Offender Management System (OMS). Among the child molesters, seven (23.3%) had exclusively victimized girls, 13 (43.3%) had exclusively victimized boys, and 10 (33.3%) had victimized both girls and boys. The child molesters had an average of 6.80 (SD = 9.65) prior sexual offence charges or convictions and 8.93 (SD = 12.37) index sexual offence charges or convictions. In terms of treatment exposure, which was assessed via self-report, 26 (86.7%) of the child molesters were either currently participating in or had previously participated in a sexual offender treatment program. Additional descriptive information about the participants is presented in Table 1. The coding procedures and self-report questionnaires are described below.

Representativeness of Sample

To assess the degree to which the sample was representative of the population of interest, data were obtained from CSC on all offenders housed within the institutions from which the current sample was drawn as of September 1st, 2004. The closest match that could be obtained

for the current sample of child molesters was 122 offenders who had prior or index convictions against a child less than 12 years of age and the 611 non-sex offenders who had no sexual convictions. Because the data that were made available were somewhat limited in detail and format, it was sometimes necessary to recode the data from the current study to match, as closely as possible, the CSC data.

As shown in Table 2, the child molesters were quite similar with the exception that the child molesters in the current sample appeared to be slightly higher risk than the child molesters in the institutional population. Specifically, child molesters in the current sample appeared to have a) more prior sexual convictions, b) more prior violent convictions, c) fewer index sexual convictions, and d) less often offended against girl victims. In Table 3, the non-sex offenders in the current sample were compared to the non-sex offenders in the institutional population. Again, the groups were quite similar with the exception of education and prior violent convictions. More specifically, the non-sex offenders in the current sample appeared to be better educated and to have more prior violent offences. Thus, the offenders in the current sample were generally similar to the larger population of offenders housed in the same institutions but may have been slightly higher risk for sexual and violent recidivism (c.f., Hanson & Bussière, 1998; Quinsey, Harris, Rice, & Cormier, 1998).

Measures

Implicit Association Test (IAT)

The Implicit Association Test (IAT) is a relatively new method of assessing implicit cognitions. The IAT has been used to measure a variety of constructs, such as self-esteem (Greenwald & Farnham, 2000), gender self-concept (Rudman, Greenwald, & McGhee, 2001), racial stereotypes (McConnell & Leibold, 2000), and shyness (Asendorpf et al., 2002). There is

evidence that the IAT possesses adequate psychometric properties. In non-offender samples, the IAT has yielded good internal consistency (α = .89, .82, and .84 in Asendorpf et al., 2002; α = .88 in Bosson et al., 2000; α = .78 in Cunningham, Preacher, & Banaji, 2001) and moderate test-retest reliability (r = .69; Bosson et al., 2000). In addition, the IAT appears relatively uncontaminated by social desirability or other deliberate attempts at dissimulation (Asendorpf et al., 2002; Greenwald et al., 2002; Greenwald & Farnham, 2000).

More recently, researchers have applied the IAT to sexual offenders. Gray et al. (in press) adapted the IAT to assess the degree to which children and sex were associated among child molesters and non-molesters. Gray et al. reported good reliability (Cronbach's alpha = .88) and known-groups validity for their IAT, with the child molesters more strongly associating children with sex than did the non-molesters (r = .32). Similarly, Mihailides et al. (2004) designed an IAT to measure the extent to which children were viewed as sexual and found that, compared to non-sex offenders, child molesters viewed children as more sexual (r = .31)

In the present study, the IATs were designed to measure the domains of evaluation (pleasant vs. unpleasant), social power (powerful vs. weak), and sexual attractiveness (sexy vs. not sexy) in self (me vs. not me) and in children relative to adults (child vs. adult). This made for a total of six computer-administered IATs, which were named the *pleasant self IAT*, *powerful self IAT*, *sexy self IAT*, *pleasant child IAT*, *powerful child IAT*, and *sexy child IAT*. Each IAT consisted of one of the two target concepts (i.e., *me* vs. *not me* or *child* vs. *adult*) combined with one of the three attributes (i.e., *pleasantness*, *power*, or *sexual attractiveness*). The target concept stimulus words are provided in Appendix E; selection of these stimulus words was rationally and empirically guided based on previous research (Asendorpf et al., 2002; Greenwald et al., 1998; Greenwald & Farnham, 2000; Haines, 1999; Rudman, Greenwald et al., 2001).

The attribute stimulus words were selected based on pre-testing. Nine sexual offenders beginning a sexual offender treatment program at a medium-security federal penitentiary in Ontario anonymously rated 164 words on pleasantness, power, and sexual attractiveness. This initial word list was derived from stimuli employed in IATs by other researchers (Asendorpf et al., 2002; Greenwald et al., 1998; Greenwald & Farnham, 2000; Haines, 1999; Rudman, Greenwald et al., 2001) and words used in semantic differentials administered to child molesters (Horley & Quinsey, 1994). Additional sexual attractiveness attribute words from IAT stimuli used by D. E. McGhee were provided by A. G. Greenwald (personal communication, October 20 and 23, 2002). Finally, some words were generated by the author.

In the pre-testing, participants rated each word on three 5-point Likert type scales ranging from *pleasant* to *unpleasant*, *powerful* to *weak*, and *sexy* to *not sexy*. The rating scales and instructions are presented in Appendix F and the consent form is presented in Appendix G. From the initial pool of words, a total of 36 stimuli words were retained: 6 words each for *pleasant*, *unpleasant*, *powerful*, *weak*, *sexy*, and *not sexy* words. Focusing first on the pleasantness domain, an attempt was made to obtain relatively unambiguous pleasantness stimulus words that were not confounded with power or sexual attractiveness. Specifically, the 12 pleasantness words were selected as follows: (1) Two words with the most pleasant, most powerful, and most sexy average ratings; (2) two words with the most pleasant, neutral powerful, and neutral sexy average ratings; (3) two words with the most pleasant, least powerful, and least sexy average ratings; (4) two words with the least pleasant, most powerful, and most sexy average ratings; (5) two words with the least pleasant, neutral powerful, and neutral sexy average ratings; and (6) two words with the least pleasant, least powerful, and least sexy average ratings. The 12 power and 12

sexual attractiveness stimulus words were selected in the same fashion as above. The attribute stimulus words are presented in Appendix E.

The IAT procedure followed Greenwald et al. (1998). As mentioned above, the IAT involves categorizing stimulus words. Participants were instructed to use the left forefinger ("d" key on the computer keyboard) and the right forefinger ("k" key) to indicate the appropriate category for each stimulus word. Stimulus words were presented in the centre of the computer screen, randomly from each category within each block of trials. To increase the distinctiveness between target concepts and attributes, target concept categories and stimulus words were presented in upper-case letters (e.g., ME), whereas attribute categories and stimulus words were presented in lower-case letters (e.g., sexy). Participants initiated the beginning of each block of trials. Examples of the IAT procedures used in the present study are presented in Appendix H.

Participants completed a total of 7 blocks of trials for each of the six IATs. (One trial consisted of the presentation of one stimulus word and the correct categorization of that word.) Each IAT was presented following the five-step sequence illustrated in Figure 2. Step 1 consisted of 20 practice trials in which participants categorized the target concept stimulus words (e.g., CHILD vs. ADULT). Step 2 was a block of 20 practice trials in which participants categorized the attribute stimulus words (e.g., sexy vs. not sexy). The practice trials were designed to allow the participant to become accustomed to the task and learn the correct category for each stimulus word. Therefore, response latencies from the practice trials did not contribute to the IAT dependent variable. On Steps 3 and 5, a block of 20 practice trials was followed by a block of 40 trials, from which the response latencies for the first two trials were excluded because they are typically exceptionally slow (Greenwald et al., 1998). Thus, only the 38 trials in Step 3 and 38 trials in Step 5 provided data for the IAT dependent variables. In Step 3 stimulus words

representing both the target concepts and the attributes were presented and participants categorized them accordingly (e.g., *CHILD* or *not sexy* vs. *ADULT* or *sexy*). Step 4 was another block of 20 practice trials in which the target concept categories were reversed. This prepared participants for Step 5, which was identical to Step 3 except that the categories were paired differently (see Figure 2). For example, whereas in Step 3 *sexy* and *CHILD* share the same response key, in Step 5 *sexy* and *ADULT* share the same response key.

Prior to each block, instructions that described the categories involved in the categorization task and the corresponding response keys (d or k) were presented via computer (see Appendix I). The appropriate category names were displayed continuously on their respective sides of the screen throughout each block. After each correct response, the next stimulus word was presented. A correct response was one that corresponded to the structure identified in Appendix E. For example, if the stimulus word was *boy*, the correct response was pressing the key that indicated *CHILD*, whereas the incorrect response was pressing the key that indicated *ADULT*. If the response was incorrect, a red "X" was displayed below the stimulus and remained on the screen until the correct response was provided. A subsequent stimulus was presented 150 ms after a correct response. Correct response latency and the accuracy of the first response of each trial were recorded.

Social Avoidance and Distress (SAD) Scale

The SAD scale (Watson & Friend, 1969), developed with a sample of undergraduate students, consists of 28 true-false self-report items and was designed to measure social anxiety or, more specifically, avoidance of, and distress in social situations. Fourteen of the items receive one point for a true response, whereas the remaining 14 items receive one point for a false

response. Total scores can range from 0 to 28. Higher scores indicate greater social anxiety. The SAD Scale items are presented in Appendix J.

The original authors reported excellent internal consistency; KR-20 values of .94 were found in two separate samples and the mean item-total correlation was .77. A correlation with social desirability (Marlowe-Crowne) of -.25 was reported, indicating greater social anxiety was associated with less social desirability. Test-retest reliability with two samples of 154 and 29 students after 1 month was moderate with correlations of .68 and .79, respectively. Evidence concerning the convergent validity of the SAD scale was provided by medium to large correlations with a variety of other measures of social anxiety (r = .45 to .76; Watson & Friend, 1969).

The SAD scale has been used with sex offenders. In a sample of child molesters and non-molesters, Horley et al. (1997) reported good test-retest reliability after approximately three months (r = .90). There is also some evidence for the discriminative validity of the SAD scale with child molesters. Specifically, researchers have found that samples of child molesters had significantly higher social anxiety than did samples of rapists (Marshall, Barbaree, & Fernandez, 1995; Segal & Marshall, 1985). In addition, significant associations between the SAD scale and related constructs have been found with sexual offenders. Specifically, the SAD scale was strongly correlated with another measure of social anxiety (Social Self-Esteem Inventory, r = -.62) and a measure of underassertiveness (Social Response Inventory; r = .58; Marshall et al., 1995). In the current study, the SAD scale displayed excellent internal consistency. Cronbach's coefficient alpha for the SAD was .97 with the nonsexual offenders and .97 with the child molesters.

Balanced Inventory of Desirable Responding (BIDR)

The Balanced Inventory of Desirable Responding (BIDR; Paulhus, 1984) is a 40-item self-report measure designed to assess the tendency to respond to self-report scales in a socially desirable manner. Each item is rated on a 7-point Likert-type scale ranging from *not true* (1) to *very true* (7). Half of the items are reverse-scored with ratings of 1 or 2 scored as 1 and ratings of 3 to 7 scored as 0. The remaining items are positive-scored with ratings of 6 or 7 scored as 1 and ratings of 1 to 5 scored as 0. The scores are summed. The BIDR provides a total score and two subscale scores: Impression Management (IM; 20 items) and Self-Deceptive Enhancement (SDE; 20 items). Higher IM scores indicate greater response bias due to a deliberate attempt to present oneself in a favourable light. Higher SDE scores reflect greater response bias due to self-deceptive overconfidence. In the present study, IM's relations with the IATs and the SAD scale were examined. The BIDR IM scale was selected for use in the current study because it is a commonly used and recommended measure in forensic risk assessment (Kroner & Weekes, 1996; Lanyon, 2001).

In various factor analytic studies, the IM subscale items have generally emerged to form one independent factor in both offender samples (Kroner & Weekes, 1996) and non-offender samples (Paulhus & Reid, 1991). Adequate internal consistency was reported by Kroner and Weekes for the IM scale (they modified the scale slightly such that it consisted of 17 items from the original 20 items of the IM scale); Cronbach's alpha was .84 with a large sample of incarcerated male offenders ($N = 539$). In addition, significantly lower IM scores were reported for offenders completing the measures as part of an intake assessment compared to offenders completing it as part of a pre-release assessment (when one would presumably be more motivated to make a good impression; Kroner & Weekes, 1996). Paulhus (1984) recommended

controlling the degree of IM in self-reports. The 20 IM items of the BIDR are presented in Appendix J. In the present study, the BIDR-IM displayed good internal consistency. Cronbach's coefficient alpha for the BIDR-IM was .89 with the nonsexual offenders and .88 with the child molesters.

Modified Sexual Experiences Survey - Male Version (Mod-SES-MV)

The male version of the Sexual Experiences Survey (SES-MV; Koss & Oros, 1982) consists of 12 yes-no questions concerning the use of coercion by the male respondent to obtain sexual contact with a woman. The SES was modified slightly for use in the present study. The first modification involved rewording the items so that they asked about sexually coercing men as well as women. The second modification was to use only the six items that corresponded most closely to the legal definition of sexual assault. This modified version is referred to here as the Modified Sexual Experience Survey – Male Version (Mod-SES-MV) (see Appendix K) to distinguish it from the original SES-MV. In the present study, the Mod-SES-MV served as a screening measure to exclude offenders from the nonsexual offender group who reported the use of sexual coercion; that is, an affirmative response to any item on the Mod-SES-MV resulted in the exclusion of the participant from the nonsexual offender group.

The psychometric properties of the SES have been examined with undergraduate students using a slightly modified 10-item version (Koss & Gidycz, 1985). Internal consistency (Cronbach alpha = .89) and test-retest reliability over one week (mean item agreement = 93%; reported only for the combined group of male and female participants using the male and female versions of the SES, respectively) were both good. SES-MV responses appear to be reasonably associated with information on sexually coercive behaviour gathered through a private interview with each participant (r = .61). Where the SES-MV and interview reports were discrepant, the

majority of the discrepancies reflected participants' denial of coercive sexual behaviour in the interview to which they had previously admitted on the SES-MV. Internal consistency of the Mod-SES-MV with the current sample could not be determined because there was no variability in item scores; all nonsex offenders denied any sexually coercive behaviour.

Canadian Adult Achievement Test (CAAT)

The Canadian Adult Achievement Test (CAAT; Psychological Corporation, 1986) is a measure of general adult educational achievement, which assesses skills in language, reading comprehension, vocabulary, spelling, number operation, problem solving, mechanical reasoning, science, and study skills. Grade equivalents were derived from a normative sample of adult volunteers ($N = 5,700$) (Taylor, 1990). This measure is routinely administered by CSC to most inmates at the beginning of their sentences. Grade equivalents were recorded in the offenders' files. Although there was no published psychometric data on offenders available for the CAAT, it is used by CSC to determine educational programming, which inspires some confidence in its validity. Language grade level was recorded for each participant because language skill deficits were expected to impair participants' performance on the IATs and self-report measures.

Materials and Apparatus

The IATs were administered via an IBM laptop computer on a 13" colour monitor using the Generic IAT computer program available on A. G. Greenwald's webpage (http://faculty.washington.edu/agg/iat_materials.htm) and the Inquisit 1.33 computer program for Windows (Millisecond Software, 2002). On the computer keyboard the label "space bar" was placed on the space bar, which was to be pressed by participants to proceed through computer-administered instructions and to initiate trial blocks. This was done to facilitate the procedure for those participants with less experience with computers or typewriters. All data analyses were

performed with version 10.0 of the Statistical Package for the Social Sciences (SPSS) for Windows.

Procedure

Eligible inmates were approached by the author and asked to participate in the study, following the recruitment script (Appendix L). If a participant expressed interest in the study, he was presented with the consent form and asked to sign (Appendixes A and B). The participant kept one copy of the signed consent form and the other copy remained with the researcher. The participant's name and Finger Print Service (FPS) number were then recorded and he was assigned a participant number. In order to protect confidentiality, on a separate list on which he was identified only by his participant number rather than by his name or FPS, additional information was recorded, including group membership (child molester vs. nonsexual offender), date of testing sessions, and institution.

On the first day of testing, participants completed three of the IATs and on the second day of testing, they completed the remaining three IATs, the social desirability measure, and the self-report measure of social anxiety. The order in which the six IATs were presented was counterbalanced; this created 12 orders. For the child molesters, the questionnaires consisted of the BIDR-IM, the SAD scale, and questions about their sexual orientation (heterosexual, homosexual, or bisexual) and exposure to sexual offender treatment programs (see Appendix J). For the non-sex offenders, the questionnaires consisted of the BIDR-IM, the SAD scale, a question about their sexual orientation, and the Mod-SES-MV (see Appendix K). Upon completion, participants were thanked, presented with a closing statement (Appendix M), and asked if they wished to receive a summary of the results of the study once they became available.

In terms of time required of the participants, the first testing session typically required approximately 30 minutes and the second session usually required approximately 45 minutes.

Once participants had completed the IATs and questionnaires, their file information was reviewed using CSC's Offender Management System (OMS). The file review coding sheet created for this study is presented in Appendix N. The following information was recorded for all participants: birth date, race, education (years), language grade level (CAAT), and number of prior and current sexual and violent charges and convictions. Additional information gathered for the child molesters was number and gender of victims in the current offence and past offences. Classification of offences as sexual or non-sexually violent was guided by the revised Static-99 coding rules (pp. 27-42) (Harris, Phenix, Hanson, & Thornton, 2003). Non-sexual nonviolent offences were defined as those offences that were neither sexual nor violent.

