

Online Child Pornography Offenders and Risk Assessment: How Online Offenders  
Compare to Contact Offenders Using Common Risk Assessment Variables

by

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*Abstract*

The aim of this study was to compare online child pornography offenders and contact offenders along the predictive items of the Static-2002 actuarial risk assessment tool, as well as, several other items and scales predictive of recidivism. In addition, the study wished to determine if the Static-2002 was a well-equipped to assess online offenders. 120 subjects were assessed in this study, 53 online child pornography offenders, 53 child molesters, and 7 offenders who committed both a contact and online offense. The research identified a number of similarities between the two groups of offenders, including a finding that the two groups did not significantly differ in age. The most pronounced differences were found on the several measures of criminality used in the study where contact offenders scored significantly higher. The Static-2002 was found to not be well suited for use with online offenders as the tool had difficulty assessing their sexual deviancy.

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# *1*

## Introduction

The popularity of the internet has resulted in new avenues for sexual exploitation. The easy flow of information and the anonymity that the internet provides has created a fertile environment for the production and distribution of child pornography. It has been shown that over the last decade and a half the number of sex offenders in the American federal court has significantly increased. More relevant to the current study however, is that the primary offence being prosecuted has changed from child sex abuse (73% of all cases in 1994) to child pornography cases (69% of all cases in 2006) (Motivans & Kyckelhahn, 2007), indicating that a shift has occurred in the localization of detected offending. Between the years 1998 and 2009 the number of prosecutions for child pornography increased by 64 percent in Canada, with a 13 percent shift between the two most recent reported years of 2008 and 2009 (Dauvergne & Turner, 2010). The increase in reported child pornography offending has given rise to concerns over the risk posed by this subpopulation of sex offenders both within the media and the scientific community. Specifically, concern over whether these offenders escalate to contact offending is of major concern to the public, clinicians, and policy makers.

The rise in arrests for this new form of sex offending has resulted in debate within the literature over the nature of sex offenders who use the internet (Babchisin, Hanson, & Hermann., 2011). There is a lack of agreement as to whether online sex offenders exist as a novel group, distinct from offline sex offenders, or whether the internet has merely provided a new venue for those with deviant sexual interest in general to operate within. Being able to accurately categorize online sex offenders has implications for investigation, sanctioning and treatment.

Sex offenders in Canada's justice system are in part sanctioned and treated according to the perceived risk they pose to the public. Offenders deemed to be of low risk serve shorter prison sentences, or avoid prison altogether, while high risk offenders are subject to stricter sanctions. Indefinite confinement is a possible sanction for those who are judged to pose an imminent threat to Canadian society, as evident by the Dangerous Offenders Act<sup>1</sup>. The determination of risk posed by an offender is often made in concert with the recommendations of a clinical expert. The most commonly practiced form of risk assessment being used today is the structured clinical assessment which employs the expertise of a clinician as she assesses a number of variables which have been empirically shown to be correlated with reoffending and escalation in crime. The structured clinical assessment often is made in conjunction with an actuarial risk assessment, an alternate method of assessment that relies of statistical weights as opposed to clinical judgment. In most cases, the clinician will weigh the findings on the actuarial risk assessment in their own judgment.

Risk assessment, whether it be of a structured clinical or an actuarial method, depends on making available specific data to the assessor. This data is most often characteristics of the offender, his history, and his victims. These characteristics have been shown through repeated empirical studies to be associated with continued criminal activity. Thus, the first step in generating a response to a novel group of offenders, such as online offenders, is to accurately determine which measurable characteristics of the population are predictive of future offending.

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<sup>1</sup> For further information on Canada's Dangerous Offenders Act see MacAlister, D. (2005). "Use of Risk Assessments by Canadian Judges in the Determination of Dangerous and Long-Term Offender Status, 1997-2002". In: *Law and Risk*, edited by the Law Commission of Canada, p.20-49. Vancouver: UBC Press.

The uncertainty and lack of information surrounding the nature of online sex offenders has resulted in their exclusion from actuarial risk assessment. Tools such as the Static-2002, one of the most commonly implemented risk assessment tools, explicitly states in its manual that it is not to be used in the assessment of online sex offenders (Phenix, Doren, Helmus, Hanson, & Thornton. 2008). Without reliable actuarial risk assessment tools, important decisions are being made without the complete wealth of knowledge that clinicians are capable of providing and implementing in their own assessments. This would indicate that the current approach to online sex offenders may not be as effective as it could be. Validating current actuarial risk assessment tools for use with online sex offenders or generating new tools is of great importance to the response to this new class of offenders.

Risk assessment is related directly to concerns about escalation, as predictions of escalation can be viewed as directional extensions of predictions of recidivism. Any attempt to isolate characteristics that influence escalation in crime will be drawn from the characteristics that predict recidivism. As such, to learn more about the escalation of online sex offenders, it would be wise to begin with an investigation of the characteristics associated with recidivism.

The current study will attempt investigate escalation of online child pornography offenders to contact offending. To do so, the study begins by investigating the similarities and differences between online child pornography offenders and contact offenders. The study will use actuarial risk assessment as the guiding model for the study, and will thus be an investigation of the characteristics identified in the literature as

being predictive of re-offence. The study will attempt to determine, which if any characteristics of recidivism are associated with the escalation from online child pornography use to contact offending through statistical analysis.

### *Problem Statement*

This study is concerned with three subpopulations of sex offenders. The first subpopulation is termed the 'strict online offender.' These offenders are categorized by being sexually aroused by pornographic material involving children which they either view or download online. These offenders do not make contact with the victim of the criminal acts which they are viewing. It is important to stress that while these offenders are not physically harming a child, their actions are criminal and damaging to the child as they encourage sexual abuse and exploitation, by providing an audience/market for the abusers, and violate the victim's right to privacy. This group shall be referred to as online offenders or online child pornography offenders for the remainder of the paper.

The second subpopulation of sex offenders this study investigates are 'strict contact offender.' These offenders commit their crimes in person with the victim. There exist several common terms in the literature for this type of offender, including; hands-on, face-to-face, in-person, and contact offender. This subpopulation can be considered the 'classic' or more studied class of sex offender. The majority of research on sex offenders and the various actuarial tools, structured clinical assessment strategies, and treatment programs administered today were developed with this subpopulation of offenders in mind. As this study compares online child pornography offenders to contact

offenders, it is appropriate to compare offenders who have the same sexual interests. To do this, the study has opted to only include child molesters in the contact group. For the remainder of the paper, this subgroup of offenders will be referred to as contact offenders or offline offenders.

The third subpopulation of sex offender included in this study is the 'mixed offender.' These offenders have committed both contact offences and online child pornography offences.

There is a subclass of online offenders who use the internet to groom children for future in-person sexual offending (Babchishin et al., 2011). These offenders are excluded from the 'strict online offender' group as their purpose is to eventually commit a contact offence. Some of these offenders are included in the study's third group, as their offending history consists of both online child pornography offending and the luring of children via the internet for contact offending. However, it must be noted that not all 'luring offenders' meet the definition of a 'mixed offender.' This study specifically considers a 'mixed offender' one who has been charged or convicted with both a contact crime and an online child pornography crime. Likewise, these offenders do not meet this study's definition of an 'online offender.' This study specifically reserves the term 'online offender' to denote an offender who has used the internet to access child pornography. It is important to bear this distinction in mind, as online child pornography offenders may very well be different from their luring counterparts.

When this study refers to sex offenders it is doing so by drawing upon the concept of a sex offender as defined by the law. The three classes of offenders considered by this study are produced by defining the groups based on their criminal activities, which are

categories of behaviour that have been defined as illicit. While the groups are constructed using legal definitions, the study incorporates information of a clinical and behavioural nature. As such, while the study is organized by a legal definition of sex offending, it recognizes the problem as being of multiple dimensions: legal, behavioural, and psychological.

As noted in their meta-analysis, Babchishin, Hanson, and Hermann (2011) found that a great deal of research on child pornography offenders did not differentiate between online offenders and mixed offenders. This represents a major shortcoming in the current understanding of child pornography offenders. Studies that aim to determine similarities or differences between online offenders and contact offenders are undermined as differences are less pronounced and similarities are more pronounced. This type of definitional confusion also nullifies findings on escalation. If recidivism studies are attempting to determine if escalation occurs in their sample, but the online group is diluted with mixed offenders, then any type of finding of escalation must be questioned due to the contamination of the online group with mixed offenders. The current study will attempt to move beyond these shortcomings by strictly imposing the use of the three group definitions previously mentioned. This will lend strength to findings of similarities or differences between contact and online offenders, and will make conclusions concerning escalation possible.

Ill-defined characteristics have major implications for risk assessment, especially actuarial risk assessment, where all decision are based on the analysis of characteristics and their presumed association with recidivism. The tools currently employed for use with contact sex offenders can not be confidently used with online offenders until the two

populations have been shown to be characteristically homogenous, and that these characteristics influence future offending for both groups. Developing and validating new tools is a time consuming and highly involved process. As such, it would be more economical to try to validate current tools for use with online offenders. It would also further expedite their deployment within the criminal justice system. Therefore, the first step in determining how current tools can be adapted for online offenders begins with an examination of the population's characteristics compared to those of contact offenders. The current study will undertake this initial step in determining the applicability of current actuarial risk assessment to online offenders, by comparing the two subgroups across a variety of empirically derived characteristics predictive of recidivism. This study will also compare contact offenders and online offenders to the mixed offenders as they may exist as a third distinct group. To aid in this comparison, the study will use the characteristics of the Static-2002, a risk assessment tool which has shown strong predictive validity for recidivism in sex offenders. The study will also look at a number of predictive factors from other risk assessment tools which may help to differentiate or consolidate these offender types. These offender groups will be compared across several socio-demographic and clinical items which will provide additional insight into the histories of these offenders. The specific characteristics which this study shall use are further discussed in the Methodology section.

The number of investigations into online offender recidivism is limited. The few studies that explicitly examined detected recidivism have found that the number of offenders who recidivate is relatively low (Seto & Eke, 2005; Webb, Crisanti, & Keen, 2007; Wakeling, Howard, & Barnett, 2011). Of those offenders who do reoffend, few

have been found to have escalated to contact offending. While these findings are encouraging, they have to be replicated several times before their findings can be relied upon. It is also useful to determine which if any factors are predictive of escalation in the subset of offenders who go on to commit contact offences. Due to online offending being a relatively new phenomenon, no research has specifically looked into detected escalation as a form of recidivism. The current study aims to pioneer this direction of enquiry by determining if there is a statistically identifiable association between the characteristics investigated and escalating criminal offending in online child pornography offenders.

The research questions this study investigates are as follows:

- (1) How are online sex offenders, contact offenders, and mixed offenders similar or different across a variety of well known characteristics predictive of recidivism?
- (2) Are the items of the Static-2002 suitable for use with online child pornography offenders?
  - (2a) If any of the characteristic of the Static-2002 are not usable in the risk assessment of online child pornography offenders, do appropriate alternative characteristics exist?
- (3) Are any of the characteristics investigated in this study related to escalation?

# 2

## **Online Child Pornography Offender and their Contact Offender Counterparts**

*An Examination of the Current Literature Comparing these Two Groups*

A comprehensive understanding of the similarities and differences between online child pornography offenders and contact offenders is a necessary step in developing proper treatment and containment strategies for this population of sex offenders. To this end, several avenues of investigation have been explored in an attempt to accurately classify online child pornography offenders who have come into contact with the criminal justice system. Over the last decade, researchers have gathered data on both static and dynamic variables of concern for online child pornography offenders. Some common examples of investigated traits are age, race, marital status, employment, and offence history (all static variables), as well as, self esteem, impression management, and cognitive distortion (all dynamic variables). This data has then been used to compare child pornography offenders with contact offenders to see if and how the two populations differ. Moving beyond trait analysis and comparison, other researchers have investigated the recidivism rates for online child pornography offenders and then compared them to known samples of contact offenders. Comparisons of this nature are an initial step in trying to develop knowledge of offenders as researchers try to frame a new type of offender with respect to presumably similar offenders who have already been thoroughly studied. Comparisons of this nature can provide a great deal of information quickly, however, it is important to keep in mind that comparisons oversimplify what is a complex behaviour. General knowledge can be gained through comparisons of this nature, but thorough understanding of offenders, the initiation and maintenance of their criminal behaviour, and how to treat them can only come from more specific investigations.

This chapter will review the literature comparing online child pornography offenders and contact offenders. It is subdivided into historical and demographic characteristics, dynamic and psychological characteristics and research comparing how these groups recidivate.

### *Historical & Demographic Characteristic*

The most commonly recorded information on online child pornography offenders is their age as it is easily obtained, verified, and has been long shown to be associated with criminal activity. Most commonly, age is noted at the time of arrest, conviction or assessment, with all these events most often occurring within a year of each other. An ongoing study by Sullivan (2004, 2005, 2007, and 2009) has continually gathered demographic information on online sex offender in New Zealand. The most recent publication found that of 318 offenders investigated, the most common age group was between 20-24 years of age. However, as Sullivan noted, there has been an uptake in older offenders, with the 2007 report finding an increase in offence rates of the 30-34 age group, and the 2009 report showing higher offending rates in the 45 years and older group. A comparative study of online offenders and contact offenders by Webb, Craissati, and Keen (2007) also found online child pornography offenders to be significantly younger than contact offenders. Within their sample of 90 online child pornography offenders the mean age was 38 (SD=10) years of age, compared to a mean age of 45 (SD=14) years of age for a sample of 120 child molesters. The finding that online child pornography offenders are on average younger than their contact offender counterparts has been investigated via meta analysis by Babchishin, Hanson, and Hermann (2011). Their meta-analysis which pooled 27 studies (including Sullivan 2004, 2005, 2007, 2009 and Webb et al., 2007) found that in the summed sample of 1845 online offenders, the average age of an online offender was 38.6 compared to 43.6 for contact offenders. However, this age difference was only found to be significant ( $p < 0.001$ ) in

the fixed effects analysis. It is important to note that, while online child pornography offenders have been found to be younger on average than their contact offending counterparts, they are still a very heterogeneous group when it comes to age. For instance, Sullivan's (2004, 2005, 2007, 2009) study has identified offenders as young as pre-teens (ages 10-14) and as old as senior citizens (65+).

Several other common static variables have been the subject of multiple studies. The most commonly investigated static variables (after age) are: race, offending history, employment, relationship status/history, and childhood abuse (both physical and sexual) (Babchishin, et al. 2011, Bourke & Hernandez, 2009; Laulik, 2007; Sullivan, 2007; Tomak, 2009; Webb et al., 2007; Wolak, 2005, 2009). It has been found that the vast majority of online sex offenders are caucasian. Wolak (2005) reported that of a sample of 2,142 arrested internet child pornography offenders 91% were white. This finding is echoed in several other papers, including Babchishin's meta-analysis which found that only 8.16% of the online offender accounted for in all studies were of a racial minority. In contrast, Babchishin et al. (2011) found that 35.4% of the offline offenders were of a racial minority, roughly four times greater than that of online offenders.

Concerning criminal history, online offenders have been found to have much lower rates of prior contact with the justice system. Wolak (2005) found that only 22% of online child pornography offenders had previously been arrested (with only 11% being arrested for sexual offences against a minor). Babshichin et al. (2011) found even lower offending rates in their meta-analysis. They discovered that only 12% of online sex offenders had a prior offence for a non-sexual crime. Officially reported rates of

reoffending are much higher for contact offenders. Greenfield (1996) reported that of a sample of child molesters, 59% had previously served a prison sentence.

