

- Fansher, A. K., Zedaker, S. B., and Brady, P. Q. (2020). Burnout among forensic interviewers, how they cope, and what agencies can do to help. *Child Maltreat.* 25, 117–128. doi: 10.1177/1077559519843596
- Foley, J., Hassett, A., and Williams, E. (2021). “Getting on with the job”: a systematized literature review of secondary trauma and post-traumatic stress disorder (PTSD) in policing within the United Kingdom (UK). *Police J.* doi: 10.1177/0032258X21990412. [Epub ahead of print].
- Forgas, J. P. (2002). Feeling and doing: affective influences on interpersonal behavior. *Psychol. Inq.* 13, 1–28. doi: 10.1207/S15327965PLI1301_01
- Frijda, N. H., Kuipers, P., and Ter Schure, E. (1989). Relations among emotion, appraisal, and emotional action readiness. *J. Pers. Soc. Psychol.* 57, 212–228. doi: 10.1037/0022-3514.57.2.212
- Granhag, P. A., and Magnusson, M. (2017). “Förhör med misstänkt [Suspect interrogation],” in *Klinisk Forensisk Psykologi [Clinical Forensic Psychology]*, eds A. Eriksson and K. Sturidsson (Lund: Studentlitteratur), 75–104.
- Granhag, P. A., Strömwall, L. A., and Cancino Montecinos, S. (2013). Polisens Förhör med Misstänkta. *Svensk Utbildning i Internationell Belysning. [Police Interrogations With Suspects. Swedish Education From an International Perspective]*. Stockholm: Rikspolisstyrelsen.
- Gudjonsson, G. H., and Sigurdsson, J. F. (2000). Differences and similarities between violent offenders and sex offenders. *Child Abuse Neglect* 24, 363–372. doi: 10.1016/s0145-2134(99)00150-7
- Holmberg, U., and Christianson, S. Å. (2002). Murderers’ and sexual offenders’ experiences of police interview and their inclination to admit or deny crimes. *Behav. Sci. Law* 20, 31–45. doi: 10.1002/bsl.470
- Huey, L., and Kalyal, H. (2017). ‘We deal with human beings’ The emotional labor aspects of criminal investigation. *Int. J. Police Sci. Manag.* 19, 140–147. doi: 10.1177/1461355717717996
- Inbau, F. E., Reid, J. E., Buckley, J. P., and Jayne, B. C. (2013). *Criminal Interrogation and Confessions, 5th Edn.* Burlington, MA: Jones and Bartlett.
- Kassin, S. M., Drizin, S. A., Grisso, T., Gudjonsson, G. H., Leo, R. A., and Redlich, A. D. (2010). Police-induced confessions: risk factors and recommendations. *Law Hum. Behav.* 34, 3–38. doi: 10.1007/s10979-009-9188-6
- Kebbell, M., Alison, L., Hurren, E., and Mazerolle, P. (2010). How do sex offenders think the police should interview to elicit confessions from sex offenders? *Psychol. Crime Law* 16, 567–584. doi: 10.1080/10683160902971055
- Lerner, J. S., and Keltner, D. (2001). Fear, anger, and risk. *J. Pers. Soc. Psychol.* 81, 146–159. doi: 10.1037/0022-3514.81.1.146
- Lerner, J. S., and Tiedens, L. Z. (2006). Portrait of the angry decision maker: how appraisal tendencies shape anger’s influence on cognition. *J. Behav. Decis. Mak.* 19, 115–137. doi: 10.1002/bdm.515
- Luke, T. J., and Alceste, F. (2020). The mechanisms of minimization: how interrogation tactics suggest lenient sentencing through pragmatic implication. *Law Hum. Behav.* 44, 266–285. doi: 10.1037/lhb0000410
- Mac Giolla, E., and Granhag, P. A. (2017). “Interviewing suspects,” in *Forensic Psychology: Crime, Justice, Law and Interventions*, eds G. M. Davies and A. R. Beech (Chichester: Wiley-Blackwell), 412–448.
- Magnusson, M., Ernberg, E., Landström, S., and Granhag, P. A. (2018). Taking the stand: defendant statements in court cases of alleged sexual abuse against infants, toddlers and preschoolers. *Psychol. Crime Law* 24, 744–759. doi: 10.1080/1068316X.2018.1424845
- Meissner, C. A., Redlich, A. D., Michael, S. W., Evans, J. R., Camilletti, C. R., Bhatt, S., et al. (2014). Accusatorial and information-gathering interrogation methods and their effects on true and false confessions: a meta-analytic review. *J. Exp. Criminol.* 10, 459–486. doi: 10.1007/s11292-014-9207-6
- Milne, B., and Bull, R. (1999). *Investigative Interviewing: Psychology and Practice.* Chichester: Wiley.
- Oxburgh, G., and Ost, J. (2011). The use and efficacy of empathy in police interviews with suspects of sexual offences. *J. Investig. Psychol. Offen. Profil.* 8, 178–188. doi: 10.1002/jip.143
- Oxburgh, G., Ost, J., Morris, P., and Cherryman, J. (2014). The impact of question type and empathy on police interviews with suspects of homicide, filicide and child sexual abuse. *Psychiatry Psychol. Law* 21, 903–917. doi: 10.1080/13218719.2014.918078
- Oxburgh, G., Ost, J., Morris, P., and Cherryman, J. (2015). Police officers’ perceptions of interviews in cases of sexual offences and murder involving children and adult victims. *Police Pract. Res.* 16, 36–50. doi: 10.1080/15614263.2013.849595
- Oxburgh, G., Williamson, T., and Ost, J. (2006). Police officers’ use of emotional language during child sexual abuse investigations. *J. Investig. Psychol. Offen. Profil.* 3, 35–45. doi: 10.1002/jip.41
- Perez, L. M., Jones, J., Englert, D. R., and Sachau, D. (2010). Secondary traumatic stress and burnout among law enforcement investigators exposed to disturbing media images. *J. Police Crim. Psychol.* 25, 113–124. doi: 10.1007/s11896-010-9066-7
- Powell, M., Cassematis, P., Benson, M., Smallbone, S., and Wortley, R. (2014). Police officers’ strategies for coping with the stress of investigating internet child exploitation. *Traumatology* 20, 32–42. doi: 10.1037/h0099378
- Prosecution Development Centre Gothenburg (2016). *Kvalitet i barnförhör [Quality of forensic interviews with children]*. Utvecklingscentrum Göteborg.
- Read, J. M., Powell, M. B., Kebbell, M. R., and Milne, R. (2009). Investigative interviewing of suspected sex offenders: a review of what constitutes best practice. *Int. J. Police Sci. Manage.* 11, 442–459. doi: 10.1350/ijps.2009.11.4.143
- Sambrano, D., Masip, J., and Blandón-Gitlin, I. (2020). How emotions affect judgement and decision making in an interrogation scenario. *Legal Criminol. Psychol.* 26, 62–82. doi: 10.1111/lcrp.12181
- Scherer, K. R., and Moors, A. (2019). The emotion process: event appraisal and component differentiation. *Annu. Rev. Psychol.* 70, 719–745. doi: 10.1146/annurev-psych-122216-011854
- Seigfried-Spellar, K. C. (2018). Assessing the psychological well-being and coping mechanisms of law enforcement investigators vs. digital forensic examiners of child pornography investigations. *J. Police Crim. Psychol.* 33, 215–226. doi: 10.1007/s11896-017-9248-7
- Soukara, S., Bull, R., Vrij, A., Turner, M., and Cherryman, J. (2009). What really happens in police interviews of suspects? Tactics and confessions. *Psychol. Crime Law* 15, 493–506. doi: 10.1080/10683160802201827
- Tiedens, L. Z., and Linton, S. (2001). Judgment under emotional certainty and uncertainty: the effects of specific emotions on information processing. *J. Pers. Soc. Psychol.* 81, 973–988. doi: 10.1037/0022-3514.81.6.973
- Toch, H. (2002). *Stress in Policing.* Washington, DC: American Psychological Association.
- Tourangeau, R., Rips, L. J., and Rasinski, K. (2000). *The Psychology of Survey Response.* Cambridge: Cambridge University Press.
- Turgoose, D., Glover, N., Barker, C., and Maddox, L. (2017). Empathy, compassion fatigue, and burnout in police officers working with rape victims. *Traumatology* 23, 205–213. doi: 10.1037/trm0000118
- Ward, T., and Siegert, R. J. (2002). Toward a comprehensive theory of child sexual abuse: a theory knitting perspective. *Psychol. Crime. Law.* 8, 319–351. doi: 10.1080/10683160208401823
- Whitaker, D. J., Le, B., Hanson, R. K., Baker, C. K., McMahon, P. M., Ryan, G., et al. (2008). Risk factors for the perpetration of child sexual abuse: a review and meta-analysis. *Child Abuse Neglect* 32, 529–548. doi: 10.1016/j.chiabu.2007.08.005