Data Treatment

Some participants' IAT data were excluded because of extreme error rates, extreme response latencies, or administrative errors. IAT data were excluded for those participants with error rates greater than 30%; such high error rates are typically excluded because they suggest the possibility of response artifacts that threaten validity, such as random responding (Greenwald et al., 1998). Among the non-sexual offenders, data were excluded for one participant on the pleasant self IAT, one participant on the powerful self IAT, and three participants on the sexy self IAT. Among the child molesters, data were excluded for three participants on the pleasant self IAT, two participants on the powerful self IAT, eight participants on the sexy self IAT, one participant on the pleasant child IAT, three participants on the powerful child IAT, and three participants on the child sexy IAT. Data were also excluded for those participants with mean response latencies greater than 2500 ms, which resulted in the exclusion of the data for one child

molester on the sexy self IAT. Exceptionally slow mean response latencies (i.e., 2500 ms or slower) may be due to biased responding, inattention, or some other response artifact (Greenwald et al., 1998). Due to administrative errors, data were lost on the powerful self IAT for one non-sexual offender and on the powerful child IAT for one non-sexual offender.

As is typical of response latency measures, the raw data are often skewed and violate a number of assumptions for parametric statistics, such as ANOVA (Greenwald et al., 1998). Researchers commonly transform IAT data by taking the natural log (ln) of the raw response latencies (Greenwald et al., 1998). In the current study, this procedure was followed and it is these transformed data on which all analyses were performed.

A few participants did not complete all items on the paper-and-pencil measures. Specifically, three child molesters were missing 1 item on the BIDR-IM and 1 item on the SAD Scale. These missing items were replaced for each subject individually with his mean response on the remaining items on that scale.

Results

Data Screening

For all analyses, data were screened for violations of assumptions. When violations were present, corrections were made by a variety of strategies, such as transformations and reducing or deleting outlying cases. In cases where the data were modified, analyses were performed on both the modified and unmodified data; if the results were comparable in terms of statistical significance and effect size, then only the results from the unmodified data were reported. If, however, the results differed, then the results from the modified data were presented.

Primary Hypotheses

Pleasant Self IAT

Mean response latencies and the IAT effect from the *pleasant self IAT* are reported in Table 4. As outlined in the procedure, the *pleasant self IAT* was designed to assess the degree to which self is evaluated positively. Mean response latencies were reported in milliseconds (ms) and in natural log (ln) of ms. A mixed design two by two ANOVA was conducted. The within-subjects factor was IAT condition (trials in which *me* and *pleasant* shared the same response key vs. trials in which *me* and *unpleasant* shared the same response key) and the between-subjects factor was group (child molester vs. non-sex offender). The dependent variable was mean log response latency. The within-subjects main effect was significant, $F(1, 55) = 159.64, p < .05$, two-tailed. This indicated that, collapsing across groups, mean log response latencies were significantly faster for the blocks of trials in which *me* and *pleasant* shared the same response key than for the blocks of trials in which *me* and *unpleasant* shared the same response key. Faster response latencies suggest a stronger association in memory between a target concept (e.g., me) and an attribute (e.g., pleasant), whereas slower response latencies suggest a weaker association in memory between a target concept and an attribute. Thus, this significant main effect suggests that when the child molesters and non-sex offenders were combined, participants viewed themselves relatively positively. The between-subjects main effect, however, was not statistically significant. This indicated that, collapsing across IAT condition, the child molesters did not significantly differ from non-sex offenders in their overall response latencies, $F(1, 55) = 1.16, p > .05$, two-tailed.

Relevant to the hypothesis was the analysis of the interaction of group (child molesters vs. non-sex offenders) by IAT condition (trials in which *me* and *pleasant* shared the same

response key vs. trials in which *me* and *unpleasant* shared the same response key). An interaction of these variables would suggest that child molesters and non-sex offenders view themselves differently on pleasantness. This did not appear to be the case, however. The interaction of group by IAT condition was not significant, $F(1, 55) = 0.42, p > .05$, one-tailed, indicating that the log response latencies in each IAT condition were generally similar between the two groups. The child molesters and non-sex offenders did not significantly differ in the extent to which they viewed themselves positively.

An alternate way to conceptualize the group by IAT condition interaction is the *IAT effect*, which is a difference score computed, in this case, by subtracting each participant's mean response latency on trials in which *unpleasant* and *me* shared the same response key from his mean response latency on trials in which *pleasant* and *me* shared the same response key. IAT effects are commonly computed and analyzed in IAT research (e.g., Gray et al., in press; Greenwald et al., 1998; Mihailides et al., 2004). The *pleasant self IAT* effect is presented in Table 4. Larger positive IAT effects correspond to faster response latencies on trials in which *pleasant* and *me* were paired than on trials in which *unpleasant* and *me* were paired. Thus, larger positive values on the pleasant self IAT effect reflect a more positive view of self.

A one-way ANOVA was performed to compare the child molesters and non-sex offenders on the pleasant self IAT effect (ln). The one-way ANOVA revealed that the pleasant self IAT effect (ln) was not significantly different between child molesters and non-sex offenders, $F(1, 55) = 0.42, p > .05$, one-tailed, $r = .09$. Note that this result is identical to that of the interaction in the mixed ANOVA reported above. Although the analyses of the IAT effects (ln) and the interaction are redundant, they are included here because the IAT effect is a convenient way to conceptualize the pattern of response latencies and is routinely reported in the

IAT literature. In addition to significance tests, effect size estimates (correlation coefficient; *r*) were reported for each IAT effect (ln) to provide an indication of the magnitude of the differences between groups. According to Cohen (1992), correlations of .10 or greater are small, .30 or greater are medium, and .50 or greater are large.

Powerful Self IAT

Mean response latencies on the *powerful self IAT* are reported in Table 5. As above, a mixed design two by two ANOVA was performed. The main effect of IAT condition was not significant, $F(1, 55) = 0.82, p > .05$, two-tailed, which suggests that *powerful* and *weak* were not differently associated with self. The main effect of group was also not significant, $F(1, 55) = 1.98, p > .05$, two-tailed, which indicates that child molesters did not differ from non-sex offenders in their overall response speed. Finally, the interaction of group by IAT condition was not significant, which suggests that child molesters did not view themselves differently in terms of power than did non-sex offenders, $F(1, 55) = 0.38, p > .05$, one-tailed. For the powerful self IAT effect, which is also presented in Table 5, larger positive values indicate a view of self as more powerful. There was no significant difference between the child molesters and non-sex offenders on the powerful self IAT effect (ln), $F(1, 55) = 0.38, p > .05$, one-tailed, $r = .08$.

Sexy Self IAT

Mean response latencies on the *sexy self IAT* are presented in Table 6. Again a mixed design two by two ANOVA was performed. The main effect of IAT condition was significant, $F(1, 47) = 94.45, p < .05$, two-tailed. The main effect of group, however, was not statistically significant, $F(1, 47) = 0.81, p > .05$, two-tailed. There was a trend towards significance for the interaction of group and IAT condition, indicating that the log response latencies in each IAT condition tended to differ between the two groups, $F(1, 47) = 1.92, p < .10$, one-tailed.

To further investigate this trend, simple effects were examined through a series of one-way ANOVAs. First, differences between the IAT conditions were analyzed for child molesters and non-sex offenders separately. Mean log response latencies were significantly faster on the trails in which *me* and *sexy* shared the same response key than on the trials in which *me* and *not sexy* shared the same response key for both the child molesters, $F(1, 20) = 22.62, p < .05$, two-tailed, and the non-sex offenders, $F(1, 27) = 96.44, p < .05$, two-tailed. Next, child molesters and non-sex offenders were compared on their mean response latencies for each IAT condition separately. The groups did not differ significantly on mean log response latencies for the trials in which *me* and *not sexy* shared the same key, $F(1, 47) = 0.03, p > .05$, one-tailed. On the trials in which *me* and *sexy* shared the same key, however, mean response latencies significantly slower for the child molesters than the non-sex offenders, $F(1, 47) = 3.05, p < .05$, one-tailed. Although both groups viewed themselves as relatively sexually attractive, the child molesters did so to a lesser extent than did the non-sex offenders.

The sexy self IAT effect is also presented in Table 5. Larger positive values reflect a view of self as more sexually attractive. As in the mixed design ANOVA interaction, the difference between the child molesters and non-sex offenders on the sexy self IAT effect approached statistical significance, $F(1, 47) = 1.92, p < .10$, one-tailed, $r = -.20$, which suggests that child molesters tended to view themselves as less sexually attractive than did the non-sex offenders.

Pleasant Child IAT

The pleasant child IAT was designed to assess the degree to which children (relative to adults) were evaluated positively. Mean response latencies are reported in Table 7. The mixed design ANOVA did not yield a significant main effect for IAT condition ($F[1, 58] = 2.81, p >$

.05, two-tailed), group, (F[1, 58] = 0.92, p > .05, two-tailed), or group by IAT condition interaction (F[1, 58] = 1.63, p > .05, one-tailed, r = .17). For the *pleasant child IAT effect*, which is reported in Table 7, larger positive values indicate a more positive view of children. A one-way ANOVA revealed that pleasant child IAT effects were not significantly different between the child molesters and the non-sex offenders, F(1, 58) = 1.63, p > .05, r = .17. Child molesters and non-sex offenders did not differ significantly in their evaluation of children (relative to adults).

Powerful Child IAT

Mean response latencies on the *powerful child IAT* are reported in Table 8. In a mixed design ANOVA, the main effect of IAT condition was significant, F(1, 55) = 138.60, p < .05, two-tailed. Collapsed across groups, participants had significantly slower response latencies on the trials in which *child* and *powerful* shared the same response key than on the trials in which *adult* and *powerful* shared the same response key. This suggests that participants viewed children as less powerful than adults. The main effect of group was not significant, F(1, 55) = 1.71, p > .05, two-tailed, nor was the interaction of group and IAT condition, F(1, 55) = 0.35, p > .05, one-tailed. The mean *powerful child IAT effect* is presented in Table 8. Larger positive values indicate a view of children as more powerful. A one-way ANOVA revealed that the powerful child IAT effect was not significantly different between child molesters and non-sex offenders, F(1, 55) = 0.35, p > .05, one-tailed, r = .08. These findings suggest that the child molesters and non-sex offenders did not differ in their view of children in terms of power.

Sexy Child IAT

In contrast to most of the IATs above, a very different pattern of results was obtained with the *sexy child IAT*. Mean response latencies are reported in Table 9. Neither the main effect

of IAT condition nor group were significant, respectively, $F(1, 56) = 0.01$, $p > .05$, two-tailed and $F(1, 56) = 0.65$, $p > .05$, two-tailed. The group by target interaction, however, was significant, $F(1, 56) = 4.47$, $p < .05$, one-tailed, indicating that the log response latencies in each IAT condition differed between the two groups.

To determine the pattern of results responsible for the significant interaction, simple effects were examined with a series of one-way ANOVAs. Mean log response latency in each IAT condition was compared in child molesters and non-sex offenders separately. For the child molesters, there was a trend toward significance with faster response latencies on the trials in which *child* and *sexy* shared the same response key than on the trials in which *adult* and *sexy* shared the same response key, $F(1, 26) = 2.59$, $p < .10$, one-tailed. In contrast, for the non-sex offenders, there was a trend toward significance with slower response latencies on the trials in which *child* and *sexy* shared the same response key than on the trials in which *adult* and *sexy* shared the same response key, $F(1, 30) = 2.15$, $p < .10$, one-tailed. The trend towards significance for both of these comparisons and the significant interaction suggest that the child molesters tended to view children as more sexually attractive than adults, whereas the non-sex offenders tended to view adults as somewhat more sexually attractive than children.

The results from the *sexy child IAT effect* again were identical to those from the interaction above. Means are reported in Table 9. Larger positive values reflect a view of children as more sexually attractive. A one-way ANOVA indicated that child molesters had significantly larger sexy child IAT effects than did the non-sex offenders, $F(1, 56) = 4.66$, $p < .05$, one-tailed, $r = .28$. These results suggest that the child molesters viewed children as significantly more sexually attractive than did the non-sex offenders.

It was hypothesized that, compared to the nonsexual offenders, child molesters would view themselves as less pleasant, less powerful, and less sexually attractive. In addition, it was expected that the child molesters would view children as more pleasant, less powerful, and more sexually attractive than would the nonsexual offenders. The results were consistent with only two hypotheses. The trend towards significance on the *sexy self IAT effect* was consistent with the expectation that the child molesters would view themselves as less sexually attractive than would the non-sex offenders. On the *sexy child IAT*, the results supported the hypothesis that the child molesters would view children as more sexually attractive than would the non-sex offenders. No significant differences between child molesters and non-sex offenders were found on the remaining four IAT effects.

Self-Reported Social Anxiety and Impression Management

Child molesters and non-sex offenders were compared on the self-report measure of social anxiety in a one-way ANOVA. As shown in Table 10, the child molesters and non-sex offenders did not differ significantly in social anxiety as measured by the SAD scale. The groups also did not differ significantly in impression management, as measured by the BIDR-IM.

Alternate Explanations

Although the main purpose of the present study was to investigate cognitions associated with child sexual abuse, the use of a correlational design, which compared nonequivalent groups, rendered the internal validity of the study vulnerable to threats from potentially confounding differences between the child molesters and nonsexual offenders on extraneous variables. Thus, the findings presented above are open to multiple explanations. Three potentially confounding variables in the present study were age, race, and sexual orientation. The child molesters were significantly older than the nonsexual offenders (Table 1). Although the chi-square analyses of

the race data reported in Table 1 was not statistically significant, when race was recoded into a dichotomous variable (White vs. Non-White), a significant difference was found. The child molesters were significantly more likely to be White than were the nonsexual offenders; 93.3% of the child molesters were White, whereas only 70.0% of the nonsexual offenders were White, χ^2 (1, N = 60) = 5.46, p < .02, Φ = .30. Self-reported sexual orientation also differed between the groups (Table 1). When sexual orientation was made into a dichotomous variable (heterosexual vs. homosexual/bisexual), only 57.1% of the child molesters were heterosexual, whereas 96.6% of the nonsexual offenders were heterosexual, χ^2 (1, N = 57) = 12.47, p < .001, Φ = -.47. One could argue that the results found for the IAT effects and the SAD scale are a function of differences in age, race, or sexual orientation, rather than a reflection of real differences, or lack thereof, between child molesters and non-sex offenders.

To address the possibility that age differences between groups may have had an impact on the results, a set of one-way ANCOVAs parallel to the one-way ANOVAs reported above were performed on the IAT effects and the SAD scale with age as the covariate. The results of the ANOVAs and ANCOVAs were virtually identical in terms of effect sizes and statistical significance. (To avoid redundancy, the results of the ANCOVAs were not reported here.) Thus, the age differences between the groups did not appear to have distorted the results reported above.

To address the racial and sexual orientation differences between the groups, effect sizes (point-biserial correlations) were computed with, respectively, the Non-White and homosexual or bisexual participants excluded. These effects are reported in Table 11 along with the effect sizes obtained with the entire sample. As shown in Table 11, the effect sizes found with only the White participants and with only the heterosexual participants were generally very similar to

those found with the entire sample. Thus, the differences between the child molesters and the nonsexual offenders in race and sexual orientation did not seem to greatly affect the results.

Another possible alternate explanation for the failure to find the expected differences for some of the IAT effects and the SAD scale involved exposure to sexual offender treatment programs. For example, it is possible that participation in sex offender treatment had increased the self-esteem of the child molesters such that differences between them and non-sex offenders no longer existed. To evaluate this alternate explanation, the influence of exposure to sexual offender treatment was examined. Many of the child molesters reported that they had been exposed to such programs. One-third (33.3%) of the child molesters reported that they were currently in a sexual offender treatment program. Of these, 44.4% reported that they had attended 10 or more sessions of the current program. Two-thirds (66.7%) reported that they had participated in a sexual offender treatment program in the past. A new variable, called *number of programs*, was created by combining self-reported information about current treatment and past treatment participation. Specifically, exposure to 10 or more current treatment sessions was counted as participation in one sex offender treatment program and added to the number of past sex offender treatment programs. For example, if an offender reported that he had participated in two sex offender programs in the past and was currently participating in a program of which he had attended at least 10 sessions, the value entered for *number of programs* was 3. Using this definition of program participation, 73.3% of the child molesters had participated in at least one sex offender treatment program. The mean number of programs in which they reported having participated was 1.70 (SD = 2.18, minimum = 0, maximum = 10). As can be seen in Table 12, the number of sex offender treatment programs in which a child molester had participated was unrelated to the IAT effects. Given these results, it seems unlikely that exposure to sex offender

treatment could have been responsible for the differences, or lack thereof, found between child molesters and non-sex offenders on the IAT effects.

There was, however, a trend toward significance for the correlation with the SAD, such that the more treatment programs in which a child molester had participated, the higher his score on the SAD, which reflects greater social anxiety. Although there was a trend toward significance for this correlation and it was of medium strength, it suggests that, if anything, including child molesters exposed to treatment in the current study should have lead to results consistent with the hypothesis for the SAD scale; that is, child molesters would have a higher mean SAD score than would the nonsexual offenders. As was reported above, however, the child molesters and nonsexual offenders were virtually identical on the SAD. Thus, including child molesters who had participated in treatment programs, rather than only those who had not received treatment, did not appear to have biased the results. Given the correlations reported in Table 12, it is unlikely that exposure to sex offender treatment programs is an alternate explanation of the findings from the between-groups comparisons on the IAT effects.