Any claim concerning the previous criminality of online child pornography offenders is contentious on account of the difficulty in detecting contact sex offending and more so with online offending. A study by Bourke and Hernandez (2009) reported much higher rates of prior offending, albeit undetected offences, which offenders admitted to during treatment. Their study reported that on average, 26% of offenders in their treatment program had a history of contact offending, however, after treatment, 85% of patients admitted to a previously undetected contact offense. While not as high, Seto, Hanson, and Babchisin (2011) found that nearly 50% of online child pornography offenders admit to at least one prior undetected contact offence. As such, while official records for offending may be much lower for online child pornography offenders (compared to child molesters), the actual rates of offending may be much higher than currently acknowledged in the literature.

Varying findings have been reported for employment history, relationship status/history, and abuse (physical/sexual). Concerning employment, no study has directly compared online child pornography offenders with a group of contact offenders. However, Hanson and Bussiere's 1998 meta-analysis with regards to sex offender recidivism found that a history of employment instability was predictive of later reoffending. Babchishin et al. (2011) compared online child pornography offenders to the general population and found that these offenders were more likely to be unemployed (14.7% versus 5.8%), like their contact offending counterparts. This indicates that both

online offender and offline offenders share a higher rate of unemployment than the general population.

Only Webb et al. (2007) has carried out a direct comparison of the marital status of online child pornography offenders and offline offenders. In Webb's sample, 56% of child pornography offenders were single compared to 41% of child molesters.

Furthermore, child molesters were nearly five times more likely to have been divorced and 14% more likely to be currently married or cohabitating than online offenders.

While none of these findings were found to be statistically significant, they suggest that online child pornography offenders may have greater difficulty forming and maintaining relationships.

It has been found (Babchishin et al., 2011) that both online child pornography offenders and contact offenders report high levels of both physical and sexual abuse, which is consistent with findings that offenders of all types report negative family backgrounds (Jespersen, Lalumiere, & Seto, 2009). Babchishin (2011) reported that online child pornography offenders report higher levels of physical abuse than contact offenders (40.8% versus 24.4%), but this result was found only to be significant in a fixed effects analysis. These findings could indicate a common variable which influences later criminality.

### *Dynamic and Psychological Characteristic*

A number of studies have compared online child pornography offenders to contact offenders across several dynamic psychological variables. In fact, comparative studies for psychological variables outnumber those that compare historical/demographic variables. This finding in itself is surprising, as the most validated actuarial risk assessment tools (Static-99/2002, SORAG, etc.) do not heavily rely on psychological factors. There is a justifiable explanation for the greater number of studies investigating dynamic psychological factors. Specifically, researchers and clinicians are more interested in which factors they can influence through intervention, and as such will dedicate more time investigating what they can change (e.g. low self esteem) as opposed to those which they cannot (e.g. childhood abuse).

This section will review the most common findings comparing online child pornography offenders to contact offenders, with regards to psychological variables investigated in the literature.

Sexual deviancy has been repeatedly found to be one of the two greatest predictors of reoffending in sex offenders (Hanson & Morton-Bourgon, 2005). Sexual deviancy has been defined by Hanson & Morton-Bourgon (2005) as an “enduring attraction to sexual acts that are illegal or highly unusual.” Measures of sexual deviancy vary. The Static-2002 gauges an offender’s sexual deviancy by determining if they had male victims and whether they had any young, unrelated victims. In contrast, other researchers have used phallometric testing as a measure of deviancy (Seto Cantor, and

Blanchard, 2006). It has been found that online child pornography offenders are sexually deviant at an equal rate to offline sex offenders, or possibly at a higher rate. Bates & Metcalf (2007) reported that in their comparison of online and offline sex offenders, 22.2% of internet offenders were sexually deviant compared to 23.1% of contact offenders, and the difference was not statistically significant. The tool used to measure the deviant sexual interests of the study's participants was a combination of various questionnaires. Seto, Cantor, and Blanchard (2006) used phallometric testing as a means to diagnose pedophilia (a behavior which is considered sexually deviant). They found that child pornography offenders showed significantly greater sexual arousal than child molesters, sex offenders who offended against adults, and general sexology patients, indicating that child pornography offenders are significantly more sexually deviant.

It has been found that offline offenders suffer more cognitive distortions, identify emotionally with children, and have lower empathy for their victims in comparison to online child pornography offenders. Bates and Metcalf (2007) found differences between online and offline offenders for all three psychological variables. They found that 21.2% of offline offenders compared to 9.1% of online offenders identified emotionally with children, 26.5% of offline offenders compared to 5.9% of online offenders presented with cognitive distortions, and 52.6% of offline offenders scored high on a scale that identified offenders who did not empathize with their victims compared to 22.7% of online offenders. These findings have been repeated in Babchishin's (2011) meta-analysis, which considered Bates and Metcalf's study, as well as two additional studies. Babchishin (2011) reported significant differences inline with Bates and Metcalf's

(2007) results for all three psychological variables. However, as noted by Bates and Metcalf (2007), these findings may be unreliable as internet offenders attempt to manage the impression they make on others at a much greater rate than offline offenders. This finding, however, was not repeated in Babchishin's (2011) meta-analysis which concluded that the summed sample of online sex offenders reported less socially desirable responding than contact offenders. There are several explanations/implications for these findings. For example, it has been found that online offenders have a higher level of education compared to other criminal offenders (Wolak, 2005). This higher level of education could be an explanation for the finding that child pornography offenders are less self-deluded, are more emotionally mature, and are more capable of empathy. A higher level of education could also explain the higher levels of deception reported by Bates and Metcalf (2007), as these offenders may be more inclined to try and deceive their assessor by suggesting that they are more remorseful, and likely to change, so that they can lessen their time in custody.

Several studies have investigated the psychological variables of self-esteem (Bates & Metcalf, 2007; Coward, Gabriel, Schuler, & Prentky, 2009), and loneliness (Bates and Metcalf, 2007; Elliott, Beech, Mandeville-Norton, & Hayes, 2009). While differences have been noted (Bates and Metcalf reported that online offenders had higher self esteem and were lonelier than offline offenders), these results have not been found to be significant. These findings have been repeated in Babchisin's meta-analysis which did not find either variable to be significant in the pooled sample of offenders. For the time

being, it can be suggested that both types of offenders think equally well of themselves and are as likely to suffer from feelings of loneliness.

### *Recidivism Studies*

Recidivism studies offer a third line of inquiry into how online offenders differ from offline offenders. Recidivism offers a different perspective on offending, namely change with time. Static and dynamic characteristics of offenders offer a snapshot of the offender at a given time, generally at a fixed point during treatment or incarceration. Recidivism differs as it shows how offenders, after intervention, either change or maintain their offending pattern. Rates of recidivism also allow policy makers and clinicians to accurately gauge the threat level of a specific subset of offenders, thus allowing them to produce appropriate counter-measures and interventions. Numerous studies have examined how contact offenders recidivate, but studies looking at how online child pornography offenders recidivate are just now being reported on. This section will thus review the limited research that has thus far been conducted investigating the recidivism rates of online child pornography offenders.

Evidence suggests that online child pornography offenders recidivate at a lower rate than contact sex offenders. Hanson, Morton, Bourgon (2005) reported that offline offenders sexually reoffend at a rate of 13.7%, violently (non-sexually) at a rate of 14.3% and generally at a rate of 36.2% after 4 to 5 years following release. In contrast, Seto and Eke (2005) found that a sample of 201 adult male child pornography offenders

recidivated sexually at a rate of 4%, recidivated violently (non-sexually) at a rate of 1%, generally reoffended at a rate of 17%, and reoffended with a new child pornography offence 6% of the time. In a comparison study, Webb, Craissati, & Keen (2007) compared 117 child molesters to 73 internet sex offenders (over a period of 18 months) and found that child molesters were significantly more likely to reoffend. In fact, only 4% of online child pornography recidivated compared to 29% of child molesters. Finally, a recent study carried out by Wakeling et al. (2011) reported a recidivism rate of 2.1% one year after release for online child pornography offenders, which increased to 3.1% after two years. Wakeling et al. (2011) reported that of the offenders who reoffended sexually, 74% reoffend online, 19% offended with an offline offence, and 6% reoffended both online and offline. General recidivism (any type of reconviction) for Wakeling's sample was 7.5% after one year and 10.6% after two years. It can be drawn from the findings of these three studies that online child pornography offenders reoffend at a lower rate than contact sex offenders. However, given the reported rates of undetected crimes for online sex offender (59% by Bourke and Hernandez (2009) and 50% by Seto et al. (2010)) it can be suggested that these low recidivism rates could be a product of online offenders committing crimes which are difficult to detect. Given their ability to hide previous criminal activity, and being more vigilant following their index offence, it is possible that they could continue to reoffend at a higher rate than what has been reported in the literature to date. The low level of recidivism may also reflect the difficulty in detecting online offending, as the act of downloading child pornography is easier to hide as there is no victim to report the crime, nor does the offender run the risk

of being found while committing their crime, as they are able to conduct their activities in the privacy of their home.

# 3

## **Literature Review of Clinical-Actuarial Comparisons**

### *Introduction - Approaches to Assessment*

The history of assessment is often divided into three generations, with each generation being dominated by a particular methodology (Bonta, 1996). The first generation of assessment was carried out solely by clinicians who employed what is today called the unstructured clinical approach to assessment. This approach grew organically from what was then the burgeoning field of psychology, and incorporated many of the early beliefs and procedures of the discipline. The manner by which assessments were produced greatly depended on the attending clinician. Widespread dissemination of empirical studies which identified valid methods for assessment were much less common. As such, it was up to each clinician to determine what information was best utilized in producing an assessment. The lack of a consistent approach to assessment led some to wonder what variables being considered were true predictors, and which were less effective in predicting psychological outcomes. Much of the research on unstructured clinical assessment took the form of challenging both its effectiveness and the beliefs of its practitioners. This was due to the fact that the unstructured clinical method was the incumbent method at the time, and researchers had begun to move towards second generation assessment.

The second generation of assessment developed as a result of challenges to the clinical method throughout the fields of psychology and psychiatry (Meehl, 1954). Researchers such as Meehl had attempted to show how mechanical methods of assessment were more accurate than those of the previous generation. Mechanical predictions are those where the decision is made not by the person utilizing the tool, but by the tool itself.

The most commonly used form of mechanical prediction is actuarial assessment. In actuarial risk assessment, values are assigned to specific criteria which the tool uses to make a prediction of recidivism (Hanson et al. 2009). The user scores the various items of the tool, tabulates a total score, and compares the score to the tool's risk table. The table translates a specific score into an associated level of risk, predicting how likely it is the offender will reoffend over a period of time. The distinguishing feature of second generation risk assessment is that the actuarial tools of the time were concerned with static variables. Such variables were of little interest to clinicians who treated forensic patients, as these variables by definition could not be changed via clinical intervention. Attempts to incorporate dynamic risk factors into risk assessment brought about the shift to third generation tools.

Third generation assessment tools attempt to incorporate dynamic factors that can change over time. These factors are of greater use in the treatment of offenders, as clinicians can identify problem behaviours and target treatment to address the underlying psychological problem. Actuarial risk assessment tools with dynamic factors are also useful to clinicians as they can be used to gauge the progress made by a forensic patient.

Developed simultaneously alongside third generation actuarial assessment tools has been the non-actuarial structured clinical approach. In structured clinical assessment, clinicians make their risk assessments using a multitude of empirically derived predictors of recidivism. How these variables are combined and their interpretation are ultimately left to the clinician and their judgment. This clinical approach to risk assessment offers an alternative to actuarial methods, and moves beyond many of the problems associated with the earlier unstructured clinical assessment.

### *First Generation Risk Assessment*

As the name suggests, unstructured clinical assessments were made with very little guidance from outside sources. The implication of this is that clinicians were susceptible to the common errors that effect human judgment. This section of the literature review will begin by review what are some of the common errors in human judgment. The study will then examine research that assesses the benefits of clinical experience are, as unstructured clinical assessment relied heavily on the experience of the clinician. This section will begin by reviewing research relevant to assessment throughout psychology and then move to specific research on the unstructured clinical assessment of risk.

### *Human Judgment*

Humans are susceptible to a range of errors when making decisions. Researchers have shown that when people attempt to draw conclusions from probabilistic data, they are more prone to attend to an event occurring than all the instances where it could have occurred but did not. Estes (1976) studied various models for learning of probabilistic data. In one condition subjects were asked to estimate the probability of an event occurring. They were given an audio cue each time the event they were to monitor could occur. In a second condition, they were asked to estimate the probability of the same event occurring, but were not alerted to each opportunity for the event to occur. In the

first condition, the subjects accurately judged the probability of the event. However, in the second condition, their predictions were closer to the frequency of the event instead of its actual probability. This led Estes (1976) to conclude that people attend to the frequency with which an event occurs, not its actual probability of occurring. In relation to predictions of recidivism, this type of error would cause one to believe that offending occurs more often than it actually does because the news reports when an offender recidivates, not when an offender fails to reoffend. Slovic, Fischhoff, and Lichtenstein (1982) described this phenomenon as base-rate error, a judgment error where people believe something occurs more often than it actually does.

The problem of base rate-error is exacerbated by what Kahneman and Tversky (1973) describe as a reliance on heuristics. Heuristics are mental shortcuts which make associations between phenomena, and which take an isolated event and generalize it into a rule. A simple heuristic could form if one were to watch a centerfielder in baseball make an extraordinary play. The heuristic would take the form of "this player is an excellent centerfielder. He makes very difficult plays." However, the heuristic may not prove to be true, and could be further proven or disproven by looking up the player's actual fielding statistics. The flaw of the heuristic and the reason it so aggravates the problem of base rate error, is that they are quickly formed and quickly accessed pieces of information. As such, people quickly come to rely on them, and disregard future information that would disprove the heuristic (Arkes, 1981). To extend this example, the observer may then see the same player make several errors in the field later in the season, but will maintain their belief that the player is a good centerfielder because they *once* saw him make an extraordinary play.

The effect of the reliance on heuristics and the overestimation of base rates has on human judgment is amplified because people often believe they have access to more information than they do (Einhorn & Hogarth, 1978). Specifically, when presented with several sources of data, people do not account for the covariation amongst the various sources. As a result, people will make more extreme judgments based on the belief that they are privy to a great deal of data, which is not the case.

The culmination of all these judgment errors is that people often over-estimate the rate at which events occur, they are steadfast and extreme in their conclusions, and will not revise their hypotheses when presented with contrary data. The mistakes that can be made due to these judgment errors in daily life can be grave, but when the same errors are repeated in a professional clinical setting, the impact they can have on the lives of patients (and in the world of forensic psychology, potential victims) is considerable.

### *Judgment in Clinical Work*

It is a commonly held belief in the fields of psychology and psychiatry that experience contributes greatly to the professional's ability to accurately make diagnoses and predict outcomes (Garb and Boyle, 2003). Contrary to this belief stands a great deal of laboratory research showing that inexperienced clinicians fare no worse than experienced clinicians in a variety of diagnostic/prognostic situations (Dawes, 1994; Goldberg, 1968). These findings have also been extended to psychology graduate students (Schinka and Sines, 1974). Studies have also shown that the amount of information available to physicians did not increase the accuracy of clinical judgments

(Goldberg, 1968; Garb and Boyle, 2003). In addition to these clinician-specific errors, studies have found clinicians to be prone to the same common judgment errors previously discussed (Oskamp, 1965; Kayne & Alloy, 1988). To follow are descriptions of several studies that examined how experience affects the accuracy of predictions made by clinicians, the later of which deal specifically with predictions of recidivism. While this study specifically deals with predictions of recidivism, it is worthwhile to examine how experience improves or detracts from clinical judgment. Broadly examining the research on clinical experience provides further insight beyond what has been reviewed in studies of recidivism is possible.