Secondary Hypotheses

Maintenance of sexual offending

In addition to examining the known groups validity of the IATs by comparing child molesters to non-sex offenders, it was also important to explore whether variation on the IATs was associated with maintenance of sexual offending among the child molesters. Maintenance of sexual offending was operationally defined as the total number of current and prior charges and convictions for sexual offences. A greater degree of maintenance was indicated by a higher number of sexual charges or convictions, which was computed by summing prior and index charges or convictions for sexual offences. On average, the child molesters had 15.73 sexual

charges or convictions (SD = 17.09, N = 30). The number of sexual charges or convictions was positively skewed, kurtotic, and had one outlying case. These violations of the assumptions were corrected by logarithmic transformation. The mean log number of sexual charges or convictions was 0.99 (SD = 0.45). The results obtained with the untransformed and transformed variables differed; thus, the results reported are for analyses involving the log number of sexual charges or convictions.

Correlations between the log number of sexual charges or convictions, IAT effects (ln), and the SAD scale were calculated for the child molesters. The zero-order correlations between the IAT effects and number of sexual charges or convictions (log) are shown in the second column of Table 13. As hypothesized, having more sexual charges or convictions (log) was significantly associated with lower sexy self IAT effects (ln), which reflect a view of self as less sexually attractive. Thus, offenders who viewed themselves as less sexually attractive had more sexual charges or convictions (log). Trends toward significance were found for the powerful self IAT effect and the pleasant child IAT effect. As expected, more sexual charges or convictions (log) were associated with a view of self as less powerful and a view of children (vs. adults) as more pleasant.

Although number of sex offences was a reasonable proxy for maintenance of sexual offending, it is vulnerable to potentially confounding factors, such as age and exposure to sex offender treatment. For example, one could argue that older offenders would have had more time to commit more sex offences and, thus, the correlations discussed above could reflect the association between the IAT effects and age rather than the association between the IAT effects and maintenance of sexual offending. Consistent with this argument, the number of sexual

charges or convictions (log) was significantly correlated with age, $r(30) = .45$, $p < .01$; as age increased, so did the number of sexual charges or convictions (log).

To address the possibility that age differences could have obscured the true relationship between the variables of interest, partial correlations were performed. As seen in the third column of Table 13, the results of the partial correlations controlling for age were generally similar to the zero-order correlations, in which age was not controlled. There were, however, a few changes. When age was controlled, a trend toward significance emerged for the pleasant self IAT effect, such that a more negative view of self tended to be associated with more sexual charges or convictions (log). The correlation with the powerful self IAT effect became statistically significant; a view of self as less powerful was associated with more sexual charges or convictions (log). The relationship between the sexy self IAT effect and number of sexual charges or convictions (log) remained significant. Finally, the trend previously observed on the pleasant child IAT effect disappeared once age was controlled.

In contrast to age, self-reported participation in sex offender treatment programs was not significantly correlated with the number of sexual charges or convictions (log), $r(30) = .14$, $p > .05$. It was not surprising, then, that the partial correlations controlling for self-reported exposure to sex offender treatment programs were virtually identical to the zero-order correlations. Given the general similarity between the three columns of correlations, it is unlikely that differences in age and treatment exposure greatly obscured the relationship between number of sexual charges or convictions and the IATs or the SAD. Age, however, did appear to have a small impact and it is these partial correlations that would be expected to provide the most accurate depiction of the relationship between the cognitions tapped by the IATs and maintenance of sexual offending.

Impression Management

The correlations between the IAT effects and the Impression Management Scale of the BIDR (BIDR-IM) are presented in Table 14. As expected, none of the correlations between the IAT effects and the BIDR-IM reached statistical significance. The SAD Scale, however, was significantly correlated with the BIDR-IM, such that reporting lower social anxiety was associated with greater impression management. Even though child molesters and non-sex offenders did not significantly differ on the BIDR-IM (see Table 10), an ANCOVA was performed comparing child molesters and nonsexual offenders on the SAD while controlling for the BIDR-IM. The results of the ANCOVA, however, were virtually identical to those from the ANOVA reported in Table 10; significant differences were found with neither analytic approach. (To avoid redundancy, the results of the ANCOVA were not presented here.) Thus, it was unlikely that impression management as measured by the BIDR-IM was responsible for the failure to find significant differences on the SAD between the child molesters and nonsexual offenders.

IAT Effects and Self-Reported Social Anxiety

The next set of analyses was conducted to examine the intercorrelations between the IAT effects and the SAD scale for the entire sample. As shown in Table 14, none of the IAT effects were significantly correlated with the SAD scale. Because the SAD was highly correlated with impression management (BIDR-IM), however, the association between the IAT effects and the SAD Scale were reexamined in partial correlations controlling for the BIDR-IM. These partial correlations are distinct from the ANCOVA described above because they addressed the relationship between the IAT effects and the SAD scale, whereas the ANCOVA compared the child molesters and non-sex offenders on the SAD scale. The results of the partial correlations

were similar to the zero-order correlations in that they were very small and not statistically significant. (To avoid redundancy, the partial correlations were not reported here.) Contrary to hypotheses, then, implicitly measured cognitions regarding self in terms of pleasantness and power were not significantly associated with self-reported social anxiety.

Intercorrelations Between IAT Effects

As shown in Table 15, intercorrelations between the IAT effects (ln) were examined in the entire sample. Interestingly, all three self-IATs correlated positively with each other. Participants who viewed themselves more positively also viewed themselves as more powerful and sexually attractive. Similarly, participants who viewed themselves as more powerful also viewed themselves as more sexually attractive. Of the child-IATs, participants who viewed children more positively also viewed them as more sexually attractive. Viewing children as more powerful was also significantly associated with viewing children as more sexually attractive.

Discussion

The primary goal of the present research was to assess whether implicitly assessed cognitions purported to play an etiological role in child sexual abuse differed between a sample of child molesters and non-sex offenders. In addition, the relation between these cognitions and number of sexual offences was examined. Six separate Implicit Association Tests (IATs) were designed to assess views of self and children (relative to adults) in terms of evaluation, power, and sexual attractiveness. Contrary to expectations, on the pleasant self IAT, child molesters did not evaluate themselves significantly more negatively than did the non-sex offenders. Similarly, on the powerful self IAT, child molesters did not view themselves as significantly less powerful than did the non-sex offenders. There was, however, a trend toward significance for the partial correlation between the pleasant self IAT effect and log number of sexual charges and convictions when current age was statistically controlled; as hypothesized, a more negative view of self was associated with more sexual offences. Also as expected, there was a significant partial correlation between the powerful self IAT effect and log number of sexual charges and convictions. Theoreticians have suggested that a view of self as negative and socially weak plays a role in both the etiology and maintenance of child sexual abuse (Finkelhor, 1984; Hall & Hirschman, 1992; Marshall & Barbaree, 1990). The current results did not suggest an etiological role for these cognitions, but were consistent with the notion that a view of self as negative and weak is associated with the maintenance of sexual offending.

On the sexy self IAT, there was a trend toward significance for the child molesters to view themselves as less sexually attractive than did the non-sex offenders, which provided partial support for the hypothesis. Further, the expected association was found between the sexy self IAT effect and the log number of sexual charges and convictions, controlling for current age.

More specifically, child molesters who viewed themselves as less sexually attractive had more sexual offences. These results were consistent with theoreticians' suggestions that a view of self as unattractive is a factor in the etiology and maintenance of child sexual abuse (Finkelhor, 1984; Hall & Hirschman, 1992; Marshall & Barbaree, 1990). It may be, as some have suggested, that a view of self as sexually unattractive rather than a view of self as negative per se, distinguishes child molesters from non-molesters (Horley, 2000; Horley & Quinsey, 1994; Horley et al., 1997; Marshall, Anderson, & Champagne, 1997).

The hypotheses regarding the pleasant child IAT and the powerful child IAT were not supported. Contrary to expectations, the child molesters did not view children as significantly more pleasant or less powerful than did the non-sex offenders as measured, respectively, by the pleasant child IAT and the powerful child IAT. In addition, the pleasant child IAT and the powerful child IAT were also not significantly associated with log number of sexual offences, when controlling for current age. This did not support the hypothesis that viewing children as more positive and socially weak was associated with a greater number of sexual offences. The findings also did not support theoreticians' suggestions that viewing children as pleasant and socially weak is involved in the etiology and maintenance of child molestation (Finkelhor, 1984; Hall & Hirschman, 1992; Marshall & Barbaree, 1990).

For the sexy child IAT, the hypotheses received partial support. As expected, compared to the non-sex offenders, child molesters viewed children as significantly more sexually attractive on the sexy child IAT. Contrary to expectations, however, a view of children as sexually attractive was not related to a greater number of sexual offences. More specifically, the sexy child IAT effect was not significantly associated with the log number of sexual charges and convictions, when controlling for current age. These findings concur with theory in which sexual

attraction to children has been identified as playing an etiological role in child sexual abuse; however, the results did not support theoretician's assertions that attraction to children contributes to the maintenance of sexual offending (Finkelhor, 1984; Hall & Hirschman, 1992; Marshall & Barbaree, 1990).

With regard to the self-report measure of social anxiety, the results did not support the hypotheses. Contrary to expectations, the child molesters were not more socially anxious than were the non-sex offenders as measured by the SAD scale. Further, the SAD scale was not significantly associated with log number of sexual charges and convictions. These findings were at odds with theory regarding the etiology and maintenance of child sexual abuse and past research in which child molesters have been found to report greater social anxiety than non-sex offenders (Katz, 1990; Segal & Marshall, 1985). Surprisingly, the SAD scale was not significantly correlated with any of the IAT effects. It had been hypothesized that greater self-reported social anxiety would be associated with an IAT-assessed view of a) self as negative, weak, and unattractive; and b) children (relative to adults) as pleasant and weak. Lower social anxiety on the SAD scale was significantly and strongly associated with greater impression management, as measured by the BIDR-IM. This puts the validity of the SAD scale into question because it seems unduly influenced by impression management. The IAT effects, however, were not significantly correlated with the BIDR-IM. As other researchers have found (Asendorpf et al., 2002; Greenwald et al., 2002; Greenwald & Farnham, 2000), the IAT appears much less vulnerable than self-report measures to respondents' attempts to "fake good".

In light of the failure to find a significant association between self-report and the IATs in the current study and in past research (e.g., Asendorpf et al., 2002; Bosson et al., 2000; Dasgupta & Greenwald, 2001), the self-report literature may be an inappropriate context in which to

interpret the current IAT results. If self-report measures and the IAT are distinct, as many researchers have argued (Greenwald & Farnham, 2000), then there is little value in assessing the degree to which the self-report literature and the current IAT results converge or diverge from one another. Following this logic, the self-report literature was not revisited here and instead the current results were considered in the context of past research with measures other than self-report.

The findings in the present study fit reasonably well with past research using penile plethysmography (PPG), viewing reaction time (VRT), and the IAT. Greater sexual attraction to children (relative to adults) was found among child molesters compared to non-sex offenders in the current study on the sexy child IAT as well as in past research using PPG (Barsetti et al., 1998; Baxter et al., 1984; Looman & Marshall, 2001; Marshall et al., 1986; Quinsey & Chaplin, 1988) and VRT (Abel et al., 2001). There is also evidence from other researchers who have used the IAT, that child molesters more strongly associate children with sex (Gray et al., in press) and view children as more sexual than do men who have not sexually abused children (Mihailides et al., 2004). There is an impressive degree of convergence across studies and methods, which bolsters confidence in the construct validity of the sexy child IAT and makes a strong case for the involvement of sexual attraction to children in sexual abuse.

There was little convergence, however, between the current and past findings regarding maintenance of sexual offending. Whereas the sexy child IAT effect was not significantly associated with number of sexual offences in the current study, there is considerable evidence that PPG-assessed sexual attraction to children is predictive of persistence in sexual offending (Hanson & Morton-Bourgon, 2004). Speculating, it seems likely that this divergence between the current study and the recidivism literature is an artifact of the research design. Past sexual

offences were examined in the current study, whereas future sexual offences were examined in the studies reviewed by Hanson and Morton-Bourgon. It may be, for example, that the present results indicate the consequences rather than the causes of maintaining sexual offending. Given that number of sexual offences has been found to predict sexual recidivism (Hanson & Bussière, 1998), however, it remains unclear why there would not be greater correspondence between the current findings with the sexy child IAT and the meta-analytic findings. If both PPG-assessed sexual attraction to children and number of sexual offences are predictive of sexual recidivism, it seems reasonable to expect at least a small positive correlation between IAT-assessed sexual attraction to children and number of sexual offences. Future research is necessary to elucidate the relationship between the sexy child IAT and maintenance of sexual offending.

Despite the concerns raised above, some researchers have argued that retrospective designs have value and can contribute to knowledge about risk factors and treatment targets, although prospective designs have greater validity (Thornton, 2002). To the extent that the current results were not simply an artifact of the retrospective design, they have implications for assessment and treatment of child molesters. The finding that the greater persistence in sexual offending was associated with a view of self as less powerful and less sexually attractive as measured, respectively, by the powerful self IAT and the sexy self IAT, suggests that these cognitions may be predictive of sexual recidivism. To date, cognitive predictors of sexual recidivism have been measured primarily by self-report methods and, perhaps because of their vulnerability to impression management, their predictive ability has generally been poor (Hanson & Morton-Bourgon, 2004). Hence, the IAT may have utility in assessing cognitions that are associated with increased risk of recidivism.

Ideally, risk assessments not only provide an estimate of risk but also identify treatment targets (Andrews & Bonta, 2003). The current results suggest that, for those child molesters who view themselves as socially weak and unattractive, targeting these cognitions in treatment may reduce their risk of reoffending. Marshall (1997; Marshall et al., 1999) has argued that increasing offenders' self-esteem and sense of social power and attractiveness, by increasing their social self-confidence, for example, is one important goal of sex offender treatment. The powerful self IAT and the sexy self IAT could be used to identify areas to address in treatment and to assess change in these areas. More specifically, administering IATs pre-treatment and post-treatment could aid in treatment planning and provide an indication of treatment progress. Of course, application of the IAT in the field would be contingent upon further encouraging results from a larger body of research.

In the current study there were several possible alternate explanations for the results discussed above. Follow-up analyses were conducted to evaluate the validity of these alternate explanations. Differences on age, race, and sexual orientation, as well as the exposure of most of the child molesters to sex offender treatment programs, could have influenced the results. For example, exposure to sex offender treatment programs could have raised the self-esteem of the child molesters so that there was no difference between the groups on the pleasant self IAT effect. With regard to age, the child molesters were older than were the non-sex offenders. In terms of race, there were more White offenders in the child molester group than among the non-sex offenders. Self-reported sexual orientation also differed between groups, with a greater proportion of the child molesters reporting homosexual and bisexual orientation than among the non-sex offenders. When these potential confounds were statistically or otherwise controlled, the results were virtually identical to those discussed above.

Just as age, race, and sexual orientation did not appear to have influenced the findings, sex offender treatment exposure also did not appear to have influenced the results. The number of programs in which sex offenders reported participating was not significantly correlated with any of the IAT effects. These non-significant correlations cast doubt on exposure to sex offender treatment as an alternate explanation of the results. Thus, none of the potential confounding variables considered appear to have influenced the results. These follow-up analyses, however, were post-hoc and did not unequivocally rule out the possibility that threats to validity were present and had an impact on the findings.

Although no hypotheses were generated regarding the intercorrelations between the IAT effects, the patterns observed were of interest and provided some support for the construct validity of the IAT procedures used in the current study. Not surprisingly, the pleasant, powerful, and sexy self IAT effects were positively related. More specifically, participants who viewed themselves as more sexually attractive also viewed themselves as more positive and powerful. Marshall et al. (1997) speculated that self-concept in the area of physical attractiveness may determine how the self is viewed in other domains, such as evaluation and social power. For example, if one feels attractive, one would also have high self-esteem and be socially confident. Interestingly, the powerful self IAT effect was negatively correlated with the sexy child IAT effect, which suggests that a view of self as socially weak was associated with a view of children as sexually attractive. With regard to the intercorrelations between the child IAT effects, the results suggested that viewing children as more sexually attractive was associated with viewing children as more pleasant and more powerful. These results are very interesting and suggest that men with more pedophilic interests may view themselves as less powerful and view children as more pleasant and more powerful.

The association between the sexy child IAT effect and the powerful child IAT effect appear to fit well with the cognitive distortion literature. Cognitive distortions have been described as justifications and rationalizations for sexual abuse of children (Ward & Keenan, 1999). A common cognitive distortion is that children are capable of informed consent to sexual activity with an adult (Abel et al., 1984; Abel et al., 1989; Bumby, 1996; Hanson et al., 1994), which implies that children may be attributed greater social power. Further, child molesters with greater sexual interest in children have been found to have more distorted cognitions (Nunes, Firestone, Bradford, & Greenberg, 2002). It is possible, then, that greater sexual attraction to children is associated with imbuing them with greater social power, which would be consistent with the observed IAT intercorrelations. Overall, the nature of the relationship between the six IAT effects seemed reasonable, which inspired some confidence that the IATs possessed adequate construct validity.

Returning to the comparisons of the child molesters and non-sex offenders, the failure to find most of the hypothesized differences between groups is open to at least three different interpretations. First, the average child molester may simply not be very different from other criminals on the cognitions that were examined. For example, it has been convincingly argued and demonstrated that personal distress variables, such as low self-esteem, are not causally related to general criminal behaviour (Andrews & Bonta, 2003; Gendreau, Little, & Goggin, 1996). Second, the IAT procedures may have failed to capture the cognitions of interest. A third possibility is that few between-groups differences were found because there are multiple etiological pathways to child sexual abuse that create different types of child molesters characterized by different cognitions.