Several studies have examined whether clinical experience allows more seasoned clinicians to make more accurate diagnoses and predictions of outcomes. This research has been replicated across a variety of scenarios. For instance, Walters, White, and Green (1988) found that when given the task of interpreting the results of a personality assessment test, less experienced clinicians fared just as well as their more experienced counterparts. Likewise, Turner (1966) found that recently graduated psychologists fared equally as well as more experienced clinicians when interpreting projective tests. Similarly, when choosing therapies, Hermann, Etnner, Dorwart, Langman-Dorwart, and Kleinmann (1999) found that older clinicians were more likely to prescribe outdated therapies. From this Hermann et al. (1999) concluded that the number of years of clinical experience were negatively correlated with validity. Other studies, however, have demonstrated that experienced clinicians, when given the latitude to gather data on their own and make a diagnosis fared better than less experienced clinicians (Brammer, 2002). Brammer (2002) thus concluded that experienced clinicians are more knowledgeable of

what material is worth gathering in making a diagnosis. This is an important consideration for third generation risk assessment which incorporates dynamic factors as well as structured clinical judgment.

The finding that experience does not enhance accuracy of diagnoses has also been replicated for graduate students in the mental health field. Schinka and Sines (1974) gave interview data to both experienced clinicians and graduate students and asked them to make a diagnosis. This study found that, statistically, the experienced clinicians were no more accurate than graduate students.

Findings concerning the unimportance of experience have been replicated for predictions of violence in clinical forensic settings. Wener, Rose, and Yesavage (1983) had a mixed group of psychologists and psychiatrists predict future violence by psychiatric inpatients using scores from the Brief Psychiatric Rating Scale and information in regards to why the patients were admitted. Statistical analysis of the professionals' predictions did not show accuracy in prediction to be significantly related to years practicing.

In a separate study, Walters, White, and Greene (1988) had physicians predict whether prison inmates were feigning symptoms of emotional disorders using the prisoners' test results on the MMPI and their demographic data. Two test groups were constructed, one composed of 24 MMPI experts and a second composed of 16 prison staff psychologists. Analysis of the two groups' ratings showed that those who were considered MMPI experts did not outperform the staff psychologists.

A third study by Quinsey and Ambtman (1979) had clinical psychiatrists and high school teachers make predictions of future violence for forensic inpatients if they were to be released. Both the teachers and the physicians were given access to the histories, index offence, post assessment data, and progress reports for a mixed group of property offenders, child molesters, and offenders who violently offended against adults. The ratings of risk given by the clinicians and the teachers were highly correlated with one another. Further, it was shown that the index offence was the most attended to source of information when predicting future violence. A recent replication of the Quinsey and Ambtman study by Huss, Odeh, and Zeiss (2004) which compared psychologists, psychiatrists, nurses, and social workers showed the same findings. Specifically, the different mental health professionals did not significantly differ in their accuracy, nor did the risk cues that the clinicians attended to in making their prediction correlate with actual future violence.

There does exist at least one study which show experience to have an effect on the practice of forensic psychologists. Ekkman, O'Sullivan, and Frank (1999) found that forensic psychologists were better at detecting lying than non-forensic psychologists in a group of forensic patients. While this does not directly bare on assessments of risk, when coupled with the findings of Brammer (2002), it shows that given a lack of alternatives (such as mechanical risk assessment tools), forensic psychologists hold an advantage in gathering useful information and distinguishing it from false information.

Extensive literature reviews and meta-analyses of research on clinical judgment have shown that amount of information available to clinicians does not increase accuracy (Dawes, 1994; Dawes, Faust, Meehl, 1989; Garb & Boyle, 2003). The studies surveyed

by these authors included varying levels of information. Some studies included very limited sets of data (e.g. test results, excerpts of interviews, etc.), while others offered complete histories, including biographical, historical, and treatment data (e.g. complete clinical charts, complete interviews). Despite the varying levels of information available to the assessors, the results of the analyses were the same, namely clinicians performed as well across scenarios and did not show better performance with more data. Grove, Zald, Boyd, Lebow, Snitz, and Nelson's (2000) meta-analysis showed that the only design variable which significantly influenced the effectiveness of clinical prediction was interview data. Clinical interviews, however, had the opposite effect than one would predict, decreasing the performance in the clinician sample as opposed to strengthening the predictive accuracy. Dawes, Faust, and Meehl (1989) have attempted to explain such findings by suggesting that an overabundance of information coupled with the ambiguity of clinical decision making complicates the assessment process. Compounding this problem is that Oskamp (1965) found that additional information leads clinicians to be more confident in their findings. Other researchers such as Garb and Boyle (2003) have suggested that the root of such errors are found in the same errors common to all people, such as reliance on heuristics, personal biases, and a lack of feedback.

*The Actuarial Alternative - Second and Third Generation Risk Assessment*

Prior to 1925 alternatives to clinical assessment did not exist, or were not written about in the psychological/medical journals of the time. However, that year Burgess published the first comparison between a mechanical system of assessment and a clinical model. The study involved following 3000 parolees from Illinois state prisons for several years to determine their recidivism rate (Burgess, 1925). Burgess developed an actuarial system which took into account 21 objective factors, such as age of the offender and number of previous convictions, and combined them in an un-weighted manner. He then compared the predictions of his model with those made by resident prison psychologists concerning the success of the parolees. The results indicated that the prison psychologists were slightly more accurate in predicting parole success; however, they were vastly inferior to Burgess's model in predicting failure.

While Burgess' study was the first to compare an actuarial risk assessment tool to clinical assessment, it wasn't until Meehl's 1954 literature review on the subject that clinical compared to actuarial prediction garnered any real attention. Meehl's literature review included 20 studies where there was a direct comparison between an actuarial model and a clinical model (Meehl, 1954). Various criteria were used to ensure that in all studies, at minimum, the clinicians had at least the same information as the actuarial model, if not more. This was to eliminate any confounding variable stemming from the actuarial model having more informational resources. The results of the literature review found a considerable advantage for the actuarial method of prediction, with approximately three-fifths of those twenty studies showing a clear advantage for the

actuarial, and two fifths showing the actuarial model and the clinical model as equal in their predictive ability.

Since Meehl's initial literature review there have been several replications which have continued to expand the number of studies including in the analysis (Dawes, Faust, & Meehl, 1989; Holt, 1970; Garb, 1994; Grove et al. 2000; Quinsey et al. 2006). All of the follow-up studies have come to the same conclusion as Meehl with the exception of Holt, who objected to the findings of Sawyer and Meehl based on their inclusion of a number of older, outdated studies, as well as their methodology. The objections raised by Holt have been the basis for many journal articles arguing against actuarial risk assessment. These objections are investigated later in this chapter.

The most extensive of these studies was Grove et al.'s (2000) meta-analysis which included 617 comparisons between clinical and mechanical methods. These 617 comparisons included predictions of diagnosis, prognosis, treatment recommendations, treatment outcomes, personality assessment, success in training or employment, and adjustment to institutional life. It also entailed predictions which directly related to the criminological field such as predictions of parole violations, violence, and sexual violence. The mechanical methods used came from a variety of fields and ranged from basic tally methods to sophisticated forms of statistical prediction. As for the clinical predictions, they included assessments made by a psychiatrists, psychologists, social workers, parole boards and judges, as well as individuals from other fields. The results of the meta-analysis favoured the actuarial method. Of the 136 studies investigated, 64 favoured the actuarial method, 8 favoured the clinical, and 64 showed equivalent accuracy between the two methods.

Comparisons between actuarial risk assessment tools and clinicians in a forensic setting have also found the mechanical model to be superior in their predictions (Quinsey and Maguire, 1986; Hall, 1988; Hanson, Morton-Bourgon, 2009). Nagayama-Hall (1988) compared predictions of future criminal behaviour made by clinicians with those made using discriminant function analysis for a sample of 342 sex offenders. It was found that the combination of several actuarial variables was highly predictive of future offending, while the predictions made by the clinicians were not. Hanson et al. (2009) summarized the findings of 118 studies comparing the predictions of actuarial tools with unstructured and structured clinical assessment. The meta-analysis determined that the mechanical predictions greatly outperformed the unstructured clinical assessments. They also outperformed the structured clinical assessments but not to the same extent as the unstructured assessments.

Third generation actuarial risk assessment has begun to include dynamic psychological factors into new tools. Dynamic factors provide more utility to clinicians treating offenders. They allows physicians to identify the underlying psychological problems which are influencing the offender's behaviour, and allows them to treat that specific problem. Tools with dynamic risk factors also allow clinicians to determine the effectiveness of treatment on the offender, as affective treatment should lessen the additive effect dynamic factors have on risk.

*Structured Clinical Assessment - Third Generation Risk Assessment*

In structured clinical assessment, clinicians make risk assessments using a multitude of empirically derived predictors of recidivism. How these variables are combined and their interpretation are ultimately left to the clinician and their judgment. Sturidsson, Haggard-Grann, Lotterberg, Dernevik, and Grann (2004) provided clinicians with a list of 30 potential predictive risk factors and asked the physicians to determine in the case of individual patients if those factors were predictive of future event or outcome. Their analysis showed that clinicians were more likely to utilize risk and insulating factors that have been empirically validated. They also noted that clinicians were more likely to prefer clinical dynamic factors to non-clinical factors.

The methodology utilized in structured clinical assessment has left some researchers (e.g. Andrews, Bonta, & Wormith, 2006) to categorize structured clinical judgments as first generational tools. However, it can be argued that these types of assessments closely resemble mechanical assessment tools which utilize a tally system for combining risk factors.

A second form of structured clinical assessment involves the modification of the predictions of actuarial risk assessment tools. Webb, Harris, Rice, Cormier, and Quinsey (1994) discussed how clinicians may modify the final assessment of an actuarial risk assessment tool on account of evidence not accounted for by the tool which would either increase or decrease the risk of recidivism. However, these authors state that such modifications should be done conservatively, and only if there is good evidence supporting such a change.

Structured clinical assessment is a relatively new form of risk assessment. Direct comparisons between this method and actuarial risk assessments are very limited. What is generally agreed upon about this form of assessment is that it avoids many of the pitfalls of unstructured clinical assessment, and performs at a level equal to or very close to that of actuarial risk assessment tools.

### *Criticism of Actuarial Risk Assessment*

Actuarial risk assessment has faced a great deal of criticism since Meehl's initial literature review. This criticism continues today. Holt (1970) and Litwack (2001) both objected to actuarial risk assessment on the grounds that the current understanding of the causes of violent recidivism are not well understood, and most likely do not take the linear form that actuarial models assume. The complexity of the mechanisms of reoffending have been cited as a possible cause for poor replications across different settings (Barbaree, Seto, Langton, & Peacock, 2001).

Other detractors of actuarial tools have found fault with the methodology of studies comparing clinical judgments with actuarial ones. Holt (1958) levelled several objections against the studies of Meehl and Sawyer. He believed that the methodology of these studies, namely the dichotomous choice which the tools and clinicians were forced to make circumvented the predictive process which clinicians utilize. Holt also objected on the grounds that these studies focused strongly on individual characteristics, and did not place them in context; specifically, dynamic situational factors were not considered. Furthermore, these studies neglected to examine how intrapersonal variables could

interact with these same situational factors. Finally, he objected to how actuarial risk assessment tools simplified the combining of predictive factors to the point that they can be combined by a lay person or a computer program. He notes that data utilized may not be accurate, or have been given capriciously, and as such, will weaken the predictive accuracy of the tool.

In addition to his critique of the methodology of Meehl and Sawyer's studies, Holt also objected to the inclusion of specific comparisons. He noted that in the other surveys, studies were included which attempted to pass off lay people as clinicians, had samples too small to detect differences, used predictions which cannot be considered clinical judgments, and also included comparisons which only included quantitative data. In his 1970 critique, Holt raised 43 individual objections against the 45 studies included in Sawyer's 1966 literature review. However, he did not specify how many of those 43 objections were levied against the same studies.

Specific to assessments of dangerousness, Litwack (2001) argued against actuarial risk assessment tools in much the same way Holt (1970) argued against Meehl and Sawyer. Litwack (2001) specifically objected to several of the studies included in Quinsey et al.'s (1998) review of the literature in support of actuarial assessment for violent offenders. Litwack's (2001) objections included the construction of groups, the size of several of the samples, and the criteria which clinicians were asked to use in making their risk assessments.

### *Conclusion - Actuarial and Clinical Assessment*

A great deal of research has been conducted to identify shortcomings in human judgment. Misinterpretation of base rates, reliance on heuristics, and over confidence in judgments have been noted as sources of error in human judgment. Research on the specific shortcomings of clinicians has noted these same errors as well as weaknesses specific to the practices of psychology and psychiatry. The strongly held belief that experience improves the predictive accuracy of clinicians has been questioned. Experienced clinicians have been shown to fare as well as their less experienced peers and in some instances mental health graduate students. This finding has also been replicated in judgments made by mental health workers in forensic settings. Further, it has been determined that the amount of information used in making predictive judgments does not positively correlate with accuracy, with at least one study showing that additional information hampered the accuracy of clinical judgments.

Alternatives to unstructured clinical assessment do exist, and have been extensively investigated over the last 60 years. The majority of this research has shown that mechanical tools, many of which are actuarial risk assessment tools, outperform their unstructured clinical predecessors. This has been shown for a wide range of assessments within the psychological field, including those in forensic psychology. Newer actuarial assessment tools have come to include dynamic factors in their assessments. This has resulted in researchers claiming that the field has moved into a third generation of risk assessment.

Developing at the same time as third generation risk assessment tools, structured clinical assessment offers an alternative method for making predictions. Unlike unstructured clinical assessment, structured clinical assessment relies on a pre-determined set of empirically derived predictive items. It is important to note that while these items are empirically derived, that does not mean they were necessarily created using statistical analysis like many of the items used in actuarial risk assessment. The use of more justifiable predictors of future behaviour has increased the accuracy of this newer form of clinical assessment beyond that of unstructured clinical assessment. While some studies have found that actuarial tools outperform structured clinical assessment, there has been a lack of replication, something that is required before definite conclusions can be drawn. It is commonly believed that at this time actuarial risk assessment and structured clinical judgment are close in their predictive accuracy.

Actuarial assessment is not without its own detractors. Various authors have objected to the use of actuarial tools on a variety of grounds. Some object to their use in predicting future offending, as the mechanisms by which recidivism occurs is not well understood. Some researchers have also objected to the way in which comparisons are made between actuarial and clinical judgment. Detractors argue that they oversimplify the clinical process by reducing judgments to dichotomous choices and not allowing for the inclusion of dynamic situational factors. There have also been objections to the range of studies included in these comparisons. Finally, the validity of specific actuarial tools seems to lessen when replicated, and this has been cited as weakness.

The literature reviewed here shows that there are definite benefits to developing an actuarial risk assessment tool for child pornography offenders. While modern

structured clinical assessment offers a reasonable alternative to actuarial risk assessment, and bearing in mind the objections to actuarial risk assessment, there is evidence showing that actuarial tools offer a great deal of predictive validity to justify such a study. This is not to say that current assessment protocols used with online sex offenders are faulty, but having a viable actuarial alternative would not only offer an additional method for assessment, but would also provide a population of studies to compare findings against, further refining current methods.

# **4**

## **Methodology**

This study is designed to examine the characteristic of online child pornography offenders against those of contact offenders in an attempt to determine how these two populations differ. Specifically, this study focuses on factors that are associated with recidivism. In doing so, the study hopes to answer the following questions:

- (1) How are online sex offenders, contact offenders, and mixed offenders similar or different across a variety of well known characteristics predictive of recidivism?
  
- (2) Are the items of the Static-2002 suitable for use with online child pornography offenders?
  - (2a) If any of the characteristic of the Static-2002 are not usable in the risk assessment of online child pornography offenders, do appropriate alternative characteristics exist?
  