In an attempt to address the possibility that there are different etiological pathways to child sexual abuse, Ward and Siegert (2002) proposed the Pathways Model of Child Sexual Abuse. Using a theory knitting approach, Ward and Siegert built upon the strengths of Finkelhor's (1984), Marshall and Barbaree's (1990), and Hall and Hirschman's (1992) theories and created a more comprehensive and flexible model to explain the etiology of child sexual abuse. In Ward and Siegert's model, 5 pathways were proposed. Each pathway is characterized by a primary dysfunctional psychological mechanism, which constitutes a vulnerability factor that ultimately plays a causal role in child sexual abuse. In the pathways model, child molesters are characterized by different clusters of symptoms.

Extrapolating from their theory, the different pathways would appear to be characterized by different patterns of cognitions about self, children, and other adults in the areas of evaluation, power, and sexual attractiveness. In the first pathway, the primary psychological mechanism is intimacy deficits. Insecure attachment is thought to lead to problems with establishing romantic relationships with other adults. In an attempt to satisfy the need for sex and closeness, they turn to children because a child is viewed as more accepting of them than is an adult. In terms of the six areas examined in the current study, child molesters in pathway one would be expected to view children as more pleasant and less powerful (e.g., intimidating) than would non-sex offenders. However, between-group differences would not be expected in the degree to which self is viewed as positive, powerful, sexually attractive, and children are viewed as sexually attractive.

Deviant sexual scripts are the primary mechanism in the second pathway, in which sex is equated with intimacy. Offenders in this pathway fear rejection, so they avoid intimacy and only achieve interpersonal closeness through sex. The choice of a child is based mainly on

opportunity and sexual or emotional need. Child molesters in this pathway would be expected to view themselves as less positive, powerful, and sexually attractive, and to view children as more positive and less powerful than would non-sex offenders. It is unclear, however, whether child molesters in this pathway would view children as more sexually attractive than would non-sex offenders.

In the third pathway, emotional disregulation is the primary mechanism, which involves problems in controlling "affective states in the service of an individual's goals" (p. 333). In this pathway sexual abuse could, for example, be an attempt to cope with negative emotions or, alternately, strong negative emotions may overwhelm one's inhibitions against sexually abusing a child. Extrapolation from the model suggests that offenders in this etiological pathway would not be expected to differ from non-sex offenders in their view of self and children (vs. adults) in the areas of evaluation, power, and sexual attractiveness.

In pathway four, antisocial cognitions are primarily involved, which typically include attitudes, values, and beliefs supportive of general criminal behaviour. For this group, sexually abusing a child is part of a broader repertoire of antisocial behaviour. These child molesters would be expected to share many of the pro-criminal cognitions common among non-sex offenders. Differences would not be expected between child molesters in pathway four and non-sex offenders in their views of self and children (vs. adults) on pleasantness, power, and sexual attractiveness.

In pathway five, all four of the psychological mechanisms above are dysfunctional. Ward and Siegert (2002) describe this group as "pure pedophiles" (p. 340). They are characterized by deviant sexual scripts in which children are the ideal sexual partners, intimacy deficits, emotional dysregulation, and cognitive distortions. Compared to non-sex offenders, this group would be

expected to view children as more positive and more sexually attractive and view adults as more threatening and possibly less sexually attractive. Differences between groups would not be expected for views of self on pleasantness, power, and sexual attractiveness, a view of children on power, or a view of other adults on pleasantness.

If Ward and Siegert (2002) are correct, one prototypical child molester does not exist and, thus, comparisons of a group of heterogeneous child molesters and a group of non-sex offenders would not be expected to yield many differences on the domains examined in the present study. In this study as well as in past research, however, sexual attraction to children has been found to distinguish between groups of (presumably heterogeneous) child molesters and non-molesters. Although these data seem to suggest a degree of homogeneity rather than heterogeneity among child molesters, Ward and Siegert posited that attraction to children can be a consequence as well as a cause of child sexual abuse. Thus, the finding that child molesters as a group are more attracted to children than are non-sex offenders is not necessarily dissonant with the argument that there are different etiological pathways to child sexual abuse.

Certain issues may warrant cautious interpretation of the results of the current study, such as the correlational retrospective design, small sample size, concerns about the construct validity of the IAT, reliance on self-reported information about participation in sex offender treatment programs, and the representativeness of the sample. Although ideally the present study would contribute to knowledge about the etiology and maintenance of child sexual abuse, the findings should be interpreted with caution because of the research design. Because of the correlational retrospective nature of the current study, the results were open to multiple interpretations. For example, in the case of the between groups differences, the greater sexual attraction to children found for the child molesters may have been a result rather than a cause of their initial sexual

offences. That is, although viewing children as sexually attractive was associated with being a child molester, the current study offers no unequivocal insight regarding its status as a potential etiological factor. Similarly, in the case of the association between the various IAT effects and number of sexual offences examined in the child molester group, the finding that a greater number of sexual offences was related to viewing self as less powerful and less sexually attractive may have been a result of detection, imprisonment, or both, rather than an indication of a causal role in the maintenance of sexual offending. Despite the limitations associated with this type of design, it is far more common among studies of sexual offenders than is a prospective design, which would not have been viable in the current study. Furthermore, by collecting and statistically controlling for several potential confounding variables, confidence in the validity of the current results was increased.

Unfortunately, the sample size was somewhat small. Had the effects been as large as initially expected (e.g., $r > .50$ in Greenwald et al., 1998), however, the current sample size would have been more than adequate. Although the sample size was small, it was still possible to detect medium-sized effects ($r \approx .30$) in the tests of the primary hypotheses (i.e., between-groups comparisons on the IAT effects). Arguably, it may not have been important to detect smaller effects; if the IAT cannot produce at least medium-sized effects, then it may not be a useful complement to other measures currently used to assess the cognitions of child molesters. Thus, the statistical power of the current study may have been adequate for its primary purpose, which was to compare child molesters and non-sex offenders on the IATs.

With regard to the construct validity of the IAT, it has been suggested that the IAT may be influenced by one's awareness of environmental associations rather than one's own view of a given category (Fazio & Olson, 2003). For example, a stronger association between *White* and

pleasant than *Black* and *pleasant* may reflect the respondent's awareness of what appears to be a commonly held stereotype but not necessarily the respondent's own personal feelings toward Black people. There is some evidence consistent with this view. Karpinski and Hilton (2001) found that participants viewed apples more positively than they did candy bars, as measured by the IAT. On a self-report measure, however, they did not find greater liking of apples than of candy bars. To further examine this discrepancy, Karpinski and Hilton manipulated participants' exposure to certain word pairings to assess the degree to which knowledge of environmental associations would influence their IATs. Specifically, they presented participants with numerous pairings of the word *youth* with positive words and the word *elderly* with negative words. The pairings were reversed for other participants, so that they received numerous pairings of *youth* with negative words and *elderly* with positive words. After these pairings, participants were administered an IAT designed to assess evaluation of the elderly and youth. Less positive evaluation of youth was found on the IAT for participants who had previously received the pairings of youth and negative words (and *elderly* and positive words) than for participants who had received the pairings of youth and positive words (and *elderly* and negative words). Self-reported evaluation of youth and elderly, however, did not differ across these conditions. These findings suggest that the IAT may tap one's awareness of environmental associations more so than one's own thoughts about a given group.

Fazio and Olson (2003) have argued that when the environmental association diverges from one's personal association, the IAT will reflect the environmental rather than the personal association. Evidence from the current study, however, suggests otherwise. For example, on the sexy child IAT, the average response latencies of the non-sex offenders were consistent with what one would expect to be a widely held association; that is, adults are generally sexually

attractive and children are not. It seems likely that even sex offenders would recognize that most people are not sexually attracted to children. Nevertheless, the child molesters in the current study more strongly associated children than adults with sexual attractiveness on the sexy child IAT. Similar results were found by Gray et al. (in press) and Mihailides et al. (2004). In these three separate studies, then, a pattern of IAT results was found among the child molesters that appears to run counter to associations that one would expect to find among most people. These findings seem at odds with an interpretation of the IAT as tapping one's awareness of environmental associations rather than one's personal associations.

Another challenge to assessing the construct validity of the IAT is that correlations between the IAT and self-report measures are generally small. Although the failure to find a meaningful association between an IAT and a self-report measure can be explained by the possibility that implicit and explicit cognition are two distinct constructs (Fazio, 1990; Fazio & Towles-Schwen, 1999), it remains to identify an adequate criterion with which to evaluate the construct validity of the IAT. Simply put: without using self-report measures, how can one determine whether the IAT is truly tapping the construct in which one is interested? One obvious alternative to self-report measures is behaviour. For example, the finding in the current study that men who were convicted of sexually abusing children differed from men who were not convicted of (or charged with) such offences on the sexy child IAT increases confidence that it may really tap cognitive representations of children and adults in terms of sexual attractiveness. In addition, the convergence with the literature inspires further confidence in the construct validity of the IAT. Specifically, researchers have found that, compared to non-molesters, child molesters are more sexually interested in children, as measured by penile plethysmography (PPG) and viewing reaction time (VRT) measures. As indicated above, there is reason to be optimistic about the

construct validity of the IAT. Despite these arguments, however, caution is warranted when inferring cognitive associations from the IATs until sufficient evidence has accumulated.

Returning to the internal validity of the current study, the attempt to address the possibility that exposure to sex offender treatment programs could have obscured differences that would have otherwise been found between the groups on the IAT effects may have been inadequate. Although the number of sex offender programs in which child molesters reported having participated was not associated with any of the IAT effects, the possibility remains that any participation in a sex offender program may have had an impact on the constructs measured by the IATs. Recall that over three quarters of the child molesters reported participation in a sex offender program. Demonstrating that the number of sex offender programs was unrelated to the IAT effects does not necessarily demonstrate that any exposure vs. no exposure to sex offender programs would also be unrelated to the IAT effects. In the current study, the number of untreated child molesters was too small to permit separation from the treated child molesters. Anecdotally, incarcerated child molesters who have not yet participated in a sex offender treatment program appear to be more reluctant to participate in sex offender research than do child molesters who have participated in such programs. Given, however, that the IATs were not correlated with the number of sex offender programs, it seems reasonable to speculate that the results would not have been different had only untreated child molesters been included.

At a more basic level, the lack of association between sex offender treatment exposure and the IAT effects may have been due to reliance on self-reported rather than file-based treatment data. For example, some child molesters may have misremembered or misrepresented their previous exposure to sex offender treatment programs. An attempt was made to extract exposure to sex offender treatment programs from offenders' files, but this information was

inconsistently reported in OMS and could not be reliably coded. Thus, it was necessary to rely on self-report for this information. To the extent that self-reported treatment exposure was inaccurate, concerns about treatment participation washing out effects that would otherwise have been found may not have been adequately addressed. This raises a tangential but extremely important point: it would be incorrect to interpret the nonsignificant correlations between the IAT effects and self-reported exposure to sex offender treatment programs as evidence that sex offender treatment is ineffective. The current study was not designed to evaluate treatment efficacy. Even if the self-reported information were accurate, offenders may have reported on programs of varying quality and in different jurisdictions.

The degree to which the current sample was representative of the population of incarcerated offenders directly affects the generalizability of the current findings. Compared to the population of offenders housed in the same institutions from which the current sample was drawn, the offenders in the current study appeared generally similar, but somewhat higher risk. For the child molesters, the current sample appeared to be higher risk than the institutional population, as evidenced by the greater number of prior sexual and violent offences and greater likelihood of boy victims (Hanson & Bussière, 1998) and the non-sex offenders appeared to be slightly higher risk for violent recidivism, as evidenced by the greater number of prior violent offences (Quinsey et al., 1998).

For the child molesters, the differences between the sample and the population may be due to variation in the inclusion criteria. The current sample included offenders with unrelated child victims less than 14 years of age, whereas the closest available CSC sample consisted of those with any victims less than 12 years of age. Undoubtedly, some of the child molesters in the population were intrafamilial child molesters, who are generally lower risk for sexual recidivism

than are extrafamilial child molesters (Hanson & Bussière, 1998). This may have been responsible for the differences observed in Table 14. The current sample, then, may be more representative of the population of similarly defined child molesters than the data suggest. To the extent that this is the case, the results from the current study would be expected to generalize to other child molesters in federal custody in Ontario. Even if the current sample were at greater risk than the population, they did not appear to be so extremely different so as to prohibit the generalization of these findings to the institutional population.

There are many future directions for research given that researchers have only recently begun to adapt implicit measures to study cognitions of sex offenders. A high priority would be to further establish the construct validity of the IAT. Greater confidence that the sexy child IAT, for example, is truly tapping sexual interest would be provided by demonstrating convergence with other measures, such as penile plethysmography (PPG) and viewing reaction time (VRT) measures of sexual interest. Further confidence would be gained by demonstrating correspondence between specific treatment targets (e.g., sexual interest in children) and pre- to post-treatment change as measured by the IAT. Prospective studies in which IAT effects were predictive of sexual offending (e.g., recidivism) would provide additional confidence. Together, these three approaches would provide a reasonably comprehensive evaluation of the construct validity of the IAT in assessing cognitions of child molesters. Another avenue for future research would be to examine different types of child molesters and, more generally, different types of sex offenders. For example, it would be interesting to identify different types of child molesters according to Ward and Siegert's (2002) etiological pathways model and use the IAT to assess the degree to which they differ. The IAT would also have potential value in exploring the offence-related cognitions of rapists and other types of offenders.

Overall, the results of the current study suggest that a) implicitly measured cognitions regarding children as sexually attractive may be a distinctive characteristic of child molesters compared to other criminals and b) implicitly measured cognitions regarding self as less powerful and less sexually attractive may be associated with greater persistence of sexual offending among child molesters. The results suggest that the IAT has utility in assessing cognitions associated with child sexual abuse. Further research is clearly warranted to address concerns regarding construct validity. The IAT appears to be a promising method of examining the cognitions of child molesters and an exciting area for future research that may eventually become a valuable complement to existing assessment techniques.

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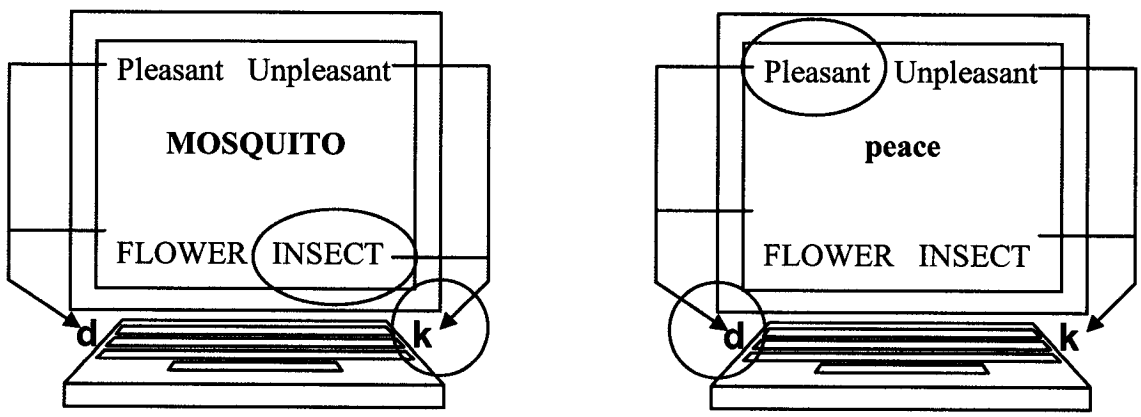


Figure 1a. Example of one block of categorization trials in an Implicit Association Test (IAT) designed to assess the pleasantness of flowers relative to insects. In these trials, flower and pleasant share the same response key, while insect and unpleasant share the same response key. For respondents who view flowers as pleasant but insects as unpleasant, response latencies would be faster because these trials would be compatible (flower and pleasant are both indicated by pressing the same key). In contrast, for respondents who view flowers as unpleasant but insects as pleasant, response latencies would be slower because these trials would be incompatible (insect and unpleasant are both indicated by pressing the same key).

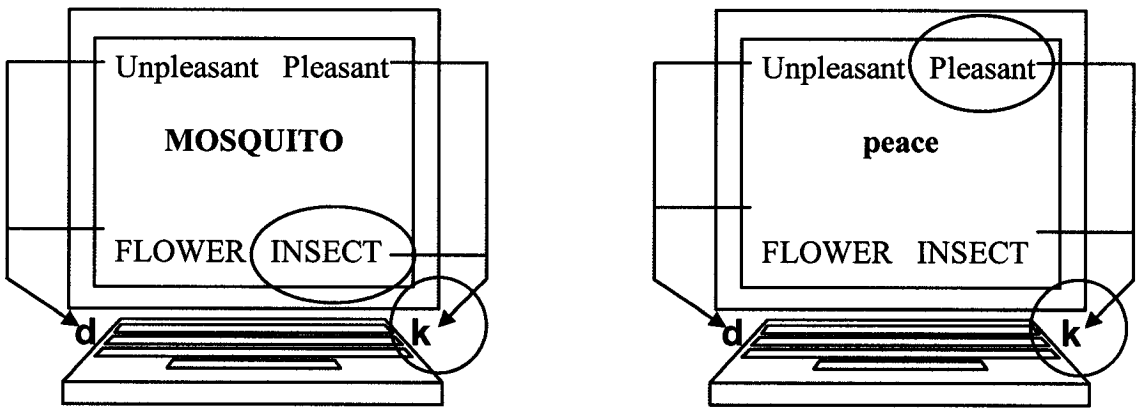


Figure 1b. Example of another block of categorization trials in an Implicit Association Test (IAT) designed to assess the pleasantness of flowers relative to insects. In these trials, flower and unpleasant share the same response key, while insect and pleasant now share the same response key. For respondents who view flowers as pleasant but insects as unpleasant, response latencies would be slower because these trials would now be incompatible (flower and unpleasant are both indicated by pressing the same key). In contrast, for respondents who view flowers as unpleasant but insects as pleasant, response latencies would be faster because these trials would now be compatible (insect and pleasant are both indicated by pressing the same key).