- (3) Are any of the characteristics investigated in this study related to escalation?

## **Participants**

The study examined the clinical files of 120 past and present male patients from the Royal Ottawa Mental Health Centre (ROMHC) being treated by the hospital's Sexual Behaviors Clinic (SBC) of the Integrated Forensic Program (IFP). The hospital was chosen as the sole site for the study due to its affiliation with the University of Ottawa.

The ROMHC's Sexual Behaviors Clinic is one of a handful of forensic clinics located in Eastern Canada, and the central forensic hospital in Canada's capital region. It conducts on-going treatment for several hundred outpatients, and has a growth rate of over 100 new patients per annum. These outpatients can be either criminally charged or convicted sex offenders or individuals with abnormal (often criminal) sexual interested or behaviors who either are referred to the clinic or seek out treatment on their own.

All the data for the study was made available from an extensive questionnaire and a battery of psychological tests administered to patients, which is part of the intake process of the SBC. Supplemental to the questionnaire is a consent form which asks if the patient would allow their data to be used in current or future research. Patients of the SBC often participate in research, and are quite often eager to do so, with 99% of patients agreeing to make their data available to researchers. Data from consenting patients was used in this study. This questionnaire made a great deal of background information available.

The participants in the study were split into three groups: online offenders, contact offenders, and mixed type offenders. The groups were divided this way since one of the goals of the study is to determine how online offenders and contact offenders differ. As such, it was necessary to isolate each type of offender. This is a unique aspect of this study, as much research conducted on online offenders has not differentiated between an offender with only online offences and those who have both online and offline offences (Babchishin, 2011).

The study wished to have a power level of 0.8 and an alpha of 0.05 and an effect size of 0.25 (moderate) for its two tailed ANOVA. For the Chi-squared analyses of the study a power level of 0.8, an alpha of 0.05, and an effect size of 0.3 was desired. Calculations for a study with three groups called for 53 subjects per group in the ANOVA, with 152 persons required for the Chi-Squared analyses with 6 degrees of freedom. As such, the study aimed to include 53 persons per offender group.

The three groups were constructed first by isolating offenders based on criminal convictions. Using convictions as the sole isolating variable 79 strict online offenders, 600 strict offline offenders, and only 3 mixed type offenders were identified.

To construct the online only offender sample, the study began by eliminating offenders whose crime consisted of attempting to lure children into a contact sexual crime from the sample. This was done as their crime involved a clear intent to commit a contact sexual offence against a child. Of the remaining files, a sample of 53 files were chosen at random to be included in the study. Upon coding, it was found that two of the 53 files chosen were of offenders who, after leaving the hospital went on to commit

contact offences. As such, these files were moved to the third group and two more files were added at random from the original list to the online only sample of 53.

The offline offender group was much larger than expected at 600 convicted offenders. It was possible to isolate offenders based on offence type, and it was determined that 215 of the convicted offenders had been convicted of child molestation, while the remaining 375 offenders had been convicted of some other form of contact sexual offending. As one of the research questions is to determine what factors, if any, are predictive of offensive escalation from online only to contact offending, it would be more precise to compare offenders who share the same targets of their sexual deviance (e.g. young children) . In producing the pool from which contact offenders would randomly be selected for inclusion in the study, the study thus eliminated all but the 215 offenders who had been convicted of child molestation. The study then eliminated offenders from consideration whose most recent offence occurred prior to 1995, the first year statistics for internet usage were published (The American Internet Survey, 1995). Finally, from the remaining pool, 53 files were selected at random to create the strict contact offender group. One file was later replaced, as it was noted that the offender had been subsequently charged with being in possession of child pornography. A replacement file was chosen at random from the pool of potential files which were not included in the sample of 53 to replace the miscategorized offender.

The pool of mixed type offender was much smaller than was anticipated. Babchishin et al. (2011) noted in their meta-analysis that a great deal of the studies they included did not differentiate between offenders who committed child pornography offences solely, and those who committed child pornography crimes as well as contact

offences. This lead to concerns that the conclusions of these studies were tainted to some extent due to groups not being mutually exclusive. It is readily apparent that at least when using convictions as the defining characteristic of contact vs. non-contact that such fears may be overly stated. Of the 682 offenders initially selected for the study, 0.89% showed a history of both online and offline offending.

To produce a sample large enough for study, the parameters for inclusion in the sample population were redefined. The study included offenders who had been either convicted or charged with at least one count of child molestation and one count of online child pornography offending. In total, 10 mixed offenders were identified as candidates for the study. Due to the number lower than desired, all 10 offenders were included in this sample.

## **Design**

This is a retrospective chart review. The study examined the clinical records of past and current patients of the Royal Ottawa Hospital's Forensic unit. Using the files of the patients three groups of offenders were constructed: online child porn offenders (no known contact offences), contact sexual offenders (no known online offences), and mixed offenders (offender with both online and contact offences).

The study used demographic information, criminal history, and victim information found in the patients' charts. Once all data had been gathered for the individual measures of interest for each group, analysis of variance (ANOVA) was performed to determine along which continuous variables the three groups of offenders

differ. Non parametric analyses (i.e. Chi-square analysis) were be used to determine if the three groups differ on the nominal and ordinal scale items.

For the investigation of escalation, a 2x3 factorial ANOVA design will be implemented. The first IV will be escalating vs. non-escalating, while the second IV will be low risk, moderate risk, and high risk. The risk score will be determined using the scoring rules of the Static-2002. If the investigation into individual characteristics reveals that a variable is not ideal for use in scoring, then it will noted, and scores with the variable being omitted and being scored under non-ideal parameters will be reported. If a significant difference is found for the ANOVA, Post-Hoc analyses will be used to determine which predictive variables were associated with escalation.

## Tools

This section investigates the general principles of actuarial risk assessment, and details issues specific to the Static-2002. Special interest is paid to the scoring issues which directly relate to the scoring of the Static-2002 for online child pornography offenders.

### *Recidivism, Actuarial Risk Assessment, and the Static-2002*

An actuarial tool is a mathematical model that assigns various weights to a number of factors that are believed to predict a given outcome (Hanson & Morton-Bourgon, 2009). Actuarial tools within the world of criminology and forensic psychology and psychiatry have often been given the tasks traditionally carried out by psychologists, psychiatrists, and parole boards, that is, assessing the likelihood of an individual reoffending (Grove, Zald, Lebow, & Nelson, 2000). As such, they are often referred to as risk assessment tools, as they determine the risk associated with releasing an offender.

Recidivism is defined as “the reversion of an individual to criminal behaviour after he or she has been convicted of a prior offence, sentenced and (presumably) corrected” (Leeper-Piquero, 2005). What constitutes a reversion to criminal activity is often a point of contention within the literature, as criteria for re-offence vary among studies (Leeper-Piquero, 2005). The measure of re-contact can be extremely broad and included any contact with the justice apparatus, such as being questioned by the police, arrested, or reconviction. The actuarial tool used for the present study used sentencing

occasions as the indicator of recidivism. For the sample of mixed-type offenders the study had to expand this criteria to charges, as not enough offenders shared a conviction for both a contact offence and a child pornography offence.

The Static-99 has proven to be one of the most reliable actuarial risk assessment tools in predicting recidivism for adult male sex offenders, including those that target children (Phenix et al., 2008; Soothill, Harman, Francis, and Kirby. 2005). The Static-2002 is the second generation of the Static-99 (the numbers indicating the year the original studies investigating the tool were published), and has been found to predict sexual recidivism better than or as well as other actuarial predictive measures of recidivism, including its predecessor the Static-99 (Hanson & Morton-Bougon, 2009).

The Static-2002 is constructed so that evaluators of different and varied backgrounds (therapists, probation officers, etc.) can evaluate a sex offender using demographic information, the offender's official criminal record, and victim information (Phenix et al. 2008) The tool evaluates the individuals along fourteen factors which were determined by Hanson and Thornton (2003) to best predict sexual recidivism. The fourteen items are broken down into five categories, as summarized in Table 1:

Table 1: Items of the Static-2002

| Category I: AGE   | Category II: PERSISTENCE OF SEXUAL OFFENDING  | Category III: DEVIANT SEXUAL INTERESTS  | Category IV: RELATIONSHIP TO VICTIMS                  | Category V: GENERAL CRIMINALITY  |
|-------------------|---|---|---|--|
| 1) Age at Release | 2) Prior Sentencing Occasions for Sexual Offences<br><br>3) Any Juvenile Arrest for a Sexual Offence and Convicted as an Adult for a Separate Sexual Offence<br><br>4) Rate of Sexual Offending | 5) Any Sentencing Occasion for Non-Contact Sex Offence<br><br>6) Any Male Victim<br><br>7) Young, Unrelated Victims | 8) Any unrelated Victim<br><br>9) Any Stranger Victim | 10) Any Prior Involvement with the Criminal Justice System<br><br>11) Prior Sentencing Occasions for Anything<br><br>12) Any Community Supervision Violation<br><br>13) Years Free Prior to Index Sex Offence<br><br>14) Any Prior Non-sexual Violence Sentencing Occasion |

Each of the fourteen items is scored along a point scale, with some factors having larger ranges. For instance, each item in category III is scored between zero and three, whereas each item in category five is scored between zero and six. Once all factors are scored, the evaluator sums the score for each item and produces the individual's total score. The total score is then compared to an index which estimates the likelihood of re-offence. Considering the level of risk, a decision can then be made in regard to the probability of reoffending. The higher the score of the Static-2002, the greater likelihood the individual will reoffend.

The Static- 2002 is not currently recommended for use with offenders who solely commit online offences. Specifically online child pornography offenders are considered ineligible for assessment using the Static-2002 because these offenders were not included in the sample population used to construct the tool (Hanson et al., 2003). The justification for the exclusion at the time the tool was produced was that online offenders did not meet the definition the study used to categorize someone as a sex offender. Despite the tool not being recommended for use with online child pornography offenders, the Static is commonly scored and reported to the courts for consideration in sentencing and parole hearings.

#### *The Static-2002 and Offending Classes*

The Static-2002 does not differentiate crimes as online or offline, but rather as a Category A or Category B criminal offence. The distinction is based on what is traditionally considered to be a sex crime, motive for the crime (sexual motive or not), and victimology. Category A crimes are those most often associated with sex crime (sexual assault, exhibitionism, etc), while Category B crimes have a sexual element but lack some of the defining characteristics of Category A crimes. The authors of the Static-2002 do not recommend using the Static-2002 with offender who have only committed Category B crimes, as the tool was not developed nor validated with Category B offenders in mind. This would exclude offenders who have only committed child pornography from predictions of recidivism via the Static-2002. An examination of the defining criteria of Category A and B crimes may prove this exclusion unwarranted.

Category A offences are what are considered by law “sexual offences” that involve a child or non consenting adult. They are also the crimes which have been studied more intensely with actuarial assessment. These crimes include contact offences, exhibitionism, voyeurism, sex with animals and dead bodies (Phenix et al., 2008). There is one subcategory of Category A crimes directly related to child pornography, the manufacturing or creating of child pornography where an identifiable child victim was used in the process. This subcategory required the individual to be present or to be watching live (via the internet) as the sexual abuse is occurring (Phenix et al., 2008).

Category B crimes can be divided into two subcategories of offending, which are delineated by motive. The first subcategory is illegal sexual behavior which involves consent or one in which there is no specific victim involved. The second subcategory is indecency without a sexual motive. Category B crimes include but are not limited to such crimes as pornography possession, prostitution, and sex in public places (Phenix et al, 2008).

Contrasting category A and category B crimes reveals several interesting distinctions (See Appendix A for a complete list of Category A and B crimes). The primary motive of all Category A crimes is the sexual act itself, whereas in Category B crimes, seven of the twelve offences have a purely economic motive<sup>2</sup>, four could be

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<sup>2</sup> Offering prostitution services, pimping/pandering, seeking/hiring prostitutes, profiting from child prostitution, coercing others into a sex trade, solicitation of a prostitute, selling sexually explicit materials to minors.

criminal acts of poor judgment with a sexual element,<sup>3</sup> and one can have either economic, sexual, or both as motives, namely crimes related to child pornography. This distinction is important when considering child pornography offenders for actuarial risk assessment. If the child pornography crime is not economically motivated, then it is more akin to a Category A crime than the Category B crimes with which it is currently grouped with.

Examining the victimology of Category B crimes reveals that child pornography is different in important aspects. Of the twelve offences, eight involve consenting adults and can be considered victimless,<sup>4</sup> two involve prostitution which is forced or involve individuals too young to give informed consent,<sup>5</sup> and the final two offences are selling sexually explicit material to minors and those relating to child pornography. Eight of the crimes are victimless, two have victims who are subjected to sexual abuse but the offender in these cases is not necessarily the perpetrator of the sex crime, selling of sexually explicit material to minors involves a ambiguous description of a victim,<sup>6</sup> and crimes involving child pornography clearly involve a victim. Much like the economics of the crime, contrasting the two categories reveals that crimes of child pornography are more akin to the victimized crimes of Category A than the crimes found in Category B.

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<sup>3</sup> Not informing a partner of being HIV positive, consenting sex in public spaces, bigamy, indecent behaviour without a sexual motive

<sup>4</sup> Consenting sex with other adults in public spaces, indecent behavior without a sexual motive, offering prostitution services, pimping/pandering, seeking/hiring prostitutes, solicitation of a prostitute, bigamy, selling sexually explicit materials to minors.

<sup>5</sup> Profiting from child prostitution, coercing others into sex trade.

<sup>6</sup> Arguably the purchasing youth is a victim, however, they are also consenting members in the transaction as they are seeking the sexual material. The very self explanatory type of victim in other types of sex crimes is not found here, making determining a victim a highly convoluted exercise.

The exclusion of child pornography crimes from Category A may be due to it not being “generally considered a sexual offence” (Phenix et al., 2008). The reason it may not be considered a sexual offence could have to do with the relatively new nature of the crime itself and less with its distinguishing features of victimology and motive. Sex offender researchers when constructing a study will often have a plethora of the sex offenders who have committed Category A offences to sample, but child pornography offenders may be underrepresented in these samples. As such, researchers may withhold making generalizations about where child pornography offenders fit into the current understand of sex offenders, thus regulating them to Category B due to a lack of information on them.

## **Measures**

To follow is a description of the various characteristics this study examines, an explanation of why they were chosen and how they relate to actuarial risk assessment. It is important to note that the first 14 characteristics are shared with the Static-2002, the actuarial risk assessment tool which is the organizing rationale for the study.

### *STATIC-2002 Characteristics*

#### Category I: Item 1: Age

Age is a characteristic universally studied in criminological research. It has been consistently shown that offenders ‘age out’ of offending, i.e. youth is correlated with

crime, and the likelihood of re-offence decreases with age (Hirschi & Gottfredson, 1983; Hanson & Bussiere, 1998; Hanson, 2002). As such, age is often a characteristic incorporated into actuarial risk assessment tools. It can be assumed that it is also included due to the ease with which it can be accessed and its high level of reliability.

It is worth noting that several of the most frequently implemented actuarial risk assessment tools use age as a variable when determining the threat posed by an individual. Besides the Static-2002, the Sex Offender Risk Appraisal Guide (SORAG), Rapid Risk Assessment for Sexual Offence Recidivism (RRASOR), and the Minnesota Sex Offender Screening Tool, Revised (MnSOST-R) all factor age into assessment, albeit in different ways (Bartosh, Garby, Lewis and Gray, 2003). For instance, the MnSOST-R considers age of the offender relative to that of his victim(s), whereas the SORAG looks at the age of the offender at time of the index offence. Regardless of how it is measured, almost all actuarial risk assessment tools make use of the relationship between age and criminal offending.