	Step 1	
	Target-concepts	
ADULT		**CHILD**
○	MATURE	
	YOUNG	○
○	BIG	
	SMALL	○
○	ADULT	
	CHILD	○

	Step 2	
	Attributes	
not sexy		**sexy**
●	cold	
	sex	●
●	ugly	
	naked	●
●	disgusting	
	beautiful	●

	Step 3	
	Combined task	
not sexy/ ADULT		**sexy/ CHILD**
●	cold	
○	MATURE	
	sex	●
	YOUNG	○
●	ugly	
○	BIG	

	Step 4	
	Reversed target-concept task	
CHILD		**ADULT**
	MATURE	○
○	YOUNG	
	BIG	○
○	SMALL	
	ADULT	○
○	CHILD	

	Step 5	
	Reversed combined task	
not sexy/ CHILD		**sexy/ ADULT**
●	ugly	
	MATURE	○
	beautiful	●
○	SMALL	
●	disgusting	
	BIG	○

Figure 2. Illustration of Sexy Child IAT procedure using stimuli designed to measure participants' perceptions of sexual attractiveness in children relative to adults. A circle beside a stimulus word indicates the category to which it belongs (e.g., *MATURE* belongs in the *Adult* category) and which index finger (left or right) should be used to make the response. The open circles indicate target-concept stimulus words for which the correct response is either *Adult* or *Child*. The dark circles indicate attribute stimulus words, for which the correct response is either *Not sexy* or *Sexy*. In the actual Sexy Child IAT, all the stimulus words from the corresponding word lists in Appendix E were presented.

Table 1

Description of Participants

Variable	Non-Sex Offenders		Child Molesters				
	N	*M* (*SD*) or %	*N*	*M* (*SD*) or %	*df*	*F* or χ^2	*r*
Age	31	38.19 (10.69)	30	47.57 (14.74)	1, 59	8.13 **	.35
Education (years)	31	10.10 (1.94)	30	9.83 (2.61)	1, 59	0.20	-.05
Language grade level	31	9.23 (3.25)	27	9.80 (3.05)	1, 56	0.50	.09
Race	30		30		3	5.91 [a]	
White		70.0%		93.3%	1	5.46 * [a]	.30
Black		6.7%		3.3%			
North American Indian		20.0%		3.3%			
Asian		3.3%		0			
Prior violent charges or convictions	31		30		2	4.08	-.26
0		19.4%		40.0%			
1		16.1%		20.0%			
2 or more		64.5%		40.0%			
Index violent charges or convictions	31		30		2	22.92***	-.61
0		3.2%		60.0%			
1		41.9%		16.7%			
2 or more		54.8%		23.3%			

Table 1 continued

Variable	Non-Sex Offenders		Child Molesters				
	N	*M* (*SD*) or %	*N*	*M* (*SD*) or %	*df*	*F* or χ^2	*r*
Sexual orientation	29		28		2	12.83** [a]	
Heterosexual		96.6%		57.1%	1	12.47** [a]	-.47
Homosexual		0%		21.4%			
Bisexual		3.4%		21.4%			

Note. *r* was reported as an effect size estimate indicating the magnitude of difference between groups; Cohen (1992) suggested that correlations of .10, .30, and .50 are small, medium, and large effects, respectively.

[a] These data violated the chi-square assumption that each cell contains a minimum of 5 participants and should be interpreted with caution.

* $p < .05$, two-tailed. ** $p < .01$, two-tailed. *** $p < .001$, two-tailed.

Table 2

Child Molesters in Current Sample and Institutional Population of Child Molesters

	Current sample		Population	
Variable	*N*	*M* (*SD*) or %	*N*	*M* (*SD*) or %
Age	30	47.57 (14.74)	122	43.02 (10.80)
Education	31		122	
Less than grade 8		20.0%		14.8%
Less than grade 10		40.0%		33.6%
White	30	93.3%	122	82.8%
Prior violent convictions	30		122	
0		60.0%		86.9%
1		16.7%		8.2%
2 or more		23.3%		4.9%
Index violent convictions	30		122	
0		63.3%		66.4%
1		16.7%		16.4%
2 or more		20.0%		7.2%
Prior sex convictions	30		122	
0		40.0%		82.0%
1		13.3%		5.7%
2 or more		46.7%		12.3%

Table 2 continued

	Current sample		Population	
Variable	*N*	*M* (*SD*) or %	*N*	*M* (*SD*) or %
Index sex convictions	30		122	
0		33.3%		4.1%
1		13.3%		28.7%
2 or more		53.3%		67.2%
Victim gender[a]	30		122	
Girls only		23.3%		51.6%
Boys only		43.3%		22.1%
Both		33.3%		26.2%

[a]For current sample, victim gender was coded for convictions against children under 14 years of age, whereas for the CSC population, victim gender was coded for convictions against children under 12 years of age.

Table 3

Non-Sex Offenders in Current Sample and Institutional Population of Non-Sex Offenders

	Current sample		Population	
Variable	*N*	*M* (*SD*) or %	*N*	*M* (*SD*) or %
Age	31	38.19 (10.69)	611	35.11 (10.03)
Education	31		608	
Less than grade 8		6.5%		11.3%
Less than grade 10		29.0%		40.8%
White	30	70.0%	606	70.1%
Prior violent convictions	31		611	
0		29.0%		77.1%
1		22.6%		9.3%
2 or more		48.4%		13.6%
Index violent convictions	31		611	
0		3.2%		12.4%
1		51.6%		46.2%
2 or more		45.2%		41.4%

Table 4

Pleasant Self IAT Mean (*M*) Response Latencies and Standard Deviations (*SD*) in Milliseconds (ms) and Natural Logarithmic Transformed Milliseconds (ln)

Variable	Non-Sex Offenders			Child Molesters		
	n	*M*	*SD*	*n*	*M*	*SD*
Unstransformed (ms)	30			27		
Pleasant + Me / Unpleasant + Not me		746.19	187.41		772.47	170.29
Unpleasant + Me / Pleasant + Not me		1039.01	332.88		1106.86	321.07
Pleasant Self IAT effect		292.82	245.69		334.39	249.88
Natural log (ln)						
Pleasant + Me / Unpleasant + Not me		6.55	0.19		6.59	0.19
Unpleasant + Me / Pleasant + Not me		6.84	0.28		6.92	0.25
Pleasant Self IAT effect		0.30	0.19		0.33	0.18

Table 5

Powerful Self IAT Mean (*M*) Response Latencies and Standard Deviations (*SD*) in Milliseconds (ms) and Natural Logarithmic Transformed Milliseconds (ln)

Variable	Non-Sex Offenders			Child Molesters		
	n	*M*	*SD*	*n*	*M*	*SD*
Unstransformed (ms)	29			28		
Powerful + Me / Weak + Not me		873.35	268.07		933.77	242.46
Weak + Me / Powerful + Not me		868.70	209.20		984.92	291.61
Powerful Self IAT effect		-4.66	181.51		51.16	237.00
Natural log (ln)						
Powerful + Me / Weak + Not me		6.69	0.26		6.76	0.24
Weak + Me / Powerful + Not me		6.69	0.22		6.79	0.26
Powerful Self IAT effect		0.01	0.18		0.04	0.21

Table 6

Sexy Self IAT Mean (*M*) Response Latencies and Standard Deviations (*SD*) in Milliseconds (ms) and Natural Logarithmic Transformed Milliseconds (ln)

Variable	Non-Sex Offenders			Child Molesters		
	n	*M*	*SD*	*n*	*M*	*SD*
Unstransformed (ms)	28			21		
Sexy + Me / Not sexy + Not me		743.35	166.92		824.92	156.77
Not sexy + Me / Sexy + Not me		1054.29	279.22		1103.11	415.26
Sexy Self IAT effect		310.94	212.26		278.19	336.35
Natural log (ln)						
Sexy + Me / Not sexy + Not me		6.56	0.19		6.65	0.19
Not sexy + Me / Sexy + Not me		6.88	0.23		6.90	0.32
Sexy Self IAT effect		0.32	0.17		0.24	0.23

Table 7

Pleasant Child IAT Mean (*M*) Response Latencies and Standard Deviations (*SD*) in Milliseconds (ms) and Natural Logarithmic Transformed Milliseconds (ln)

Variable	Non-Sex Offenders			Child Molesters		
	n	*M*	*SD*	*n*	*M*	*SD*
Unstransformed (ms)	31			29		
Pleasant + Child / Unpleasant + Adult		831.67	269.04		845.54	190.25
Unpleasant + Child / Pleasant + Adult		841.04	233.16		920.97	293.74
Pleasant Child IAT effect		9.37	214.09		75.43	220.29
Natural log (ln)						
Pleasant + Child / Unpleasant + Adult		6.65	0.25		6.67	0.21
Unpleasant + Child / Pleasant + Adult		6.66	0.24		6.74	0.26
Pleasant Child IAT effect		0.01	0.21		0.07	0.18

Table 8

Powerful Child IAT Mean (*M*) Response Latencies and Standard Deviations (*SD*) in Milliseconds (ms) and Natural Logarithmic Transformed Milliseconds (ln)

Variable	Non-Sex Offenders			Child Molesters		
	n	*M*	*SD*	*n*	*M*	*SD*
Unstransformed (ms)	30			27		
Powerful + Child / Weak + Adult		1015.05	305.66		1085.44	282.04
Weak + Child / Powerful + Adult		761.14	178.89		834.39	203.28
Powerful Child IAT effect		-253.92	205.75		-251.06	192.02
Natural log (ln)						
Powerful + Child / Weak + Adult		6.84	0.25		6.90	0.23
Weak + Child / Powerful + Adult		6.57	0.20		6.65	-.21
Powerful Child IAT effect		-0.28	0.16		-0.25	0.18

Table 9

Sexy Child IAT Mean (*M*) Response Latencies and Standard Deviations (*SD*) in Milliseconds (ms) and Natural Logarithmic Transformed Milliseconds (ln)

Variable	Non-Sex Offenders			Child Molesters		
	n	*M*	*SD*	*n*	*M*	*SD*
Unstransformed (ms)	31			27		
Sexy + Child / Not sexy + Adult		959.93	314.64		936.46	300.55
Not sexy + Child / Sexy + Adult		897.50	234.78		988.76	298.27
Sexy Child IAT effect		-62.43	212.50		52.29	210.75
Natural log (ln)						
Sexy + Child / Not sexy + Adult		6.77	0.28		6.74	0.27
Not sexy + Child / Sexy + Adult		6.72	0.23		6.80	0.25
Sexy Child IAT effect		-0.05	0.20		0.05	0.18

Table 10

Self-Reported Social Anxiety and Impression Management

	Non-Sex Offenders			Child Molesters					
Variable	*n*	*M*	*SD*	*n*	*M*	*SD*	*df*	*F*	*r*
SAD	31	9.71	9.25	30	9.83	9.51	1, 59	0.00	.01
BIDR-IM	31	5.26	4.89	30	7.31	4.97	1, 59	2.65 [a]	.21

[a] two-tailed test.

Table 11

Effect Sizes (*r*) for Between-Groups Comparisons with All Participants, only White Participants, and only Heterosexual Participants

	CM vs. Nonsexual offenders		
Variable	Entire sample [a]	White only [b]	Heterosexual only [c]
IAT effect (ln)			
Pleasant self	.09	.03	.17
Powerful self	.08	.07	.05
Sexy self	-.20†	-.20	-.26†
Pleasant child	.17	.13	.20
Powerful child	.08	.08	.03
Sexy child	.28*	.26*	.45**
SAD	.01	-.05	-.14

Note. CM = 1, Nonsexual offender = 0. ln = natural log.

[a]*N* ranged from 49 to 61. [b]*N* ranged from 39 to 49. [c]*N* ranged from 38 to 44.

* $p < .05$, one-tailed. ** $p < .01$, one-tailed. † $p < .10$, one-tailed.

Table 12

Correlations of Self-Reported Number of Sex Offender Treatment Programs with IAT Effects and Self-Reported Social Anxiety for Child Molesters

Measure	*N*	Number of programs
IAT effect (ln)		
Pleasant self	27	-.07
Powerful self	28	.12
Sexy self	21	-.08
Pleasant child	29	-.06
Powerful child	27	.17
Sexy child	27	.05
SAD	30	.32†

Note. ln = natural log. Number of programs = the number of sexual offender treatment programs in which respondent reported participating.

† $p < .10$, two-tailed.

Table 13

Zero-order Correlations and Partial Correlations with Number of Sexual Charges and Convictions (log) for Child Molesters

Measure	*N*	*r*	Partial correlation controlling for: Current age	Number of programs
IAT effect (ln)				
Pleasant self	27	-.21	-.30†	-.20
Powerful self	28	-.31†	-.32*	-.33*
Sexy self	21	-.42*	-.42*	-.42*
Pleasant child	29	.26†	.16	.27†
Powerful child	27	.15	.12	.13
Sexy child	27	-.20	-.07	-.21
SAD	30	-.03	.05	-.08

Note. ln = natural log. Age = current age. Number of programs = the number of sexual offender treatment programs in which respondent reported participating.

* $p < .05$, one-tailed. † $p < .10$, one-tailed.

Table 14

Correlations Between IAT Effects, Self-Reported Social Anxiety, and Impression Management for Entire Sample

Variable	*N*	SAD	BIDR-IM
IAT effect (ln)			
Pleasant self	57	-.11	.22
Powerful self	57	-.05	-.11
Sexy self	49	.04	-.11
Pleasant child	60	-.06	.23
Powerful child	57	-.02	.10
Sexy child	58	.07	.06
SAD	61	–	-.49**

Note. ln = natural log.

** $p < .01$, two-tailed.

Table 15

Intercorrelations Between IAT Effects (ln) for Entire Sample

IAT	1	2	3	4	5	6
1. Pleasant self	-	.28*	.41**	.26†	.01	.02
		(53)	(48)	(57)	(55)	(55)
2. Powerful self		-	.45**	.02	-.19	-.31*
			(47)	(56)	(53)	(54)
3. Sexy self			-	.26†	-.19	-.19
				(49)	(47)	(48)
4. Pleasant child				-	.15	.44**
					(57)	(57)
5. Powerful child					-	.37**
						(55)
6. Sexy child						-

Note. ln = natural log. Sample sizes are in parentheses.

† $p < .10$, two-tailed. * $p < .05$, two-tailed. ** $p < .01$, two-tailed.

Appendix A

Consent Form Presented to Child Molester Participants

Consent Form Presented to Child Molester Participants

I, _____, agree to participate in the research conducted by Kevin Nunes of the School of Psychology in the faculty of Social Science at the University of Ottawa as part of his PhD. The project is under the supervision of Dr. Philip Firestone. The purpose of the research is to see if incarcerated men who have not committed sexual offences are different from men who have committed sexual offences in the way they think of themselves, other adults, and children. The researchers need information from men who have not committed sexual offences as well as those who have been arrested for sexual offences.

My participation will consist of two sessions, each lasting approximately 45 minutes, during which I will be asked to complete computer categorization tasks and paper-and-pencil-questionnaires. I will also be asked to consent to the disclosure of specific information from my institutional files, such as my criminal record and assessment information. This information will be used by the researcher to see if there is a relationship between specific file information and the tasks completed in the present study. My file information will be accessed for the current study and for follow-up studies.

I understand that the contents of my files will be used only for research purposes and that my confidentiality will be respected and protected. The information I provide will **NOT** be shared with Correctional Service of Canada (CSC) staff or put on any institutional file. In the publication or presentation of study results, I will **not** be identified as a participant. My name, FPS number, and other personal information will **not** be written on the information I provide to protect my confidentiality.

I understand that I may find some of the activities tiring or boring. I also understand that since some of the activities deal with sensitive information, they may be embarrassing or

Appendix B

Consent Form Presented to Non-sexual Offender Participants

Consent Form Presented to Nonsexual Offender Participants

I, _____, agree to participate in the research conducted by Kevin Nunes of the School of Psychology in the faculty of Social Science at the University of Ottawa as part of his PhD. The project is under the supervision of Dr. Philip Firestone. The purpose of the research is to see if incarcerated men who have **NOT** committed sexual offences are different from men who have committed sexual offences in the way they think of themselves, other adults, and children. The researchers need information from men who have **NOT** committed sexual offences as well as those who have been arrested for sexual offences. My participation in the present study does **NOT** mean I am a sexual offender; the researchers recognize this.

My participation will consist of two sessions, each lasting approximately 45 minutes, during which I will be asked to complete computer categorization tasks and paper-and-pencil-questionnaires. I will also be asked to consent to the disclosure of specific information from my institutional files, such as my criminal record and assessment information. This information will be used by the researcher to see if there is a relationship between specific file information and the tasks completed in the present study. My file information will be accessed for the current study and for follow-up studies.

I understand that the contents of my files will be used only for research purposes and that my confidentiality will be respected and protected. The information I provide will **NOT** be shared with Correctional Service of Canada (CSC) staff or put on any institutional file. In the publication or presentation of study results, I will **not** be identified as a participant. My name, FPS number, and other personal information will **not** be written on the information I provide to protect my confidentiality.

Appendix C

SOCIAL SCIENCES AND HUMANITIES RESEARCH ETHICS BOARD

CERTIFICATION OF ETHICAL APPROVAL

This is to certify that the University of Ottawa Social Sciences and Humanities Research Ethics Board (REB) has examined the application for ethical approval for the research project Implicit Cognitions of Child Molesters (File 02-03-15) submitted by Kevin Nunes, and supervised by Philip Firestone of the School of Psychology. The members of the REB found that the research project met appropriate ethical standards as outlined in the Tri-Council Policy Statement and in the Procedures of the University of Ottawa Research Ethics Boards, and accordingly gave the research project a Category Ia (Approval). This certification is valid for one year from the date indicated below.

_____ November 3, 2003

Catherine Paquet Date

Protocol Officer for Ethics in Research

For Christine Dallaire,

Chair of the Social Sciences and Humanities REB

Appendix D

Approval to Conduct Research from the Correctional Service of Canada

Please be advised that the Regional Deputy Commissioner has approved the following research project:

RESEARCH PROPOSAL: Implicit Cognitions of Child Molesters

RESEARCHER: Kevin Nunes, Ph. D. Psychology, University of Ottawa

SITES IDENTIFIED FOR DATA COLLECTION: KP, RTC, Millhaven, Warkworth, Bath

The study group includes approximately 50 extrafamilial child molesters and a comparison group of 50 non-sexual offenders who consent to participate. The purpose of the research is to see if incarcerated men who have not committed sexual offences are different from men who have committed sexual offences in the way they think of themselves, other adults and children.

The researcher is proposing to conduct data collection in October/November 2003. He has received reliability clearance.

The data collection process will require the participants to complete a series of computer categorization tasks on the researcher's own lap-top computer. In addition, the researcher will require access to OMS and file information.

Mr. Nunes is proposing to contact your Chief of Psychology directly to enlist participants for the study, and to make arrangements for a time and location to conduct data collection.

Upon request, I will provide a copy of the research proposal detailing the study design and methodology.

If you have any questions or concerns regarding this research, please do not hesitate to contact me.

Chris Bell

Project Officer

Policy & Planning

Regional Headquarters (Ontario)

Correctional Service of Canada

Appendix E

Stimulus Words for IATs

Target-Concepts

Me words. Me, my, mine, myself

Not me words. It, they, them, their

Child words. Young, small, boy, girl, kid, child

Adult words. Mature, big, man, woman, grownup, adult

Attributes

Pleasant words. Vacation, rainbow, smile, sunshine, paradise, freedom.

Unpleasant words. Rotten, poison, sickness, vomit, cancer, evil.

Powerful words. Violent, destroy, command, powerful, confident, success.

Weak words. Afraid, insecure, feeble, scrawny, timid, lamb.

Sexy words. Fuck, naked, masturbate, sex, beautiful, love.

Not sexy words. Yuck, stink, cold, ugly, impotent, disgusting.

Appendix F

Pre-Testing Stimulus Word Ratings Questionnaires: Pleasantness, Power, and Sexual Attractiveness

Pleasantness Ratings

We are trying to get an idea of what certain words mean to people. In this questionnaire, you are asked to rate the pleasantness of a number of words. We are interested in **your personal opinion** about each word; there are no right or wrong answers.

Please ask about any words you do not understand.

Do **NOT** write your name on the questionnaire. Once you have completed the questionnaire, place it in the envelope.

On the following pages, please rate how **pleasant** you think each word is by circling the appropriate number, as in the example below.

Example:

	not at all pleasant		**neither**		**very pleasant**
1. Happiness	1	2	3	4	5
2. Misery	1	2	3	4	5
3. Lamp	1	2	3	4	5

Please rate how **pleasant** you find each word by circling the appropriate number. Remember, we are interested in **your personal opinion** about each word; there are no right or wrong answers.

	not at all pleasant		neither		very pleasant
1. Failure	1	2	3	4	5
2. Grief	1	2	3	4	5
3. Loyal	1	2	3	4	5
4. Pollute	1	2	3	4	5
5. Smile	1	2	3	4	5
6. Valued	1	2	3	4	5
7. Rude	1	2	3	4	5
8. Innocent	1	2	3	4	5
9. Feeble	1	2	3	4	5
10. Afraid	1	2	3	4	5
11. Cancer	1	2	3	4	5
12. Dependent	1	2	3	4	5
13. Filth	1	2	3	4	5
14. Independent	1	2	3	4	5
15. Love	1	2	3	4	5
16. Lucky	1	2	3	4	5
17. Poison	1	2	3	4	5
18. Rotten	1	2	3	4	5
19. Vacation	1	2	3	4	5
20. Yuck	1	2	3	4	5

	not at all pleasant		neither		very pleasant
21. Timid	1	2	3	4	5
22. Shout	1	2	3	4	5
23. Proud	1	2	3	4	5
24. Orgasm	1	2	3	4	5
25. Lamb	1	2	3	4	5
26. Heaven	1	2	3	4	5
27. Frigid	1	2	3	4	5
28. Fight	1	2	3	4	5
29. Death	1	2	3	4	5
30. Bossy	1	2	3	4	5
31. Awful	1	2	3	4	5
32. Confident	1	2	3	4	5
33. Divorce	1	2	3	4	5
34. Frail	1	2	3	4	5
35. Hated	1	2	3	4	5
36. Joy	1	2	3	4	5
37. Mighty	1	2	3	4	5
38. Power	1	2	3	4	5
39. Stupid	1	2	3	4	5
40. Violent	1	2	3	4	5
41. Worthy	1	2	3	4	5

	not at all pleasant		neither		very pleasant
42. Truth	1	2	3	4	5
43. Smart	1	2	3	4	5
44. Romance	1	2	3	4	5
45. Pleasure	1	2	3	4	5
46. Hostile	1	2	3	4	5
47. Give	1	2	3	4	5
48. Selfish	1	2	3	4	5
49. Cruel	1	2	3	4	5
50. Blowjob	1	2	3	4	5
51. Cheer	1	2	3	4	5
52. Detached	1	2	3	4	5
53. Seductive	1	2	3	4	5
54. Follow	1	2	3	4	5
55. Happy	1	2	3	4	5
56. Stink	1	2	3	4	5
57. Insecure	1	2	3	4	5
58. Potent	1	2	3	4	5
59. Scrawny	1	2	3	4	5
60. Turned off	1	2	3	4	5
61. Sickly	1	2	3	4	5
62. Rainbow	1	2	3	4	5

	not at all pleasant		neither		very pleasant
63. Passion	1	2	3	4	5
64. Leader	1	2	3	4	5
65. Horny	1	2	3	4	5
66. Gentle	1	2	3	4	5
67. Dull	1	2	3	4	5
68. Cooperative	1	2	3	4	5
69. Beautiful	1	2	3	4	5
70. Cold	1	2	3	4	5
71. Friend	1	2	3	4	5
72. Health	1	2	3	4	5
73. Kindness	1	2	3	4	5
74. Poverty	1	2	3	4	5
75. Sunshine	1	2	3	4	5
76. Warm	1	2	3	4	5
77. Winner	1	2	3	4	5
78. Tragedy	1	2	3	4	5
79. Rejected	1	2	3	4	5
80. Patience	1	2	3	4	5
81. Lose	1	2	3	4	5
82. Glory	1	2	3	4	5
83. Erotic	1	2	3	4	5

	not at all pleasant		neither		very pleasant
84. Corpse	1	2	3	4	5
85. Bland	1	2	3	4	5
86. Aroused	1	2	3	4	5
87. Competent	1	2	3	4	5
88. Disaster	1	2	3	4	5
89. Flower	1	2	3	4	5
90. Agony	1	2	3	4	5
91. Guilty	1	2	3	4	5
92. Celibate	1	2	3	4	5
93. Soft	1	2	3	4	5
94. Laughter	1	2	3	4	5
95. Delicate	1	2	3	4	5
96. Paradise	1	2	3	4	5
97. Fragile	1	2	3	4	5
98. Hard	1	2	3	4	5
99. Jail	1	2	3	4	5
100. Lust	1	2	3	4	5
101. Powerful	1	2	3	4	5
102. Sensual	1	2	3	4	5
103. Vile	1	2	3	4	5
104. Yield	1	2	3	4	5

	not at all pleasant		neither		very pleasant
105. Ugly	1	2	3	4	5
106. Strong	1	2	3	4	5
107. Repulsive	1	2	3	4	5
108. Peace	1	2	3	4	5
109. Massage	1	2	3	4	5
110. Loser	1	2	3	4	5
111. Hot	1	2	3	4	5
112. Slime	1	2	3	4	5
113. Gold	1	2	3	4	5
114. Evil	1	2	3	4	5
115. Crash	1	2	3	4	5
116. Bold	1	2	3	4	5
117. Aloof	1	2	3	4	5
118. Bright	1	2	3	4	5
119. Daring	1	2	3	4	5
120. Sickness	1	2	3	4	5
121. Freedom	1	2	3	4	5
122. Hatred	1	2	3	4	5
123. Kind	1	2	3	4	5
124. Loud	1	2	3	4	5
125. Obedient	1	2	3	4	5

	not at all pleasant		neither		very pleasant
126. Prison	1	2	3	4	5
127. Sex	1	2	3	4	5
128. Succeed	1	2	3	4	5
129. Vomit	1	2	3	4	5
130. Withdrawn	1	2	3	4	5
131. Triumph	1	2	3	4	5
132. Sick	1	2	3	4	5
133. Rage	1	2	3	4	5
134. Pain	1	2	3	4	5
135. Masturbate	1	2	3	4	5
136. Lame	1	2	3	4	5
137. Homely	1	2	3	4	5
138. Naked	1	2	3	4	5
139. Fuck	1	2	3	4	5
140. Powerless	1	2	3	4	5
141. Drab	1	2	3	4	5
142. Sexy	1	2	3	4	5
143. Shy	1	2	3	4	5
144. Controlling	1	2	3	4	5
145. Surrender	1	2	3	4	5
146. Blah	1	2	3	4	5

	not at all pleasant		neither		very pleasant
147. Warmth	1	2	3	4	5
148. Ashamed	1	2	3	4	5
149. Welcome	1	2	3	4	5
150. Command	1	2	3	4	5
151. Useless	1	2	3	4	5
152. Destroy	1	2	3	4	5
153. Success	1	2	3	4	5
154. Fury	1	2	3	4	5
155. Pure	1	2	3	4	5
156. Honest	1	2	3	4	5
157. Nice	1	2	3	4	5
158. Impotent	1	2	3	4	5
159. Good	1	2	3	4	5
160. Distant	1	2	3	4	5
161. Bad	1	2	3	4	5
162. Assertive	1	2	3	4	5
163. Disgusting	1	2	3	4	5
164. Vulnerable	1	2	3	4	5

Power Ratings

We are trying to get an idea of what certain words mean to people. In this questionnaire, you are asked to rate the powerfulness of a number of words. We are interested in **your personal opinion** about each word; there are no right or wrong answers.

Please ask about any words you do not understand.

Do **NOT** write your name on the questionnaire. Once you have completed the questionnaire, place it in the envelope.

On the following pages, please rate how **powerful** you think each word is by circling the appropriate number, as in the example below.

Example:

	very weak		neither		very powerful
1. Big	1	2	3	4	5
2. Small	1	2	3	4	5
3. Corn	1	2	3	4	5

Please rate how **powerful** you find each word by circling the appropriate number. Remember, we are interested in **your personal opinion** about each word; there are no right or wrong answers.

	very weak		neither		very powerful
1. Failure	1	2	3	4	5
2. Grief	1	2	3	4	5
3. Loyal	1	2	3	4	5
4. Pollute	1	2	3	4	5
5. Smile	1	2	3	4	5
6. Valued	1	2	3	4	5
7. Rude	1	2	3	4	5
8. Innocent	1	2	3	4	5
9. Feeble	1	2	3	4	5
10. Afraid	1	2	3	4	5
11. Cancer	1	2	3	4	5
12. Dependent	1	2	3	4	5
13. Filth	1	2	3	4	5
14. Independent	1	2	3	4	5
15. Love	1	2	3	4	5
16. Lucky	1	2	3	4	5
17. Poison	1	2	3	4	5
18. Rotten	1	2	3	4	5
19. Vacation	1	2	3	4	5
20. Yuck	1	2	3	4	5

	very weak		neither		very powerful
21. Timid	1	2	3	4	5
22. Shout	1	2	3	4	5
23. Proud	1	2	3	4	5
24. Orgasm	1	2	3	4	5
25. Lamb	1	2	3	4	5
26. Heaven	1	2	3	4	5
27. Frigid	1	2	3	4	5
28. Fight	1	2	3	4	5
29. Death	1	2	3	4	5
30. Bossy	1	2	3	4	5
31. Awful	1	2	3	4	5
32. Confident	1	2	3	4	5
33. Divorce	1	2	3	4	5
34. Frail	1	2	3	4	5
35. Hated	1	2	3	4	5
36. Joy	1	2	3	4	5
37. Mighty	1	2	3	4	5
38. Power	1	2	3	4	5
39. Stupid	1	2	3	4	5
40. Violent	1	2	3	4	5
41. Worthy	1	2	3	4	5

	very weak		neither		very powerful
42. Truth	1	2	3	4	5
43. Smart	1	2	3	4	5
44. Romance	1	2	3	4	5
45. Pleasure	1	2	3	4	5
46. Hostile	1	2	3	4	5
47. Give	1	2	3	4	5
48. Selfish	1	2	3	4	5
49. Cruel	1	2	3	4	5
50. Blowjob	1	2	3	4	5
51. Cheer	1	2	3	4	5
52. Detached	1	2	3	4	5
53. Seductive	1	2	3	4	5
54. Follow	1	2	3	4	5
55. Happy	1	2	3	4	5
56. Stink	1	2	3	4	5
57. Insecure	1	2	3	4	5
58. Potent	1	2	3	4	5
59. Scrawny	1	2	3	4	5
60. Turned off	1	2	3	4	5
61. Sickly	1	2	3	4	5
62. Rainbow	1	2	3	4	5

	very weak		neither		very powerful
63. Passion	1	2	3	4	5
64. Leader	1	2	3	4	5
65. Horny	1	2	3	4	5
66. Gentle	1	2	3	4	5
67. Dull	1	2	3	4	5
68. Cooperative	1	2	3	4	5
69. Beautiful	1	2	3	4	5
70. Cold	1	2	3	4	5
71. Friend	1	2	3	4	5
72. Health	1	2	3	4	5
73. Kindness	1	2	3	4	5
74. Poverty	1	2	3	4	5
75. Sunshine	1	2	3	4	5
76. Warm	1	2	3	4	5
77. Winner	1	2	3	4	5
78. Tragedy	1	2	3	4	5
79. Rejected	1	2	3	4	5
80. Patience	1	2	3	4	5
81. Lose	1	2	3	4	5
82. Glory	1	2	3	4	5
83. Erotic	1	2	3	4	5

	very weak		neither		very powerful
84. Corpse	1	2	3	4	5
85. Bland	1	2	3	4	5
86. Aroused	1	2	3	4	5
87. Competent	1	2	3	4	5
88. Disaster	1	2	3	4	5
89. Flower	1	2	3	4	5
90. Agony	1	2	3	4	5
91. Guilty	1	2	3	4	5
92. Celibate	1	2	3	4	5
93. Soft	1	2	3	4	5
94. Laughter	1	2	3	4	5
95. Delicate	1	2	3	4	5
96. Paradise	1	2	3	4	5
97. Fragile	1	2	3	4	5
98. Hard	1	2	3	4	5
99. Jail	1	2	3	4	5
100. Lust	1	2	3	4	5
101. Powerful	1	2	3	4	5
102. Sensual	1	2	3	4	5
103. Vile	1	2	3	4	5
104. Yield	1	2	3	4	5

	very weak		neither		very powerful
105. Ugly	1	2	3	4	5
106. Strong	1	2	3	4	5
107. Repulsive	1	2	3	4	5
108. Peace	1	2	3	4	5
109. Massage	1	2	3	4	5
110. Loser	1	2	3	4	5
111. Hot	1	2	3	4	5
112. Slime	1	2	3	4	5
113. Gold	1	2	3	4	5
114. Evil	1	2	3	4	5
115. Crash	1	2	3	4	5
116. Bold	1	2	3	4	5
117. Aloof	1	2	3	4	5
118. Bright	1	2	3	4	5
119. Daring	1	2	3	4	5
120. Sickness	1	2	3	4	5
121. Freedom	1	2	3	4	5
122. Hatred	1	2	3	4	5
123. Kind	1	2	3	4	5
124. Loud	1	2	3	4	5
125. Obedient	1	2	3	4	5

	very weak		neither		very powerful
126. Prison	1	2	3	4	5
127. Sex	1	2	3	4	5
128. Succeed	1	2	3	4	5
129. Vomit	1	2	3	4	5
130. Withdrawn	1	2	3	4	5
131. Triumph	1	2	3	4	5
132. Sick	1	2	3	4	5
133. Rage	1	2	3	4	5
134. Pain	1	2	3	4	5
135. Masturbate	1	2	3	4	5
136. Lame	1	2	3	4	5
137. Homely	1	2	3	4	5
138. Naked	1	2	3	4	5
139. Fuck	1	2	3	4	5
140. Powerless	1	2	3	4	5
141. Drab	1	2	3	4	5
142. Sexy	1	2	3	4	5
143. Shy	1	2	3	4	5
144. Controlling	1	2	3	4	5
145. Surrender	1	2	3	4	5
146. Blah	1	2	3	4	5

	very weak		neither		very powerful
147. Warmth	1	2	3	4	5
148. Ashamed	1	2	3	4	5
149. Welcome	1	2	3	4	5
150. Command	1	2	3	4	5
151. Useless	1	2	3	4	5
152. Destroy	1	2	3	4	5
153. Success	1	2	3	4	5
154. Fury	1	2	3	4	5
155. Pure	1	2	3	4	5
156. Honest	1	2	3	4	5
157. Nice	1	2	3	4	5
158. Impotent	1	2	3	4	5
159. Good	1	2	3	4	5
160. Distant	1	2	3	4	5
161. Bad	1	2	3	4	5
162. Assertive	1	2	3	4	5
163. Disgusting	1	2	3	4	5
164. Vulnerable	1	2	3	4	5

Sexual Attractiveness Ratings

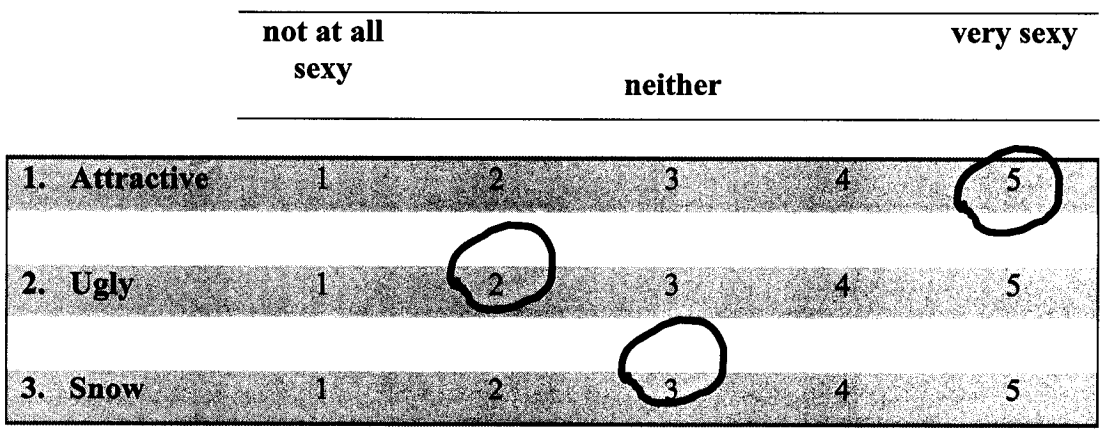
We are trying to get an idea of what certain words mean to people. In this questionnaire, you are asked to rate the sexiness of a number of words. We are interested in **your personal opinion** about each word; there are no right or wrong answers.