The current study also measures age and uses age at the time of the original intake assessment carried out by the ROMHC's sexual behaviors clinic. The goal of the study is to determine how online offenders and contact offenders differ in the characteristics most relevant to reoffending. As such, it is important to use a time anchor to differentiate between the two samples. Calculating the age of the offenders at present (i.e. as if we were conducting a risk assessment in the present year) does not constitute a relevant event or 'anchor,' i.e. something significant. As such, this study will opt to use age at time of initial assessment. It is worth noting that it would be possible to use age at time of release or age at sentencing, however, using age at release assumes that the offender

was incarcerated (which is not always the case), while sentencing would be very similar to age at time of index offence plus one to two years. It has been noted that the assessments carried out by ROMHC's SBC generally occur within 12 months of the index offence as the ROMHC's report is often an item of interest to the courts during sentencing.

#### Category II: Item 2: Prior Sentencing Occasions for Sexual Offences

It is commonly accepted that the best predictor of future behavior is past behavior. Individuals who have a history of offending are much more likely to recidivate than a person who has no prior history of offending beyond the index offence. In Hanson and Bussiere's 1998 meta-analysis of sex offenders, they found that a prior general offence was moderately correlated with future general offending, while a prior sexual offence was also moderately correlated with future offending. Specific to offenders who offend against children, Hanson, Steffy, and Gauthier (1993) found prior sexual convictions to be the most highly correlated ( $p < .001$ ) risk predictor for recidivism. This relation has been further shown to extend to offenders with a history of online child pornography offending. Seto and Eke (2008) found that in a sample of 301 child pornography offenders that a criminal history and substance abuse were the greatest predictors of future offending, including future contact offending.

Prior offending is a variable universally included in actuarial risk assessment for all offending, including sexual offending. Its usefulness stems from the ease with which

it can be recorded and the strength of its predictive relationship to future offending. The present study has opted to include it for these same reasons.

#### Category II: Item 3: Juvenile Arrests

It has been shown that the earlier an offender begins to participate in criminal activity, the more likely they are to be persistent in their offending. This has been shown to be true not only of general crime, but also of sexual offending (Hanson & Bussiere, 1998). The Static-2002 rates offenders as higher risk if they have committed at least one juvenile sexual offence prior to the index offence being considered (Phenix et al. 2008).

This characteristic is underdeveloped in the literature for child pornography offenders despite being a well established predictor of persistent offending. This is a variable where the two offender classes may significantly differ, as current research on adult offending has shown that online offenders are less likely to have a criminal record (Wolak, 2005; Webb et al., 2007).

#### Category II: Item 4: Rate of Offending

Hanson and Thornton (2003) showed that offenders who offend more often are at a greater risk to recidivate. The Static-2002 uses sentencing data to determine this rate of offending. Therefore, an offender can have had multiple sexual offences during a time period, but for the purpose of the tool only one sentencing occasion is recorded. The

Static-2002 considers offenders who have more than one sentencing occasion per fifteen years of their life to be at higher risk to recidivate (Phenix et. al 2008).

### Category III: Deviant Sexual Interests

Deviant sexual interests have been shown to have the highest correlation with recidivism (Hanson & Bussiere, 1998; Hanson & Morton-Bourgon, 2005). Deviant sexual interests are defined by Phenix et al. (2008) as illegal paraphilias, which includes such offences as exhibitionism, voyeurism, and a diagnosis of pedophilia.

Deviant sexual interests are often included on actuarial risk assessment tools designed for use with sex offenders as they are highly correlated with recidivism. Interestingly, as noted by Seto (2006), online child pornography offenders are more likely to be diagnosed with pedophilia than child molesters. However, molesters have been shown to recidivate at a higher rate than online child pornography offenders.

The Static-2002 includes three measures to determine deviancy: non-contact sexual offending, male victims, and young unrelated victims. These three scoring items present a problem for use with online child pornography offenders. Offenders who have a history of online child pornography offending by definition meet the requirements for having a non-contact sex offence; as such, on this measure they will always be scored at risk to recidivate. For the other two items, male victims and young, unrelated victims, the contents of the pornography a child pornography offender uses is not enough to score these two items. Therefore, for members of the online-only offending group, these measures will not be skipped in the scoring procedure (akin to being scored a zero).

Category III: Item 5: Any Sentencing Occasions for Non-contact Sex Offences

Offenders who have paraphilic interests are more likely to recidivate (Hanson & Bussiere, 1998). The Static-2002 considers any conviction for a non-contact sex offence to be grounds for increased recidivism, and scores these offenders as such (Phenix et al. 2008).

Category III: Item 6: Any Male Victims & Item 7: Young Unrelated Victims

These two measures of deviant sexual interests have been found to correlate with recidivism. Offenders who offend solely against males or offend sexually against both males and females have been found to recidivate at a higher rate than offenders with solely female victims (Hanson & Bussiere, 1998).

Offenders whose victims include young and unrelated victims also reoffend at a higher rate than offenders who do not. As stated in the coding rules for the Static-2002, this item is a “proxy for sexual interest in children, which is a well established predictor of sexual recidivism” (Phenix et al., 2008).

With respect to child pornography offenders, the Static-2002 scoring makes clear that neither of these items should be scored based solely on the images of children in an offender’s pornography collection. It is interesting to note that the Static-2002’s coding manual uses young-unrelated as a proxy for interest in children, when they exclude child pornography offences. It may be more fitting to instead say this specific item is a proxy

for higher-risk offending, a topic to be discussed later in this study. Likewise, for any-male victims, a sexual interest in males should be equally as predictive for online offenders as it is for contact offenders if the tool is measuring what it claims to be measuring. If it does not, then the characteristic must be a proxy for something else.

The scoring rules of the Static-2002 for these items depend upon the presence of either male victims or young/unrelated victims. If the offender had at least one victim who was male they are scored as higher risk. If they have had at least two victims, one of whom was a stranger victim then they are scored in the higher risk category for young, unrelated victim.

#### Category IV: Item 8: Any Unrelated Victims & Item 9: Any Stranger Victims

These two variables gauge the relationship between the victim and the offender. It has been shown that offenders who offend only against members of their family tend to recidivate at a lower frequency than offenders who go outside their family (Hanson & Bussiere, 1998). Likewise, offenders whom offend against people who they do not know are at an increase risk of sexually recidivating (Hanson & Bussiere, 1998).

Child pornography offenders often are not known and unrelated to their victims. Webb et al. (2007) reported that the median number of images found in a child pornography offender's collection is of 317.50 images (mean number of images was 16,698, but this was highly skewed), which consists of numerous individuals. With regards to child pornography offenders, it has yet to be shown if there is a relationship between offenders who know their victim in some way and recidivism.

The Static-2002's position for scoring the Category IV measures for online child pornography offenders is consistent with how the tool scores the deviancy measures (Category III). Specifically, offenders with only online offences are scored in the lower risk categories for each item, as viewing the abuse of an unrelated stranger is not considered the same as personally abusing an unrelated stranger.

#### Category V: Item 10: Any Prior Involvement with the Criminal Justice System

General criminality is the second greatest predictor of recidivism. It has been shown that offenders who have criminal records are more likely to recidivate violently, sexually, or generally when compared to offenders who have not previously had contact with the criminal justice system (Hanson and Bussiere, 1998; Hanson and Moron-Bourgon, 2005). The Static-2002 employs five measures of criminality, the first of which is “any prior involvement with the criminal justice system.” This measure is scored based on whether at any point in the offender's life prior to the index offence the offender had made contact with the criminal justice system. Involvement is defined by Phenix et al. (2008) as arrests, charges, or convictions. The Static-2002 places any offender with at least one prior contact with the criminal justice system in the higher risk category.

This is expected to be a major differentiating variable between contact sex offenders and online child pornography offenders. Wolak et al. (2005) reported that 73% of child pornographer offenders in their study had no prior criminal history. This is in contrast to the child molesters in Greenfield's study (1996) which reported that 59% of child molesters had previous contact with the justice system.

#### Category V: Item 11: Prior Sentencing Occasions

The Static-2002's second measure of criminality is a frequency measure. This measure can be seen as a continuation of the measure "Any prior involvement with the criminal justice system." While the first variable looks at any contact, the second "prior sentencing occasions" differentiates between individuals who have offended more frequently.

The scoring for this item looks at the number of sentencing occasions for an individual. Prior involvement uses a much lower threshold for its measure. An individual is considered to have prior involvement if they have been arrested, charged, or convicted (Phenix et al., 2008), whereas this second measure only count the times an individual had been sentenced. Furthermore, for an individual to be considered at higher risk, the offender will have had to have three or more separate sentencing occasions.

As mentioned previously, the study predicts that involvement with the justice system will be a major differentiating factor between contact and online offenders. Pertaining to this measure, there is expected to be an even more pronounced gap between the offender types.

#### Category V: Item 12: Any Community Supervision Violations

It has been shown that offenders who do not conform to the conditions of community supervision are at a greater likelihood to recidivate (Hanson & Morton-

Bourgon, 2004). Offenders who have violated the conditions of their release are scored as higher risk than offenders who have not (Phenix et al. 2008).

This Static-2002 measure of criminality is not ideally suited to online child pornography offenders. As online child pornography offenders are less likely to be detected and have criminal records, there is a reduced opportunity for them to violate community supervision when compared to contact offenders. This variable may still be useful in differentiating between online child pornography offenders who are at a higher risk to recidivate or escalate compared to those who are a lower risk. This variable also suffers due to the difficulty in detecting the offending of online child pornography offenders.

#### Category V: Item 13: Years Free Prior to Index Sex Offence

This measure looks to determine the persistence of offending. The point of reference for this variable is the index offence and looks at the period of time just before the index offence occurred. It specifically looks to see if the offender had a long period or a short period of non-offending prior to the index offence. Offenders who had previously been incarcerated or convicted within the last 3 years for an offence separate from the index offence are considered at higher risk than those who had not.

This measure is similar to “any community supervision violations” as it requires the offender to have previously been incarcerated. As such, it is less useful in differentiating between contact offenders and online offenders as online offenders are

much less likely to have been incarcerated. It will be a useful measure in differentiating between high risk online offenders and low risk ones.

Category V: Item 14: Any Prior Non-Sexual Violence Sentencing Occasion

As Hanson and Morton-Bourgon (2004) showed there is a link between violent offending and persistent sexual offending. This variable is similar to the two previous variables in that it is more likely to be used to differentiate between types of online offenders as opposed to online offenders and contact offenders. Offenders who have a separate sentencing occasion for a violent offence in the history are scored as being of higher risk (Phenix et al. 2008).

### *Non-Static-2002 Measures*

Additional measures of interest were selected for inclusion in the study to offer dimensions of comparison beyond those of the Static-2002. The additional measures are grounded in the literature, and have demonstrated strong association with both general and sexual recidivism. The additional items address psychological characteristics not assessed by the Static-2002; as they are self-report measures, whereas the Static-2002 only takes into account information which can be found in court documents.

#### Derogatis Sexual Function Inventory

The Derogatis Sexual Functioning Inventory (DSFI) is a self report instrument which determines along ten domains the sexual functioning of an individual (Derogatis, 1978), which is defined as the ability to engage in a healthy sexual relationship. The DSFI is designed to identify which areas of sexuality are problematic for individuals who either engage in abnormal sexual interactions or are unable to engage in healthy sexual interaction. The DSFI assesses how informed an individual is about sex, their sexual experience, sex drive, attitude towards sex, psychological symptoms, affect, gender role, sexual fantasy, body image, and sexual satisfaction. It also calculates a summary score, the sexual functioning index, based on an individual's raw scores on the ten subscales. The summary score gives an overview of how well the individual is able to function sexually, with individual deficits identifying what aspects of sexuality are problematic for the individual.

Child molesters have been found to score much lower than normative samples on the DSFI (Pawlak, Boulet, and Bradford, 1991). This is consistent with the belief that one of the underlying processes which feeds sexually deviant behavior is poor social functioning which prevents normal sexual interaction (Marshall, Abel, & Quinsey, 1983). Scores for online offenders and contact offenders may show telling differences between the two groups.

#### Michigan Alcohol and Screening Test

Substance abuse has long been associated with recidivism in sex offenders (Quinsey et al. 2005). Seto & Eke (2008) found that substance abuse was one of two predictors of reoffending in a sample of 301 child pornography offenders. Determining if the offender groups differ in their abuse of alcohol may provide insight into patterns of re-offence.

The Michigan Alcohol Screening Test (MAST) is a self-report questionnaire composed of 22 yes or no questions (Zung, 1982). The test is most often administered as part of a semi-structured interview. The test is scored by tallying the number of statements the offender endorses which are associated with alcoholism. High scores are associated with alcohol abuse.

### Bumby Cognitive Distortion Scale

It is believed that offenders who sexually recidivate do so in part because they subscribe to beliefs and attitudes that condone and minimize sexually inappropriate behavior (Murphy, 1990). To gauge the number of cognitive distortions held by sex offenders, Bumby (1996) developed the RAPE and MOLEST scales, which together form the Bumby Cognitive Distortion Scale. Higher scores on either the RAPE or MOLEST scale have been shown to correlate with the number of victims and duration of offending (Bumby, 1996). A positive prognosis for treatment is less likely for an offender who endorses many cognitive distortions (Bumby, 1996). Research has shown that online offenders hold fewer cognitive distortions than contact offenders (Babchishin et al., 2011). Replication of these results is important, as the lack of cognitive distortions in online child pornography offenders may prove to be vital to understanding why they appear to recidivate at a rate much lower than their contact offending counterparts.

### Phallometrically Determined Sexual Deviance

This item is found on the SORAG actuarial risk assessment tool for sex offenders. It is one of that tool's measures of sexual deviancy. It is included in this study as it may be a more appropriate gauge of deviant sexual interests. As mentioned previously, the measures of deviancy used by the Static-2002 may be unsuitable for only child pornography offenders.

Phallometrically determined sexual deviance is measured by gauging the sexual arousal an offender has to a variety of stimuli. They are presented with neutral stimuli, non-deviant hetero and homosexual stimuli, and a range of sexually-deviant stimuli including images of young children and rape, as well as audio tapes which describe sexually inappropriate interactions between an adult and a child and an adult and another adult. Offenders who react above a specific threshold are deemed to be aroused by that material. Offenders are deemed to be deviant if they are aroused by any of the material depicting sexually deviant interactions.

#### Paulhus Impression Management and Self-Deception Scales

The Paulhus Impression Management and Self-Deception Scales measures the socially desirable responding of an offender and their awareness of doctoring the truth. The Impression Management subscale measures how likely the offender is attempting to create a false impression of themselves. When rating their own personalities, people often attempt to present themselves more favorably (Edward, 1970). The second subscale is the Self-Deception scale. This subscale measures to what extent an offender is aware or unaware of their misrepresentation of their personality (i.e. whether the offender is consciously or unconsciously presenting themselves in a better light).

The study includes this measure as a check for the other psychological measures used in this study. If this scale shows that either the online offenders or contact offenders are significantly managing how they impress on their physician (and the self report tests they administer), it reduces the reliability of the results.

### Education

It has been found that online child pornography offenders are generally more educated than contact offenders (Wolak et al., 2005). While education has not been associated with recidivism or included in any ARA models that this author is aware of, it is included in this study as higher levels of education may provide offenders with skills which would aid in controlling or hiding their offending behavior. For example, offenders with a background in internet technology may be more capable of camouflaging their online offending. As such, the study has tracked whether the offenders within the study pursued higher education (college or university).

### Separation from Biological Parents prior to Age 16

A troubled childhood has been associated with criminality later in life (Harris et al. 2005). The SORAG uses separation from a biological parent prior to the age of 16 as a proxy measure for an offender having had an unstable childhood (Harris et al., 2005). While studies have reported differences in childhood abuse between online and offline offenders, none have probed further into childhood difficulties. As such, this measure was included in the study to see how, if at all, these offender classes differed in the stability of their upbringing.