Please ask about any words you do not understand.

Do **NOT** write your name on the questionnaire. Once you have completed the questionnaire, place it in the envelope.

On the following pages, please rate how **sexy** you think each word is by circling the appropriate number, as in the example below.

Example:



Please rate how **sexy** you find each word by circling the appropriate number. Remember, we are interested in **your personal opinion** about each word; there are no right or wrong answers.

	not at all sexy		neither		very sexy
1. Failure	1	2	3	4	5
2. Grief	1	2	3	4	5
3. Loyal	1	2	3	4	5
4. Pollute	1	2	3	4	5
5. Smile	1	2	3	4	5
6. Valued	1	2	3	4	5
7. Rude	1	2	3	4	5
8. Innocent	1	2	3	4	5
9. Feeble	1	2	3	4	5
10. Afraid	1	2	3	4	5
11. Cancer	1	2	3	4	5
12. Dependent	1	2	3	4	5
13. Filth	1	2	3	4	5
14. Independent	1	2	3	4	5
15. Love	1	2	3	4	5
16. Lucky	1	2	3	4	5
17. Poison	1	2	3	4	5
18. Rotten	1	2	3	4	5
19. Vacation	1	2	3	4	5
20. Yuck	1	2	3	4	5

	not at all sexy		neither		very sexy
21. Timid	1	2	3	4	5
22. Shout	1	2	3	4	5
23. Proud	1	2	3	4	5
24. Orgasm	1	2	3	4	5
25. Lamb	1	2	3	4	5
26. Heaven	1	2	3	4	5
27. Frigid	1	2	3	4	5
28. Fight	1	2	3	4	5
29. Death	1	2	3	4	5
30. Bossy	1	2	3	4	5
31. Awful	1	2	3	4	5
32. Confident	1	2	3	4	5
33. Divorce	1	2	3	4	5
34. Frail	1	2	3	4	5
35. Hated	1	2	3	4	5
36. Joy	1	2	3	4	5
37. Mighty	1	2	3	4	5
38. Power	1	2	3	4	5
39. Stupid	1	2	3	4	5
40. Violent	1	2	3	4	5
41. Worthy	1	2	3	4	5

	not at all sexy		neither		very sexy
42. Truth	1	2	3	4	5
43. Smart	1	2	3	4	5
44. Romance	1	2	3	4	5
45. Pleasure	1	2	3	4	5
46. Hostile	1	2	3	4	5
47. Give	1	2	3	4	5
48. Selfish	1	2	3	4	5
49. Cruel	1	2	3	4	5
50. Blowjob	1	2	3	4	5
51. Cheer	1	2	3	4	5
52. Detached	1	2	3	4	5
53. Seductive	1	2	3	4	5
54. Follow	1	2	3	4	5
55. Happy	1	2	3	4	5
56. Stink	1	2	3	4	5
57. Insecure	1	2	3	4	5
58. Potent	1	2	3	4	5
59. Scrawny	1	2	3	4	5
60. Turned off	1	2	3	4	5
61. Sickly	1	2	3	4	5
62. Rainbow	1	2	3	4	5

	not at all sexy		neither		very sexy
63. Passion	1	2	3	4	5
64. Leader	1	2	3	4	5
65. Horny	1	2	3	4	5
66. Gentle	1	2	3	4	5
67. Dull	1	2	3	4	5
68. Cooperative	1	2	3	4	5
69. Beautiful	1	2	3	4	5
70. Cold	1	2	3	4	5
71. Friend	1	2	3	4	5
72. Health	1	2	3	4	5
73. Kindness	1	2	3	4	5
74. Poverty	1	2	3	4	5
75. Sunshine	1	2	3	4	5
76. Warm	1	2	3	4	5
77. Winner	1	2	3	4	5
78. Tragedy	1	2	3	4	5
79. Rejected	1	2	3	4	5
80. Patience	1	2	3	4	5
81. Lose	1	2	3	4	5
82. Glory	1	2	3	4	5
83. Erotic	1	2	3	4	5

	not at all sexy		neither		very sexy
84. Corpse	1	2	3	4	5
85. Bland	1	2	3	4	5
86. Aroused	1	2	3	4	5
87. Competent	1	2	3	4	5
88. Disaster	1	2	3	4	5
89. Flower	1	2	3	4	5
90. Agony	1	2	3	4	5
91. Guilty	1	2	3	4	5
92. Celibate	1	2	3	4	5
93. Soft	1	2	3	4	5
94. Laughter	1	2	3	4	5
95. Delicate	1	2	3	4	5
96. Paradise	1	2	3	4	5
97. Fragile	1	2	3	4	5
98. Hard	1	2	3	4	5
99. Jail	1	2	3	4	5
100. Lust	1	2	3	4	5
101. Powerful	1	2	3	4	5
102. Sensual	1	2	3	4	5
103. Vile	1	2	3	4	5
104. Yield	1	2	3	4	5

	not at all sexy		neither		very sexy
105. Ugly	1	2	3	4	5
106. Strong	1	2	3	4	5
107. Repulsive	1	2	3	4	5
108. Peace	1	2	3	4	5
109. Massage	1	2	3	4	5
110. Loser	1	2	3	4	5
111. Hot	1	2	3	4	5
112. Slime	1	2	3	4	5
113. Gold	1	2	3	4	5
114. Evil	1	2	3	4	5
115. Crash	1	2	3	4	5
116. Bold	1	2	3	4	5
117. Aloof	1	2	3	4	5
118. Bright	1	2	3	4	5
119. Daring	1	2	3	4	5
120. Sickness	1	2	3	4	5
121. Freedom	1	2	3	4	5
122. Hatred	1	2	3	4	5
123. Kind	1	2	3	4	5
124. Loud	1	2	3	4	5
125. Obedient	1	2	3	4	5

	not at all sexy		neither		very sexy
126. Prison	1	2	3	4	5
127. Sex	1	2	3	4	5
128. Succeed	1	2	3	4	5
129. Vomit	1	2	3	4	5
130. Withdrawn	1	2	3	4	5
131. Triumph	1	2	3	4	5
132. Sick	1	2	3	4	5
133. Rage	1	2	3	4	5
134. Pain	1	2	3	4	5
135. Masturbate	1	2	3	4	5
136. Lame	1	2	3	4	5
137. Homely	1	2	3	4	5
138. Naked	1	2	3	4	5
139. Fuck	1	2	3	4	5
140. Powerless	1	2	3	4	5
141. Drab	1	2	3	4	5
142. Sexy	1	2	3	4	5
143. Shy	1	2	3	4	5
144. Controlling	1	2	3	4	5
145. Surrender	1	2	3	4	5
146. Blah	1	2	3	4	5

	not at all sexy		neither		very sexy
147. Warmth	1	2	3	4	5
148. Ashamed	1	2	3	4	5
149. Welcome	1	2	3	4	5
150. Command	1	2	3	4	5
151. Useless	1	2	3	4	5
152. Destroy	1	2	3	4	5
153. Success	1	2	3	4	5
154. Fury	1	2	3	4	5
155. Pure	1	2	3	4	5
156. Honest	1	2	3	4	5
157. Nice	1	2	3	4	5
158. Impotent	1	2	3	4	5
159. Good	1	2	3	4	5
160. Distant	1	2	3	4	5
161. Bad	1	2	3	4	5
162. Assertive	1	2	3	4	5
163. Disgusting	1	2	3	4	5
164. Vulnerable	1	2	3	4	5

Appendix G

Pre-Testing Consent Form

Consent form (Pre-testing)

I, _____, agree to participate in the research conducted by Kevin Nunes of the School of Psychology in the faculty of Social Science at the University of Ottawa as part of his PhD. The project is under the supervision of Dr. Philip Firestone (Professor). The purpose of the research is to see how incarcerated men view different words in terms of pleasantness, power, and sexual attractiveness. The ratings, averaged across many participants, will then be used to select words for use in other studies.

My participation will take about 1 hour in total. I will be asked to complete 3 questionnaires, each taking about 20 minutes, in which I will make a total of 492 ratings.

Information obtained will NOT be shared with Correctional Service of Canada (CSC) staff and will NOT be put on any institutional file. Participation in this study will NOT affect any administrative decisions concerning me such as my institutional placement or parole. In the publication or presentation of the results, I will not be identified as a participant. My name and other identifying details will not be written on the information I provide. I have received assurance from the researchers that the information I will share will be anonymous and my participation will remain strictly confidential.

I understand that I may find the activity tiring and boring. I am free to withdraw from the project at any time, before or during the session, refuse to participate and refuse to answer questions. Refusal to participate will NOT affect my treatment by CSC in any way.

The data collected will be kept in a secure manner for a period of 10 years after time of publication in a locked filing cabinet and a password-protected computer and will be accessible only to the researchers working on this and follow-up research.

Any information about my rights as a research participant may be addressed to the **Protocol Officer for Ethics in Research, 550 Cumberland Street, Room 160, (613) 562-5387 or** ethics@uottawa.ca .

If I have any questions about the conduct of the research project, I may contact the researcher, Kevin Nunes, or his supervisor, Dr. Philip Firestone.

Kevin Nunes, University of Ottawa, School of Psychology, 120 University Private, Ottawa, Ontario K1N 6N5, 613-562-5800 extension 4457, knune008@uottawa.ca.

Philip Firestone, University of Ottawa, School of Psychology, 120 University Private, Ottawa, Ontario K1N 6N5, 613-562-5800 extension 4444, fireston@uottawa.ca.

There are two copies of the consent form, one for me to keep.

PARTICIPANT'S SIGNATURE: _____ DATE: _____

RESEARCHER'S SIGNATURE: _____ DATE: _____

Appendix H

Examples of IATs Used in the Present Study

Example of IATs Used in Present Study

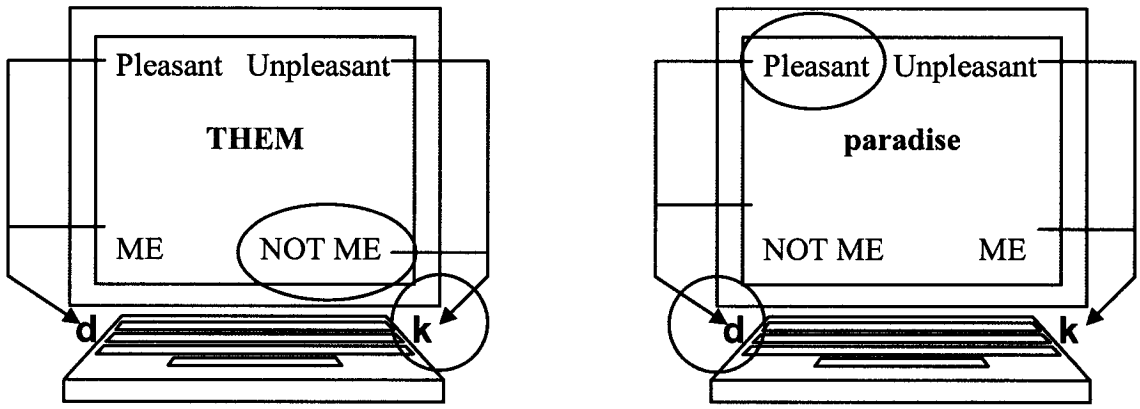


Figure H1. Example of trials in pleasant self IAT, which was designed to assess view of pleasantness of self. In the trial on the left, *pleasant* and *me* are both indicated by the same key, whereas in the trial on the right, *unpleasant* and *me* are both indicated by the same key. If one has a generally negative view of oneself, one should categorize the word presented in the centre of the screen more slowly in the first trial than in the second trial.

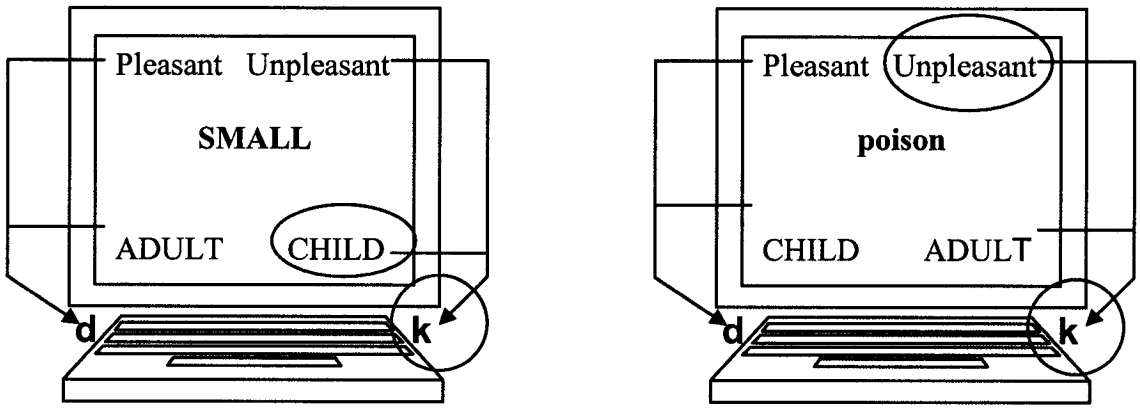


Figure H2. Example of trials in pleasant child IAT, which was designed to assess view of pleasantness of children relative to adults. In the trial on the left, *unpleasant* and *child* are both indicated by the same key, whereas in the trial on the right, *pleasant* and *child* are both indicated by the same key. If one has a more positive view of children relative to adults, one should categorize the word presented in the centre of the screen more slowly in the first trial than in the second trial.

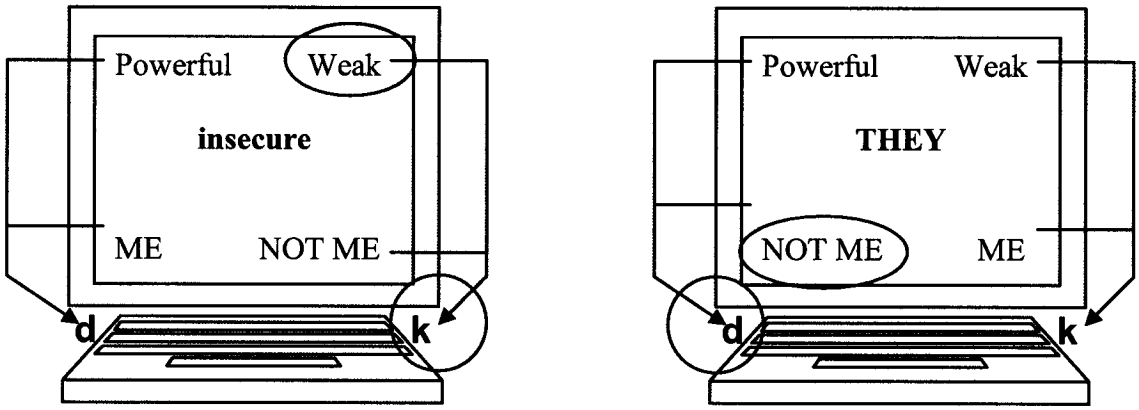


Figure H3. Example of trials in powerful self IAT, which was designed to assess view of self on power. In the trial on the left, *powerful* and *me* are both indicated by the same key, whereas in the trial on the right, *weak* and *me* are both indicated by the same key. If one views oneself as weak, one should categorize the word presented in the centre of the screen more slowly in the first trial than in the second trial.