### Relationship Status

The relationship status of offender is often reported variable in comparison studies between online offenders and contact offenders (Webb et al., 2007; Wolak, 2005). Deviant sexual behavior has been attributed to inability of sexual offenders to interact normally, socially and sexually (Marshall, Abel, & Quinsey, 1983). A good measure of social/sexual interactions is one's ability to engage and maintain relationships. As such, the study chose to determine whether offenders were single, married, or divorced/estranged from a partner. As mentioned earlier, it has been reported that online offenders are more likely to be single (Webb et al., 2007).

## Procedure

The initial step in the study was gaining ethics approval from both the Royal Ottawa Hospital and the University of Ottawa (See Appendix B for letters of ethical approval). The Hospital has its own ethics procedure while the University requires that graduate students have their projects approved by its own ethics board. Once ethics approval was received the Records Department at the Royal Ottawa Hospital was contacted and arrangements made for access to the necessary files.

The scoring for each offender occurred over a 6 week period. For each participant in the study a coding sheet was prepared (see appendix C). The coding sheet recorded the information necessary to score each item of the Static-2002, but did not include the actual score per item. The scoring sheet also recorded the offenders score (i.e. for the DSFI the percentile rank of the offender was recorded) or designation (i.e. ever married) for each of the 6 additional recorded items.

Once all data had been recorded on the coding sheets, these sheets were used to input the data into SPSS statistical analysis software. Data was first screened to ensure that no data input errors had occurred. For the individual measures of interest for each group, analysis of variance (ANOVA) was performed to determine along which continuous variables the three groups of offenders differed. Chi-square analysis was used to determine if the three groups differed on the nominal and ordinal scale items.

# 5

## Results

The study included 116 subjects, 53 (46%) of whom had been convicted of possessing child pornography while not having ever been charged with a contact sex crime, 53 (46%) individuals who had been convicted of child molestation and had no known history of child pornography offending, and 10 (8%) individuals who had been either charged or convicted of being in possession of child pornography and having molested a child. The characteristics of the child pornography offenders and the child molesters are included in Tables two through four, and are divided into Static-2002 variables, psychological variables, and demographic variables. The study was designed to compare each of the three groups across all variables. However, due to the low count of mixed-type offenders in the subject pool at the research site, the majority of comparisons between mixed offenders and the other two groups were dropped from the study. Tables 5 and 6 include summary information for the small sample of mixed offenders. Comparisons between the mixed-offenders and the other two groups were extremely limited as the small sample size made it impossible to perform meaningful analyses.

#### *Static-2002 Variables*

Table 2 includes all comparisons for the items of the Static-2002. Comparisons for age across all three groups showed that the age at time of assessment for each offender type was non-significant. Online offenders had a mean age of 36 (SD = 14), while contact offenders had a mean age of 39 (SD = 16). The ages of the online

offenders and the contact offenders did not significantly differ from those of the mixed offenders, who had an average age of 36 (SD = 13).

Table 2 - Static-2002 Variables (n = 106)

| Category   | Item      | Static-2002 Variable                                    | Online (n = 53)<br>n(%) | Contact (n =53)<br>n(%) |
|------------|-----------|---|-------------------------|-------------------------|
| <b>I</b>   | <b>1</b>  | Age   | 36 (SD = 14)            | 39 (SD = 16)            |
| <b>II</b>  | <b>2</b>  | Prior Sexual Sentencing Occasions                       | 0.06 (SD = 0.23)        | 0.68 (SD = 1.1)**       |
|            | <b>3</b>  | Rate of Sexual Offending (> 1 offence per 15 years)     | 1 (2%)                  | 11 (21%)**              |
|            | <b>4</b>  | Juvenile Arrests and Adult Conviction for a Sex Offence | 1 (2%)                  | 5 (9%)                  |
| <b>III</b> | <b>5</b>  | Non-Contact Offence                                     | --                      | 0                       |
|            | <b>6</b>  | Interest in Males                                       | 23 (43%)                | 25 (47%)                |
|            | <b>7</b>  | Young/Unrelated Victim                                  | --                      | 21 (40%)                |
| <b>IV</b>  | <b>8</b>  | Unrelated Victim  | --                      | 48 (91%)                |
|            | <b>9</b>  | Stranger Victim   | --                      | 13 (25%)                |
| <b>V</b>   | <b>10</b> | Prior Criminal Involvement                              | 11 (21%)                | 33 (62%)**              |
|            | <b>11</b> | Prior Sentencing Occasions                              | 0.17 (SD = 0.38)        | 1.174 (SD = 2.38)**     |
|            | <b>12</b> | Parole Violations                                       | 1 (2%)                  | 16 (30%)**              |
|            | <b>13</b> | Years Free  | 33 (SD = 15)            | 25 (SD = 22)            |
|            | <b>14</b> | Non-Sexual Violent Sentencing Occasion                  | 0 (0%)                  | 5 (9%)*                 |

\* p <0.05 \*\*p<0.01

The Static's Category III (deviant sexual interests) and Category IV (relationship to victim) items were difficult to score across both groups, making four of the fourteen measures of the Static-2002 unsuitable for comparison. Specifically, Item 5, sentencing occasions for non-contact sex offences was incomparable as all child pornography offenders by definition had at least one sentencing occasion for a non-contact offence. It should be noted that for the contact offenders none of the sample of 53 had a history of a

non-contact offence. Item 6, male victims was not score-able as defined by the Static-2002, however, a proxy measure "interest in male" was created by the researcher to gauge the predominant sexual interest of the offenders. The number of child pornography offenders who were primarily interested in males was very close to the number of child molesters who had a male victim, a chi-square analysis for this comparison returned a non-significant result. Items 6 through 8 all depend on the offender's relationship to the victim, as such it was not possible to score the child pornography offenders along these variables.

Child pornography offenders and contact offenders differed significantly across a total of six variables on the Static-2002, all of which have to do with prior criminality (items 2, 3, 10, 11, 12, and 14). Contact offenders were significantly more likely to have had a prior conviction for a sex offence ( $F(1,105) = 17.70, p < .0005$ ), had offended at a higher rate than child pornography offenders ( $\chi = 9.40, df = 1, p < 0.05$ ), had prior criminal involvement of any kind ( $\chi = 18.806, df = 1, p < 0.0005$ ), had significantly more sentencing occasions for general offending ( $F(1,105) = 21.88, p < 0.0005$ ), had significantly more parole violations ( $\chi = 15.45, df = 1, p < 0.0005$ ), and had a significantly higher rate of non-sexual violent offending ( $\chi = 5.05, df = , p < 0.05$ ).

### *Demographic Variables*

Table 3 includes comparisons between child pornography offenders and contact offenders for the demographic variables measured in the study.

Table 3 - Psychological Variables (n = 95)

| <b>Demographic Variables</b>             | <b>Online (n=50) (n%)</b> | <b>Contact(n=45)</b> |
|--|---------------------------|----------------------|
| Attended College                         | 39 (78%)                  | 4 (9%)**             |
| Separation from a parent prior to age 16 | 10 (20%)                  | 22 (49%)**           |
| Relationship Status                      |                           |                      |
| →Single                                  | 27 (56%)                  | 37 (70%)             |
| →Married/Common Law                      | 13 (28%)                  | 10 (19%)             |
| →Separated                               | 8 (17%)                   | 6 (11%)              |

\* p <0.05 \*\*p<0.01

Of the three demographic variables measured in the study two proved to be significantly related to offender type. Child pornography offenders were more likely to have attended post secondary education ( $\chi = 45.66$ ,  $df = 1$ ,  $p < 0.0005$ ), with 40% having graduated university or college and another 38% having at least attended university or college. In contrast, less than 10% of child molesters had attended university or college. Contact offenders were found to be significantly more likely to have been separated from a biological parent prior to the age of sixteen ( $\chi = 9.38$ ,  $df = 1$ ,  $p < 0.005$ ), with nearly half of the sample of contact offenders having a history of parental separation. The comparison between the two offender groups for relationship status proved to be non-significant.

### *Psychological Variables*

Tables 4 and 4.1 shows the scores for both the child pornography and the child molester groups across several psychological variables. Four self-report tests were used in the study to measure a variety of psychological characteristics. These measures included the Derogatis Sexual Functioning Inventory, the Michigan Alcohol and Screening Test, the Bumby Cognitive Distortion scales - RAPE and MOLEST, and the Paulhus Deception Scales for Impression Management and Self Deception. In addition, whether the offenders were diagnosed with pedophilia by way of phallometric testing is also included in Tables 4.

Table 4 - Psychological Variables (n=101)

| Psychological Variable                  | Online (n=50) (n%) | Contact(n=51) (n%)   |
|---|--------------------|----------------------|
| DSFI - Information                      | 45.68 (SD = 8.34)  | 35.51 (SD = 9.23)**  |
| DSFI - Experience                       | 44.24 (SD = 13.23) | 40.21 (SD = 10.68)   |
| DSFI - Sexual Drive                     | 47.20 (SD = 10.34) | 43.90 (SD = 11.06)   |
| DSFI - Attitude                         | 46.96 (SD = 8.86)  | 38.38 (SD = 9.56)**  |
| DSFI - Symptoms                         | 44.76 (SD = 11.20) | 45.79 (SD = 15.46)   |
| DSFI - Affect                           | 39.20 (SD = 11.04) | 44.21 (SD = 13.85)   |
| DSFI - Gender Identity                  | 43.72 (SD = 11.04) | 45.33 (SD = 11.34)   |
| DSFI - Fantasy                          | 47.30 (SD = 11.95) | 40.31 (SD = 10.93)** |
| DSFI - Body Image                       | 37.84 (SD = 8.98)  | 42.38 (SD = 10.36)*  |
| DSFI - Satisfaction                     | 45.08 (SD = 13.06) | 45.61 (SD = 9.44)    |
| DSFI - Sexual Functioning Index         | 36.00 (SD = 14.47) | 32.24 (SD = 12.30)   |
| DSFI - Global Sexual Satisfaction Index | 53.14 (SD = 13.85) | 51.47 (SD = 11.46)   |
| MAST Alcohol                            | 2.86 (SD = 5.67)   | 7.92 (SD 12.71)**    |
| Phallometrically Determined Pedophilia  | 29 (58%)           | 42 (82%)**           |

\* p <0.05 \*\*p<0.01

The Derogatis Sexual Functioning Inventory is comprised of 10 subscales and two summary scales. Each offender's scores on each item of the DSFI is recorded in their chart as a t-score. As such, the summary tables and the analyses run in this study are based on those ranks (See Appendix D for the raw score to t-score conversion table). It was found that child molesters and online offenders differ along several of the subscales of the DSFI. Contact offenders were significantly more likely to know less about the act of sex (item DSFI - Information) ( $F(1,100) = 33.73, p < 0.0005$ ), had fewer sexual fantasies (item DSFI - Fantasy) ( $F(1, 100) = 9.52, p < 0.005$ ) than child pornography offenders, and had more conservative attitudes towards sex (item DSFI - Attitude) ( $F(1,100) = 22.02, p < 0.0005$ ). Online child pornography offenders significantly suffered from lower levels of body image self esteem (item DSFI - Body Image) ( $F(1,100) = 5.586, p < 0.05$ ) than their contact offending counterparts. The two groups did not significantly differ on any of the other DSFI subscales or the two summary scales.

Table 4.1 includes an additional 4 psychological measures from a smaller sample of offenders. The Bumbly Cognitive Distortion Scale and the Paulhul Deception Scale were administered to fewer patients than the other psychological measures used in the study as these scales were only recently added to the battery of standardized tests administered as part of the intake process at the hospital.

Table 4.1 Additional Psychological Variables (n = 37)

| <b>Psychological Variables</b>                  | <b>Online (n=33)</b> | <b>Contact(n=4)</b> |
|---|----------------------|---------------------|
| Bumby Cognitive Distortions - RAPE              | 57.06 (SD = 14.89)   | 72.00 (SD = 10.74)  |
| Bumby Cognitive Distortions - MOLEST            | 61.34 (SD = 18.25)   | 72.75 (SD = 15.63)  |
| Paulhus Deception Scale - Impression Management | 52.73 (SD = 10.02)   | 51.50 (SD = 10.54)  |
| Paulhus Deception Scale - Self Deception        | 53.58 (SD = 8.8)     | 50.50 (SD = 14.46)  |

\* p <0.05 \*\*p<0.01

Contact offenders and child pornography offenders significantly differed across two additional psychological measures. Contact offenders scored significantly higher than online offenders on the MAST for alcohol dependence ( $F(1,99) = 6.64, p<0.01$ ) and were more likely to be diagnosed as pedophiles via phallometric testing ( $\chi = 6.87, df=1, p<0.01$ ). The two groups showed a non-significant difference for the Bumby and Paulhus scales. However, as table 3.1 shows, the number of contact offenders who had undergone these assessments was only 4. The low number of contact offenders with data for these measures lessens the power of the detected non-significance.

### *Mixed Offenders*

The entirety of the forensic records at the research site which catalogued more than three thousand sex offenders contained a total of only ten offenders who had been charged or convicted with both a contact offence and possession of online child pornography. As such, it was not possible to carry out the non-parametric analyses as the low number of subjects caused the majority of comparisons to violate the assumptions of

Chi-square analysis. In the interest of completeness, the study has included Tables 5 and 6 which report the descriptive statistics for the mixed offender group. One ANOVA on age was performed to determine if the small sample of mixed offenders differed significantly in age from the other two groups. The result showed that they did not.

Table 5 Static-2002 Variables for Mixed Type Offenders (n=10)

| <b>Static-2002 Variable</b>                             | <b>Mixed Type Offenders<br/>(n = 10) n(%)</b> |
|---|---|
| Age   | 36 (SD = 13)                                  |
| Prior Sexual Sentencing Occasions                       | 1.30 (SD = 1.64)                              |
| Rate Sexual Offending (> 1 offence per 15 years)        | 4 (40%)                                       |
| Juvenile Arrests and Adult Conviction for a Sex Offence | 1 (10%)                                       |
| Non-Contact Offence                                     | --  |
| Interest in Males                                       | 8 (80%)                                       |
| Young/Unrelated Victim                                  | 5 (50%)                                       |
| Unrelated Victim  | 7 (70%)                                       |
| Stranger Victim   | 3 (30%)                                       |
| Prior Criminal Involvement                              | 6 (60%)                                       |
| Prior Sentencing Occasions                              | 1.80 (SD = 2.10)                              |
| Parole Violations                                       | 3 (30%)                                       |
| Years Free  | 28 (SD = 15)                                  |
| Non-Sexual Violent Sentencing Occasion                  | 1 (10%)                                       |

Table 6 Demographic Variables for Mixed Type Offenders (n = 10)

| <b>Demographic Variables</b>             | <b>Mixed Type Offenders<br/>(n = 10) n( %)</b> |
|--|--|
| Attended College                         | 6 (60%)  |
| Separation from a parent prior to age 16 | 3 (30%)  |
| Relationship Status                      |  |
| →Single                                  | 8 (80%)  |
| →Married/Common Law                      | 0 (0%)   |
| →Separated                               | 2 (20%)  |

Descriptive statistics for the psychological measures for the mixed group offenders are not reported here. Several of the offenders in the group had not undergone the DSFI, MAST, Bumby, or the Paulhus scales, nor had they undergone phallometric testing. The researcher felt it would not be informative and possibly misleading to include summary statistics for the mixed offenders on these tests. The lack of mixed offenders scored along these psychological measures presents an opportunity for further research, and is further addressed in the Discussion section of this paper.