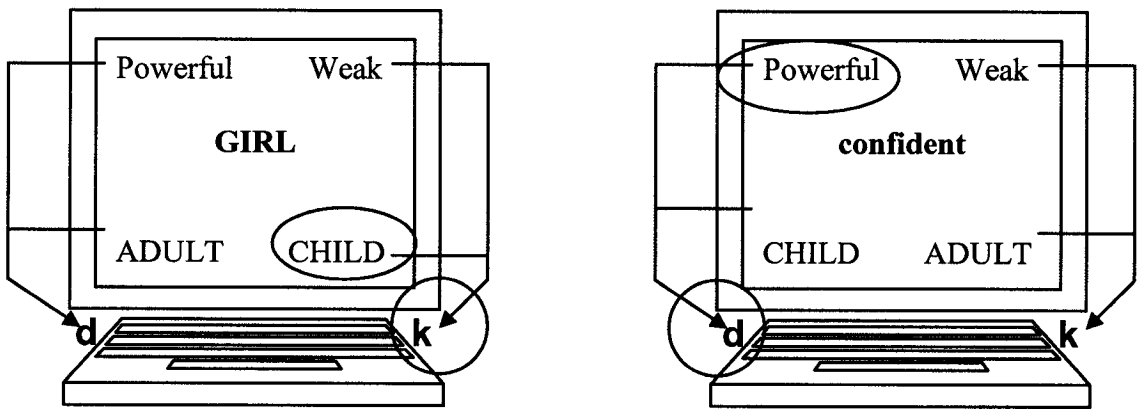


Figure H4. Example of trials in powerful child IAT, which was designed to assess view of children relative to adults on power. In the first trial, *weak* and *child* are both indicated by the same key, whereas in the second trial, *powerful* and *child* are both indicated by the same key. If one views children as weak relative to adults, one should categorize the word presented in the centre of the screen more quickly in the first trial than in the second trial.

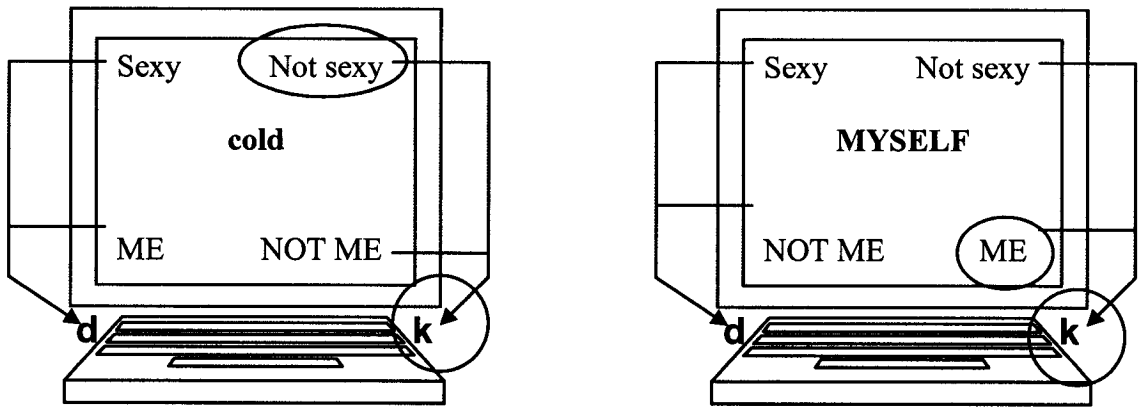


Figure H5. Example of trials in sexy self IAT, which was designed to assess view of self on sexual attractiveness. In the trial on the left, *sexy* and *me* are both indicated by the same key, whereas in the trial on the right, *not sexy* and *me* are both indicated by the same key. If one views oneself as sexually unattractive, one should categorize the word presented in the centre of the screen more slowly in the first trial than in the second trial.

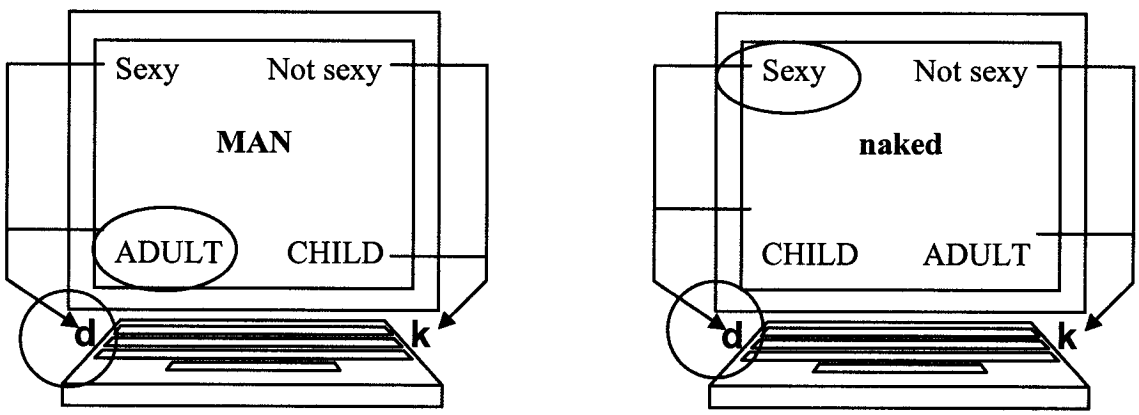


Figure H6. Example of trials in sexy child IAT, which was designed to assess view of children relative to adults on sexual attractiveness. In the trial on the left, *not sexy* and *child* are both indicated by the same key, whereas in the trial on the right, *sexy* and *child* are both indicated by the same key. If one views children as sexually attractive relative to adults, one should categorize the word presented in the centre of the screen more slowly in the first trial than in the second trial.

Appendix I

IAT Instructions Presented Via Computer

IAT Instructions Presented via Computer

Overview

A brief description of the procedures used in this research follows on the next several display pages.

Words will be presented on this display screen, and your responses will be entered on the keyboard. The research assumes that you can read English fluently, and that your vision is normal or corrected to normal. If you do not consider yourself fluent in English, or if your vision is not normal or corrected to normal, AND ESPECIALLY IF YOU ARE HAVING SOME DIFFICULTY READING THIS DESCRIPTION, PLEASE ask the experimenter now whether or not you should continue. If you wish to ask any questions before you begin, please do so now.

Instructions for the Sorting Tasks

For each of several sorting tasks you will be shown words one at a time in the middle of the computer screen. Your task is to sort each item into its correct category as fast as you can by pressing EITHER the 'd' key or the 'k' key.

IMPORTANT: Press the 'd' key using your left index finger, or 'k' key using your right index finger. The categories associated with the 'd' and 'k' keys will be shown at the top of each screen. Please pay close attention to these category labels -- they change for each sorting task!

This task is now completed. Please press the spacebar to proceed.

Please examine the next page carefully. It gives key assignment instructions for the next series of categorization trials.

The next few blocks will change one of the categorization tasks. You will have on-screen reminders at the top throughout the block. Please use this block to remember the instructions and learn the task so you will be able to respond rapidly in the following blocks.

Appendix J
Questionnaire Completed by Child Molester Participants

BIDR-IM

Read each statement and circle the number that best describes you, from *Not True* to *Very True* about you.

BIDR-IM	**Not true**						**Very true**
1. I sometimes tell lies if I have to.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
2. I never cover up my mistakes.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
3. There have been occasions when I have taken advantage of someone.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
4. I never swear.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
5. I sometimes try to get even rather than forgive and forget.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
6. I always obey laws, even if I'm **un**likely to get caught.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
7. I have said something bad about a friend behind his/her back.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
8. When I hear people talking privately, I avoid listening.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
9. I have received too much change from a salesperson without telling him or her.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
10. I always declare everything at customs.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
11. When I was young I sometimes stole things.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
12. I have never dropped litter on the street.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
13. I sometimes drive faster than the speed limit.	**1**	**2**	**3**	**4**	**5**	**6**	**7**

	Not true						Very true
14. I never read sexy books or magazines.	1	2	3	4	5	6	7
15. I have done things that I don't tell other people about.	1	2	3	4	5	6	7
16. I never take things that don't belong to me.	1	2	3	4	5	6	7
17. I have taken sick-leave from work or school even though I wasn't really sick.	1	2	3	4	5	6	7
18. I have never damaged a library book or store merchandise without reporting it.	1	2	3	4	5	6	7
19. I have some pretty awful habits.	1	2	3	4	5	6	7
20. I don't gossip about other people's business.	1	2	3	4	5	6	7

SAD Scale

Please indicate whether each statement is *True* (T) or *False* (F) about you.

1. I feel relaxed even in unfamiliar social situations.	**T**	**F**
2. I try to avoid situations which force me to be very sociable.	**T**	**F**
3. It is easy for me to relax when I am with strangers.	**T**	**F**
4. I have no particular desire to avoid people.	**T**	**F**
5. I often find social occasions upsetting.	**T**	**F**
6. I usually feel calm and comfortable at social occasions.	**T**	**F**
7. I am usually at ease when talking to someone of the opposite sex.	**T**	**F**
8. I try to avoid talking to people unless I know them well.	**T**	**F**
9. If the chance comes to meet new people, I often take it.	**T**	**F**
10. I often feel nervous or tense in casual get-togethers in which both sexes are present.	**T**	**F**
11. I am usually nervous with people unless I know them well.	**T**	**F**
12. I usually feel relaxed when I am with a group of people.	**T**	**F**
13. I often want to get away from people.	**T**	**F**
14. I usually feel **un**comfortable when I am in a group of people I don't know.	**T**	**F**
15. I usually feel relaxed when I meet someone for the first time.	**T**	**F**

16. Being introduced to people makes me tense and nervous.	**T**	**F**
17. Even though a room is full of strangers, I may enter it anyway.	**T**	**F**
18. I would avoid walking up and joining a large group of people.	**T**	**F**
19. When my superiors want to talk with me, I talk willingly.	**T**	**F**
20. I often feel on edge when I am with a group of people.	**T**	**F**
21. I tend to withdraw from people.	**T**	**F**
22. I don't mind talking to people at parties or social gatherings.	**T**	**F**
23. I am seldom at ease in a large group of people.	**T**	**F**
24. I often think up excuses in order to avoid social engagements.	**T**	**F**
25. I sometimes take the responsibility for introducing people to each other.	**T**	**F**
26. I try to avoid formal social occasions.	**T**	**F**
27. I usually go to whatever social engagements I have.	**T**	**F**
28. I find it easy to relax with other people.	**T**	**F**

Please respond to each question.

1. What is your sexual orientation? **Heterosexual** **Homosexual** **Bisexual**

2. Are you currently in a sex offender treatment program? **YES** **NO**

3. If you are currently in a sex offender treatment program, how many sessions have you attended so far? _____

4. How many sex offender treatment programs have you taken in the past? _____

Appendix K
Questionnaire Completed by Non-sex Offender Participants

BIDR-IM

Read each statement and circle the number that best describes you, from *Not True* to *Very True* about you.

BIDR-IM	**Not true**						**Very true**
21. I sometimes tell lies if I have to.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
22. I never cover up my mistakes.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
23. There have been occasions when I have taken advantage of someone.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
24. I never swear.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
25. I sometimes try to get even rather than forgive and forget.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
26. I always obey laws, even if I'm **un**likely to get caught.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
27. I have said something bad about a friend behind his/her back.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
28. When I hear people talking privately, I avoid listening.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
29. I have received too much change from a salesperson without telling him or her.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
30. I always declare everything at customs.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
31. When I was young I sometimes stole things.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
32. I have never dropped litter on the street.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
33. I sometimes drive faster than the speed limit.	**1**	**2**	**3**	**4**	**5**	**6**	**7**

	Not true						Very true
34. I never read sexy books or magazines.	1	2	3	4	5	6	7
35. I have done things that I don't tell other people about.	1	2	3	4	5	6	7
36. I never take things that don't belong to me.	1	2	3	4	5	6	7
37. I have taken sick-leave from work or school even though I wasn't really sick.	1	2	3	4	5	6	7
38. I have never damaged a library book or store merchandise without reporting it.	1	2	3	4	5	6	7
39. I have some pretty awful habits.	1	2	3	4	5	6	7
40. I don't gossip about other people's business.	1	2	3	4	5	6	7

SAD Scale

Please indicate whether each statement is *True* (T) or *False* (F) about you.

1. I feel relaxed even in unfamiliar social situations.	**T**	**F**
2. I try to avoid situations which force me to be very sociable.	**T**	**F**
3. It is easy for me to relax when I am with strangers.	**T**	**F**
4. I have no particular desire to avoid people.	**T**	**F**
5. I often find social occasions upsetting.	**T**	**F**
6. I usually feel calm and comfortable at social occasions.	**T**	**F**
7. I am usually at ease when talking to someone of the opposite sex.	**T**	**F**
8. I try to avoid talking to people unless I know them well.	**T**	**F**
9. If the chance comes to meet new people, I often take it.	**T**	**F**
10. I often feel nervous or tense in casual get-togethers in which both sexes are present.	**T**	**F**
11. I am usually nervous with people unless I know them well.	**T**	**F**
12. I usually feel relaxed when I am with a group of people.	**T**	**F**
13. I often want to get away from people.	**T**	**F**
14. I usually feel **un**comfortable when I am in a group of people I don't know.	**T**	**F**
15. I usually feel relaxed when I meet someone for the first time.	**T**	**F**
16. Being introduced to people makes me tense and nervous.	**T**	**F**

17. Even though a room is full of strangers, I may enter it anyway.	**T**	**F**
18. I would avoid walking up and joining a large group of people.	**T**	**F**
19. When my superiors want to talk with me, I talk willingly.	**T**	**F**
20. I often feel on edge when I am with a group of people.	**T**	**F**
21. I tend to withdraw from people.	**T**	**F**
22. I don't mind talking to people at parties or social gatherings.	**T**	**F**
23. I am seldom at ease in a large group of people.	**T**	**F**
24. I often think up excuses in order to avoid social engagements.	**T**	**F**
25. I sometimes take the responsibility for introducing people to each other.	**T**	**F**
26. I try to avoid formal social occasions.	**T**	**F**
27. I usually go to whatever social engagements I have.	**T**	**F**
28. I find it easy to relax with other people.	**T**	**F**

Please circle your response to each question.

1. What is your sexual orientation?	**Heterosexual**	**Homosexual**	**Bisexual**
2. Have you ever committed a sex offence?	**YES**	**NO**	
3. Have you ever been charged with a sex offence?	**YES**	**NO**	

Mod-SES-MV

Please respond *Yes* or *No* to each question.

1. Have you ever been in a situation where you **used** some degree of physical force (twisting his or her arm, holding him or her down, etc.) to try to make a person engage in kissing or petting when he or she didn't want to?	**YES**	**NO**
2. Have you ever been in a situation where you tried to get sexual intercourse with a person when he or she didn't want to by **threatening** to use physical force (twisting his or her arm, holding him or her down, etc.) if he or she didn't cooperate, but for various reasons sexual intercourse did **not** occur?	**YES**	**NO**
3. Have you ever been in a situation where you **used** some degree of physical force (twisting his or her arm, holding him or her down, etc.) to try to get a person to have sexual intercourse with you when he or she didn't want to, but for various reasons sexual intercourse did **not** occur?	**YES**	**NO**
4. Have you ever had sexual intercourse with a person when he or she didn't want to because you **threatened** to use physical force (twisting his or her arm, holding him or her down, etc.) if he or she didn't cooperate?	**YES**	**NO**
5. Have you ever had sexual intercourse with a person when he or she didn't want to because you **used** some degree of physical force (twisting his or her arm, holding him or her down, etc.)?	**YES**	**NO**
6. Have you ever been in a situation where you obtained sexual acts with a person such as anal or oral intercourse when he or she didn't want to by using **threats or physical force** (twisting his or her arm, holding him or her down, etc.)?	**YES**	**NO**

Appendix L

Research Recruitment Script

TO BE READ BY RESEARCHER TO ELIGIBLE INMATES

My name is Kevin Nunes. I am a psychology student at the University of Ottawa conducting research for my degree. The purpose of the research is to compare people who have not been convicted of sexual offences and people who have been convicted of sexual offences. We want to see if there are differences in the way they think about themselves, adults, and children.

We need information from men who have **NOT** been convicted of sexual offences and from men who have been convicted of sexual offences. Just because you participate in the study, it does **NOT** mean that you are a sexual offender; we recognize this.

Participation in this study involves completing some computer tasks and some questionnaires. It will take approximately 45 minutes on two separate days, for a total of 1 hour and a half of your time.

Would you be willing to participate? (If yes) **Great! I'll ask you to read and, if you like, to sign the consent form; one copy is for you to keep and the other is for me to keep.**

Appendix M

Closing Statements (Read to Participant by Researcher)

(Once participant has completed final task.) You have completed everything.

Thank you very much for your participation in this study. Once this research is completed, I can send you a brief description of the study and results. This should be ready by September, 2004. Would you like me to send you one at that time?

Do you have any questions about the study? (Researcher answers any questions.)

Thank you very much for your help with my research.

Appendix N

Offender Management System (OMS) File Review Coding Sheet

OMS File Review Coding Sheet

Subject # _____

PRIOR OFFENCES

CONVICTIONS

First SEX **conviction** (yyyy-mm-dd) _____

SEX **convictions** _____ Youngest victim (yrs) _____

Male victims: <14 14-15 16+ **Female** victims: <14 14-15 16+

violent **convictions** _____

nonsexual nonviolent **convictions** _____

CHARGES

First SEX **charge** (yyyy-mm-dd) _____

SEX **charges** _____ Youngest victim (yrs) _____

Male victims: <14 14-15 16+ **Female** victims: <14 14-15 16+

violent **charges** _____

nonsexual nonviolent **charges** _____

Subject # _____

INDEX OFFENCES

Date
yyyy-mm-dd

CONVICTIONS

_____ # SEX **convictions** _____ Youngest victim (yrs) _____

Male victims: <14 14-15 16+ **Female** victims: <14 14-15 16+

_____ # violent **convictions** _____

_____ # nonsexual nonviolent **convictions** _____

CHARGES

_____ # SEX **charges** _____ Youngest victim (yrs) _____

Male victims: <14 14-15 16+ **Female** victims: <14 14-15 16+

_____ # violent **charges** _____

_____ # nonsexual nonviolent **charges** _____

Subject # _____

CM: Yes No

RACE: White NA Indian

Asian Inuit

Black Other _____

DOB (yyyy-mm-dd) _____

Need for translator Yes No

Home language _____

Highest grade completed _____

Language grade level (CAAT) _____