#### *Additional Finding*

An unintended yet noteworthy finding of this study was that three offenders who had offended online had been diagnosed with Asperger syndrome (two online only offenders and one mixed offender). While research is ongoing, it is currently thought that roughly 60 of every 10,000 births is affected by an autistic spectrum disorder, Asperger syndrome being one of them (Aspergers Society of Ontario, 2011). As such, the finding of three offenders with the disorder in a sample of only 63 offenders who had committed

crimes online is unexpected. A finding such as this lends itself to theories which support the belief that online offending is partially a byproduct of an inability to socialize. Due to the small sample size of the population this finding is speculative only, but provides a direction for future investigation.

# 6

## **Discussion**

This study examined three research questions concerning online child pornography offenders, contact offenders, and mixed offenders. However, due to unpredictable problems with the sample population, comparisons amongst all three groups could not be completed. The discussion of results is presented according to the three research questions posed. Methodological shortcomings had the greatest impact upon the third research question and are addressed there and in the Limitations section of the study.

#### *Similarities and Differences between Offender Types*

Overall, online offenders and contact offenders were as likely to differ as they were to be similar across the predictors of recidivism, indicators of psychological health, and demographic variables. Overall, both groups were heterogeneous with scores across the variables of the study ranging greatly.

Contrary to previous reports (Webb et al., 2007; Babchishin et al., 2011) the study found that online offenders and contact offenders did not significantly differ in age. Unique to this study was the finding that offenders who had both an online child pornography offence and a contact offence also did not significantly differ in age from either of the other two groups. The reason for the detected non-significance and deviation from previous findings could be due to multiple reasons. The current study's pool of contact offender was several years younger on average than those reported in other studies. Babchishin et al.'s (2011) meta-analysis reported that contact offenders

had an average age of 43.6, more than four years older than the determined age of contact offenders in this study (mean age for contact offenders in study was 39, SD=16).

However, the reported age for online offenders was also higher than the determined age of online offenders in the current study (mean age of online offenders in study was 36, SD=14). This could have resulted from the small sample size of the study, and could possibly normalize with a larger sample size.

A second explanation for the non-significance in age between online offenders and contact offenders may be accounted for by internet usage trends. While internet use across all Canadian age categories has increased since the mid 1990s, the largest growth has been in the number of older users. A study of Canadian internet usage in 1998 (Canadian Heritage, 1998) found that one in four people between the ages of 25 and 44 were regular internet users. Older individuals used the internet much less, with less than one in five people ages 45 to 54 being regular users, and less than one in twenty people 55 and older regularly using the internet. The Statistics Canada 2009 Information and Communications Technology survey found that in 2009 more than 80% of people 34 years of age and under used the internet daily, 70% of people between the ages of 35 and 54 used the internet daily, and more than 65% of people 55 years of age and older used the internet daily. The differences found in age of offending in earlier research could be due to the disparity in internet usage in older offenders. As older Canadians use the internet more, those with deviant sexual interests may use the internet to search out images and videos of child pornography. This would bring the age of online offenders

more in line with those of contact offenders, and account for the finding that the age of the two offender groups do not significantly differ.

Offline offenders were significantly more likely to score higher than online offenders across all items concerning criminality on the Static-2002 actuarial risk assessment tool. Offline offenders were more likely to have been previously convicted of a sexual crime, were more likely to have offended at a higher rate, were more likely to have had any previous criminal involvement, were more likely to have had a previous sentencing occasion for any type of crime, were more likely to have violated conditions of their parole, and were more likely to have been previously convicted of a non-sexually violent crime. These findings are in line with those of previous studies (Webb et al., 2007; Wolak, 2005; Seto and Eke, 2008).

One unique variable developed from the Static-2002 and used in this study is the examination of offender preference for male victims. The current study noted whether online offenders were primarily interested in young males. The Static-2002 uses male victims as a proxy measure for deviant sexual interests, as offenders with male victims have been shown to recidivate at a higher rate (Hanson & Bussiere, 1998). It was found that 43% of online offenders had a preference for male, while child molesters in the study offended against males roughly 47% of the time, an non-significant difference. This finding has implications for future research. Future research on the recidivism of online child pornography offenders may wish to examine if there is a correlation between victim sex preference and reoffending.

In addition to age, three other demographic variables were charted: college/university attendance, separation from a biological parent prior to the age of sixteen, and relationship status. It was found that online child pornography offenders are much more likely to have attended college or university ( $\chi^2 = 45.66$ ,  $df = 1$ ,  $p < 0.0005$ ). A college education could indicate that the offenders were more likely to have regularly engaged in computer use. Greater familiarity with computers may have in part influenced online offenders to carry out their offending online. Further research should determine if online offenders express greater comfort or familiarity with computers, and whether or not this familiarity influences their decision to offend online. Another direction for further research into online offending and education should examine whether online offenders with college or university degrees pursued studies in fields where computers are central to the discipline (e.g. internet technology, computer science, engineering, etc.). Alternately, offending online may not be due to greater familiarity and knowledge of computers, but rather the result of higher general sophistication. This would also explain why more offenders attend college/university. It is possible that online offenders come from families which are in a higher sociodemographic bracket, thus providing them with the opportunity to attend college, and making it more likely they have a computer with which to offend with. Offline offenders may not have the same opportunities or access to computers and therefore offend in person as opposed to online.

It was also found that offline offenders were significantly more likely to have been separated from a biological parent prior to the age of sixteen. Separation from a

biological parent is used as a proxy measure of childhood difficulties on the SORAG actuarial risk assessment tool. Conduct problems in youth have been shown to be predictive of recidivism (Harris and Rice, 2007). The finding that offline offenders are more likely to have been separated from a biological parent prior to the age of sixteen is in agreement with the previous mentioned significant findings of increased criminality in contact offenders.

It was also determined that online and offline offenders do not significantly differ in relationship status. The findings of this study stand in sharp contrast to those of Webb et al. (2007) who reported that online child pornography offenders were much more likely to be single and to have never been married. In the current study, the opposite was found to be true. Online offenders were less likely to report being single and were more likely to be married or separated. The data present in the study did not offer any insight into why this finding stands in opposition to previously reported results. The disagreement between this study's findings and those of other researchers may be due to the heterogeneous nature of online child pornography offenders. Further research on the ability of child pornography offenders to form lasting relationships is important as difficulty forming relationships has been suggested as an influential factor in the start up and maintenance of deviant sexual offending. Furthermore, finding of Asperger Syndrome within the population of offenders who had offended online lends credence to the idea that research on sociability is a fertile ground for future research on online child pornography offending and should be further studied.

No other study has yet to examine the scores of online sex offenders on the Derogatis Sexual Functioning Index. The DSFI was developed to identify the areas of sexual functioning which are abnormal in either a male or female individual. The tool was originally developed for use with the general public. However, its application with sex offenders has shown that child molesters score significantly lower than the general public on the tool (Pawlak, Boulet, & Bradford, 1991). In general, across the twelve scales of the tool, contact offenders were found to score lower than online offenders, indicating that they have lower levels of normal sexual functioning. Significant differences were detected on the measures of sexual information, sexual attitudes, sexual fantasy, and body image. This is in line with the findings of Pawlak et al. (1991).

Of all the significant differences detected, the only scale/item where offline offenders were lower than online offenders was body image. The mean t-score for online offenders of 37.84 puts these offenders in the lowest three percent of the population for body image. This finding may have important implications for determining a mechanism for how online offenders come to offend and give direction to treatment. As suggested by Webb (2007) online offender may have difficulty in forming and maintaining relationships. Low body image self esteem may prevent online offenders from attempting to form or maintain non-deviant intimate relationships. Lack of appropriate adult contact may then result in these offenders fixating on a population which they would perceive as less judgmental or threatening (e.g. children). This finding also has implications for the treatment of online sex offenders. If their offending is in part due to a belief that they are unattractive to adults, then incorporating a therapy such as cognitive

behavioural therapy, designed to modify such negative thought patterns may present a promising avenue for treatment.

Online offenders and contact offenders also significantly differed across two other psychological measures, the Michigan Alcohol and Screening Test and Phallometrically determined pedophilia. The finding that online offenders do not suffer from alcohol problems at the same rate as contact offenders is in line with the findings concerning criminality. The phallometric findings however are unexpected. Seto et al. (2006) found that online child pornography offenders score higher on phallometric measures than contact offenders and suggested that viewing online child pornography was a stronger indicator of pedophilia than contact offending against a child. Given that the current study included less than one sixth the number of subject than Seto et al.'s (2006) study, the current study's findings may be due to sample size.

#### *Application of the Static-2002 with Online Sex Offenders*

The Static-2002 was selected as the actuarial risk assessment tool of choice for the study as it is one of the most commonly implemented actuarial risk assessment tools being used with sex offenders. As such, the aim was to determine how online, contact, and mixed offenders compared across the variables included in the tool. It quickly became apparent that the tool was ill-suited for use with online offenders, confirming the recommendation of the creators of the tool (Phenix et al., 2008) not to use it with online offenders.

The Static-2002's fourteen predictors of recidivism are subdivided into five main categories. Categories 3 and 4 posed major complications for the assessment of online child pornography offenders. Of the three measures of sexual deviancy (Category 3) employed by the tool, non-contact offending, male victims, and young and unrelated victims, only one was score-able while the other two were not. The measure non-contact offending is the only variable that can be scored for online child pornography offenders. While it is score-able, it is a constant not a variable, and thus it, does not differentiate amongst online offenders. The scoring rule for this item scores the offender of being of "higher risk" if they have ever committed a non-contact offence. Therefore, by definition, online child pornography offenders will always score as higher risk on this item. Therefore, while score-able, this item is ill-suited for use with online child pornography offenders. The two remaining sexual deviancy measures are not assessable for online child pornography offenders. As previously mentioned, future research should examine if an interest in young males in pornography is associated with higher risk of recidivism/escalation for child pornography offenders, much in the same way as having male victims is already associated with increase risk of recidivism for contact offenders. Both Category 4 items, relationship to the victim are not score-able for online child pornography offenders.

Without the Category 3 and 4 measures of the Static-2002, the risk assessment tool is reduced to making prediction based solely on the past criminality and age of the offender. Hanson and Morton-Bourgon (2005) found that for contact sex offenders, deviant sexual interests and criminal history were the two strongest predictors of future recidivism. Therefore, as currently constructed, the Static-2002 is incapable of assessing online sex offenders along one of the two most important predictors of recidivism.

Alternative measures of deviancy could be utilized in assessing online child pornography offenders. This study included one measure which may be a suitable alternative measure of deviance. The SORAG actuarial risk assessment tool employs the results of phallometric testing in the assessment of deviancy for sex offenders. A brief examination of the items of the SORAG show that it does not suffer from the same scoring problems that the Static-2002 does for online child pornography offenders. One direction for future research is a longitudinal study that assesses the level of risk of online sex offenders using the SORAG risk assessment tool, and then determining how well those scores predicted future online and contact offending.

### *Escalation of Child Pornography Offenders*

There were very few mixed offenders in the study's subject pool, limiting the extent to which this question could be addressed. Of the ten offenders who committed both a contact and an online child pornography offence, in only one instance was there an

escalation in offending. Three cases involved the offender being charged with both a contact crime and an online child pornography crime at the same time, while the other six cases showed the offender having committed a child pornography crime after having already committed a contact offence.

Babchishin et al.'s (2011) meta-analysis of child pornography offenders raised concern that many studies had not accounted for mixed type offenders, having included them with the online offending subclass. The results of the current study appear to alleviate some of these concerns, as mixed type offenders that have been detected by the justice system were much rarer than expected. However, the impression that mixed type offenders do not occur often may not be an accurate representation of known online child pornography offenders, but rather an effect of sampling location. It is reasonable to speculate that if the study's three groups were generated from a population of prison inmates, as opposed to being treated as outpatients at a mental health hospital, that more mixed-type offenders would have been included in the sample. Furthermore, concerning escalation, it is likely that an offender having already committed an online child pornography offence having then committed a contact offence, would receive a prison sentence, as they would be a repeat offender. This hypothesis for the low number of mixed-type offenders available to the study is reinforced by the fact that of the ten mixed-type offenders in the study, five had been assessed after having transferred to the hospital from a prison as part of a court ordered assessment. Of the remaining five, three had been assessed following release on parole and being ordered to attend treatment at the

hospital. Future research should attempt to gain access to a prison either as a primary research site or a complementary research site to a mental health hospital.

# 7

## Limitations

This study and research of its ilk suffer from various limitations. This section will begin with a discussion of the general limitations to this type of research. It will then elaborate on limitations specific to this study.

### *General Limitations*

One of the major lines of inquiry of this study is how online child pornography offenders differ from contact offenders. By comparing the two groups, this study aimed to discover similarities and differences between them which would shed light on the new class of sex offender, the online child pornography offender and test the applicability of the Static-2002. Many other studies have utilized this same framework to learn more about online child pornography users. This type of research suffers from the general limitation of representiveness, which is a threat to external validity. It relies on gathering information about a new class of offender by examining the histories of detected offenders. However, it does not offer insight into what offenders who remain undetected are like, what their histories are, or what actions prevent them from being detected. Also, this form of research does not test predictive validity by tracing offenders forward in time. As such, any conclusions drawn from this type of research must be tempered by the reality that the information gathered on the offenders does not apply to all online child pornography offenders, but only to those who are detected by the criminal justice system. Future research into online offending may wish to approach the topic from a different perspective than the one used in this study. Instead of examining the characteristics of the offender, and determining how these characteristics affect offending, studies could

consider alternative factors which influence offending. One possible direction would be an examination of how environment and opportunity may influence the commencement and persistence of online offending. An examination of environment may also provide insight into the distinction between online offenders who are eventually caught and those who evade detection. Offenders who operate openly on the internet via chat relay programs, P2P (peer-to-peer) programs and public message boards are more exposed and more likely to be detected by authorities. Offenders whom evade detection may do so by operating within private-invite only message boards, may operate their own FTP (file transfer protocol) servers, and avoid engaging in discussion of their sexual interests with unknown persons. The online environment in which child pornography offenders operate within will greatly impact whether they are detected or not.

There is also the threat to discriminant validity in the study. Several scales and items have been used by the study to establish how online and offline offenders are similar/different. However, by employing numerous items the study may be measuring the same similarity or difference multiple times but erroneously counting each finding as unique. This is likely for the repeated findings concerning criminality in the study, and the various results concerning criminal activity for each offender group should be considered as a general finding concerning all criminal activity.

### *Specific Limitation*

The study met with several limitations which have reduced the scope of the conclusions that can be drawn from the research. The most apparent of these limitations stems from the small number of offenders who had committed both a contact crime and a online child pornography offence. The low number of subjects in this third group affected all three research questions of the study, most seriously affecting the first and third research questions.

The low number of mixed offenders made it impossible to compare all three groups across the items of the Static-2002, the psychological variables, or the additional demographic variables. The majority of the Static-2002 variables are bivariate, meaning that non-parametric analyses would need to be used. Chi-squared analyses, the statistical method used in analyzing nonparametric data measures the frequency in cells versus the expected frequency in those cells. A significant result is found when the summed difference between observed and expected frequency of all cells is found in excess of a given cut-off value. One of the rules of Chi-squared analysis is that each cell must have an expected frequency of at least five. Across almost all variables of the Static-2002, with the small sample size of mixed offenders (n=10), this rule was violated. As such, it was not possible to analyze the non-parametric variables for the third group.

The low number of group three offenders meant that the third research question could not be addressed. The design of the study called for total scores on the Static-2002

to be computed for both the mixed offenders and the online child pornography offenders, and to see if the scores on the tool were correlated with escalation. The low number of offenders in the third group meant that there were not enough mixed offenders to carry out the analyses. However, it is worthwhile to note that in the small group of offenders who committed both a contact and child pornography offence it was more likely that an offender committed an online child pornography crime after having already committed a contact offence (de-escalation). Had this trend been found in a larger sample of mixed offenders, it would have presented as a further limitation to the study, as a study of escalation would not be suitable with a sample which predominantly deescalated.

# 8

## **Conclusions**

The study found that online child pornography offenders and child molesters are about as likely to differ across a number of predictors of recidivism, psychological measures, and demographic measures, as they are to be similar. Online offenders, contact offenders, and mixed offenders did not significantly differ in age, a finding which is contrary to much of the other research into these offending classes. One plausible explanation for this difference is that online offending is mirroring the expansion of internet use in Canada. As the number of older individuals using the internet increases, the number of older individuals who use the internet to download and collect child pornography may also increase. Thus, earlier reports of these offending classes differing significantly in age may not have been due to a fundamental difference among offenders, but to differences in internet use across generations.

The greatest differences between online offenders and contact offenders were detected in offending history, with online offenders showing significantly less detected criminality across all variables measured in the study. These findings are in agreement with previous findings comparing online offenders and contact offenders.

Several psychological variables were examined for online and offline offenders. This study is the first to examine the scores of online child pornography offenders on the Derogatis Sexual Functioning Inventory. This comparison produced one very interesting result: online offenders scored significantly lower than offline offenders on the scales measure of body image. The average score for online offenders placed them in the lowest 3% of the population. This finding could have major implications for a mechanism explaining online offending as well as for treatment. A mechanism which explains online offending as being linked to a perceived unattractiveness to other adults

would be strengthened by the findings of this study. Furthermore, if this finding is replicated, then one possibility for the treatment of online offenders would be therapy that specifically target and eliminated the offender's belief in their own unattractiveness.

The Static-2002 seemed ill-equipped for use with online offenders. Several of the measures were unusable with this group. The tool's measure of sexual deviancy, one of the strongest predictors of recidivism for contact offenders, was not assessable for online child pornography offenders. It would appear that another actuarial risk assessment tool would be better suited for use with online offenders. One possible tool would be the Sex Offender Risk Assessment Guide (SORAG). Future research similar to this study should be carried out with that tool to determine whether it is a suitable alternative. Another possible alternative would be to develop and validate a new tool for online offenders based on in-depth examination of a sample of these offenders in various settings.

This study had aimed to examine escalation from online offending to contact offending. Escalation is a major cause of concern amongst the general population and is still not fully understood by those who work with sex offenders. A clear understanding of escalation would greatly aid the judicial system in identifying and controlling dangerous offenders, thereby increasing public safety. If a link can be found between online offending and later contact offending, then more targeted sanctions would be justifiable in the sentencing and treatment of online offenders. This research question could not be addressed by this study due to the low number of offenders who met the criteria for escalation in the study's subject pool. The low number of offenders of this type may be the result of the study site. Future research attempting to address this question should consider drawing from a prison sample as opposed to those of a mental

health hospital. Interestingly, of the offenders who were included in this study who could have been used in this group, there were indications of a de-escalation trend as opposed to an escalation trend. The possibility that online offending occurs more often after previous contact offending (in offenders who have committed both types of crimes) was not found in the literature review. It may prove to be a rich subject for future research.

The study faced several limitations, both in the nature of the research and in its method. Research of this kind attempts to add to knowledge of online offenders, a relatively new type of offender. However, this type of research is limited by the fact that the offenders used in research studies have already been detected. Offenders who have not been detected and continue to operate undetected by the criminal justice apparatus may differ significantly from those offenders who have been arrested or prosecuted.

The results of this study support many of the previously documented features of online child pornography offenders while identifying several new avenues for further research into this offending class.

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Appendix A

Category A and Category B Crimes

| Category A Crimes  | Category B Crimes   |
|--|---|
| <ul style="list-style-type: none"> <li>• Aggravated sexual assault</li> <li>• Attempted sexual offences</li> <li>• Compelling the commission of any sexual offences regardless of whether it is compelled in person or via the internet</li> <li>• Contributing to the delinquency of a minor (where the offence had a sexual element)</li> <li>• Distributing obscene materials to minors (no economic motive)</li> <li>• Exhibitionism</li> <li>• Illicit sexual use of the internet</li> <li>• Incest</li> <li>• Indecent exposure</li> <li>• Internet luring</li> <li>• Invitation to sexual touching</li> <li>• Juvenile sex tourism</li> <li>• Lewd or lascivious acts with a child under 14</li> <li>• Manufacturing/Creating child pornography where an identifiable child victim is used in the process</li> <li>• Molest children</li> <li>• Obscene telephone calls</li> <li>• Oral copulation</li> <li>• Penetration with a foreign object</li> <li>• Rape</li> <li>• Sexual assault</li> <li>• Sexual homicide</li> <li>• Sexual offences against animals</li> <li>• Sexual offences involving dead bodies</li> <li>• Sodomy</li> <li>• Unlawful sexual intercourse with a minor</li> <li>• Voyeuristic activity</li> </ul> | <ul style="list-style-type: none"> <li>• Consenting sex with other adults in public places</li> <li>• Crimes relating to child pornography</li> <li>• Indecent behavior without a sexual motive</li> <li>• Not informing a sexual partner of HIV positive status</li> <li>• Offering prostitution services</li> <li>• Pimping/pandering</li> <li>• Seeking/hiring a prostitute</li> <li>• Profiting from child prostitution</li> <li>• Coercing others into sex trade</li> <li>• Solicitation of a prostitute</li> <li>• Bigamy</li> <li>• Selling sexually explicit materials to minors</li> </ul> |

Appendix B  
Scoring Sheet

**Offender Scoring Sheet**Static Items

Study ID code: \_\_\_\_\_

- 1) Age at time of assessment: \_\_\_\_\_
- 2) Prior sentencing occasions  
for sexual offences: \_\_\_\_\_
- 3) Any juvenile arrest for a sexual  
offence and convicted as an  
adult for a separate sexual offence: \_\_\_\_\_
- 4) Rate of sexual offending: \_\_\_\_\_
- 5) Any sentencing occasion for  
non-contact sex offence: \_\_\_\_\_
- 6) Any male victim: \_\_\_\_\_
- 7) Young, unrelated victims: \_\_\_\_\_
- 8) Any unrelated victim: \_\_\_\_\_
- 9) Any stranger victim: \_\_\_\_\_
- 10) Any prior involvement with  
the criminal justice system: \_\_\_\_\_
- 11) Prior sentencing occasions  
for anything: \_\_\_\_\_
- 12) Any community supervision violation: \_\_\_\_\_
- 13) Years free prior to index sex offence: \_\_\_\_\_
- 14) Any prior non-sexual violence  
sentencing occasion: \_\_\_\_\_

*Non-Static Items*

Separation from either biological parent by age 16 {except for death of parent (item 1 of SORAG): \_\_\_\_\_

Never married (item 4 of SORAG): \_\_\_\_\_

Phallometrically determined sexual deviance (item 13 of SORAG): \_\_\_\_\_

Meets DSM-III criteria for any personality disorder (item 11 of SORAG): \_\_\_\_\_

Education: \_\_\_\_\_

*Derogatis Sexual Functioning Inventory*

Range \_\_\_\_\_ Sex Drive \_\_\_\_\_ Knowledge \_\_\_\_\_

Attitude \_\_\_\_\_ Distress \_\_\_\_\_ Pos. Psych Symp \_\_\_\_\_

Fantasies \_\_\_\_\_ Body Self Image \_\_\_\_\_

Sex Satisfaction (self rep) \_\_\_\_\_ Global Sex Satisfaction \_\_\_\_\_

*Buss-Perry Aggression*

Physical \_\_\_\_\_ Verbal \_\_\_\_\_ Anger \_\_\_\_\_ Hostility \_\_\_\_\_

MASAS Test \_\_\_\_\_

Bumby Cognitive Scale: CM \_\_\_\_\_ Rapist \_\_\_\_\_

Barratt Impulsiveness Scale: \_\_\_\_\_

Paulhus Deception Scale: IM \_\_\_\_\_ SDE \_\_\_\_\_

Axis(II): \_\_\_\_\_

Appendix C

DSFI Conversion Sheet

DSFI GENERAL NORM

MALE

| T-Score | RAW SCORES     |               |          |             |             |                       |                    |            |               |          |        |         |
|---------|----------------|---------------|----------|-------------|-------------|-----------------------|--------------------|------------|---------------|----------|--------|---------|
|         | Information 75 | Experience 63 | Drive 76 | Attitude 80 | Symptoms 80 | Max=70 Affects min=24 | Role Definition 80 | Fantasy 75 | Body Image 70 | Satis 60 | SFI 73 | GSFI 75 |
|         | min=22         | min=22        | min=24   | 20          | 20          |                       | min=21             | min=28     | 25            | 20       | 20     | 35      |
| 80      |                |               |          | 56          |             |                       |                    |            |               |          |        |         |
| 79      |                |               |          | 55          | .0          |                       |                    |            |               |          |        |         |
| 78      |                |               | 44-45    |             |             |                       |                    |            |               |          |        |         |
| 77      |                |               | 42-43    | 54          |             |                       |                    |            |               |          |        |         |
| 76      |                |               | 40-41    | 53          |             |                       |                    |            |               |          |        |         |
| 75      | 26             |               | 38-39    | 52          | .05-.01     |                       |                    |            |               |          |        |         |
| 74      |                |               | 36-37    |             |             |                       |                    |            |               |          |        |         |
| 73      |                |               | 34-35    | 51          |             |                       |                    |            |               |          |        | 610     |
| 72      |                |               | 33       | 50          |             |                       |                    |            |               |          |        | 600     |
| 71      |                |               | 32       |             |             |                       |                    |            |               |          |        |         |
| 70      |                |               | 31       | 49          |             | 3.00                  |                    |            |               |          |        | 585     |
| 69      |                |               | 30       |             |             | 2.90                  |                    |            |               |          |        |         |
| 68      | 25             |               | 28-29    | 48          |             | 2.85                  |                    |            |               |          |        | 560     |
| 67      |                |               | 27       | 47          |             | 2.80                  |                    |            |               |          |        |         |
| 66      |                |               | 26-27    | 46          |             | 2.75                  |                    |            |               |          |        | 555     |
| 65      |                |               | 25       | 44-45       |             | 2.70                  |                    |            |               |          |        | 550     |
| 64      |                |               | 24       | 43          |             | 2.65                  |                    |            |               |          |        | 545     |
| 63      |                | 24            | 24       | 42          |             | 2.60                  |                    |            | 3-6           |          |        | 48-48   |
| 62      | 24             |               | 23       | 41          |             | 2.50                  |                    |            |               |          |        | 38-41   |
| 61      |                |               | 22       | 40          | .10-.06     | 2.45                  |                    |            | .7            |          |        | 35-38   |
| 60      |                |               | 22       | 39          |             | 2.40                  |                    |            | 8             | 10       |        | 535     |
| 59      |                |               | 21       | 38          |             | 2.35                  |                    |            |               |          |        |         |
| 58      |                |               | 21       | 36-37       | .15-.11     | 2.30                  |                    |            |               |          |        | 530     |
| 57      | 23             |               | 20       | 35          |             | 2.20                  |                    |            | 9             |          |        | 524-528 |
| 56      |                |               | 20       | 34          |             | 2.10                  |                    |            |               |          |        | 520-524 |
| 55      |                | 23            | 20       | 33          | .20-.16     | 2.05                  |                    |            | 9             | 10       | 9      | 520     |
| 54      |                |               | 19       | 31-32       |             | 1.95                  |                    |            | 8             |          |        | 512     |
| 53      | 22             |               | 19       | 30          | .25-.21     | 1.90                  |                    |            | 7             |          |        | 512     |
| 52      |                |               | 18       | 29          | .30-.26     | 1.85                  |                    |            | 11            |          |        | 505     |
| 51      |                | 22            | 18       | 28          |             | 1.75                  |                    |            |               |          |        | 505     |
| 50      |                |               | 17       | 26-27       | .35-.31     | 1.70                  |                    |            | 6             | 12       | 8      | 45      |
| 49      | 21             |               | 17       | 25          |             | 1.60                  |                    |            |               |          |        | 92      |
| 48      |                | 21            | 16       | 24          | .45-.36     | 1.55                  |                    |            |               |          |        | 87-92   |
| 47      |                |               | 16       | 22-23       | .50-.46     | 1.50                  |                    |            |               |          |        | 83-87   |
| 46      |                |               | 15       | 20-21       | .55-.51     | 1.35                  |                    |            | 5             | 13       |        | 76-83   |
| 45      | 20             | 20            | 15       | 20-21       | .55-.51     | 1.30                  |                    |            | 4             | 14       | 7      | 475     |
| 44      |                | 19            | 14       | 19          |             | 1.20                  |                    |            |               | 15       |        | 470     |
| 43      |                |               | 14       | 17-18       | .60-.56     | 1.15                  |                    |            |               | 16       |        | 467-69  |
| 42      |                | 18            | 13       | 15-16       | .65-.61     | 1.00                  |                    |            |               | 18       | 6      | 464-66  |
| 41      | 19             |               | 11-12    | 14          | .70-.66     | .85                   |                    |            |               | 19       |        | 461-63  |
| 40      |                | 17            | 10       | 13          | .75-.71     | .75                   |                    |            | 3             | 20       | 5      | 456-460 |
| 39      |                | 16            | 9        | 12          |             | .65                   |                    |            |               |          |        | 451-455 |
| 38      | 18             |               | 8        | 10-11       | .85-.76     | .55                   |                    |            |               |          |        | 450     |
| 37      |                | 15            | 8        | 7-9         | 1.00-.86    | .50                   |                    |            |               | 4        |        | 446-449 |
| 36      |                |               | 7        | 6           | 1.05-1.01   | .35                   |                    |            |               |          |        | 441-445 |
| 35      |                | 14            | 7        | 5           | 1.10-1.06   | .25                   |                    |            |               | 21       |        | 440     |
| 34      | 17             | 12-13         | 5-6      | 2-4         | 1.20-1.11   | .15                   |                    |            | 5-4           |          |        | 436-438 |
| 33      |                | 11            | 4        | 1           | 1.25-1.21   | 0                     |                    |            |               |          |        | 433     |
| 32      |                | 8-10          | 3        | -1-0        | 1.35-1.26   | -.05                  |                    |            | 2             |          |        | 435     |
| 31      | 16             | 6-7           | 3        | -3-2        | 1.45-1.36   | -.20                  |                    |            |               | 22-25    |        | 430-432 |
| 30      | 15             | 3-5           |          | -4          | 1.50-1.46   | -.30                  |                    |            | 1             |          |        | 426-429 |
| 29      | 14             |               |          | -8-5        | 1.65-1.51   | -.40                  |                    |            |               | 26-28    |        | 425     |
| 28      |                |               |          | -9          | 1.75-1.66   | -.55                  |                    |            |               | 29       |        | 420     |
| 27      | 13             | 2             | 2        | -12-10      | 1.90-1.76   | -.65                  |                    |            |               | 30       | 3      |         |
| 26      |                |               | 1        | -13         | 2.00-1.91   | -.80                  |                    |            |               | 31       |        |         |
| 25      |                | 1             |          | -14         | 2.15-2.01   | -.85                  |                    |            |               | 32       |        |         |
| 24      |                |               | 0        | -16-15      | 2.25-2.16   | -.95                  |                    |            |               | 33       | 2      | 410     |
| 23      |                |               |          | -17         | 2.35-2.26   |                       |                    |            |               |          |        |         |
| 22      | 12             | 0             |          | -18         | 2.65-2.36   |                       |                    |            |               |          |        |         |
| 21      |                |               |          | -19         | 2.85-2.66   |                       |                    |            |               |          |        |         |
| 20      |                |               |          | -20         | 3.00-2.86   |                       |                    |            |               |          |        |         |

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