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Greater Knowledge Enhances Complainant Credibility and Increases Jury Convictions for Child Sexual Assault

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Child sexual assault (CSA) cases reliant on uncorroborated testimony yield low conviction rates. Past research demonstrated a strong relationship between verdict and juror CSA knowledge such as typical delays in reporting by victims, and perceived victim credibility. This trial simulation experiment examined the effectiveness of interventions by an expert witness or an educative judicial direction in reducing jurors' CSA misconceptions. Participants were 885 jurors in New South Wales, Australia. After viewing a professionally acted video trial, half the jurors rendered individual verdicts and half deliberated in groups of 8–12 before completing a post-trial questionnaire. Multilevel structural equation modeling exploring the relationship between CSA knowledge and verdict demonstrated that greater CSA knowledge after the interventions increased the odds ratio to convict by itself, and that the judicial direction predicted a higher level of post-trial CSA knowledge in jurors than other expert interventions. Moreover, greater CSA knowledge was associated with heightened credibility perceptions of the complainant and a corroborating witness. At the conclusion of the trial, the more jurors knew about CSA, the higher the perceived credibility of both the complainant and her grandmother, and the more likely jurors were to convict the accused.

Keywords: jury decision making, child sexual abuse, educative information, expert evidence, judicial directions, witness credibility, deliberation, multilevel structural equation modeling

INTRODUCTION

In Australia, child sexual assault (CSA) cases typically result in low conviction rates, possibly because of a lack of corroborative evidence to prove the alleged sexual abuse (Cossins, 2020) but also because of research findings suggesting a strong relationship between juror misconceptions about CSA, such as expectations that the victim will resist and immediately report the abuse (Quas et al., 2005; Cossins, 2008; Cossins et al., 2009), low assessments of complainant credibility (Gabora et al., 1993), and a high acquittal rate (Wundersitz, 2003; Fitzgerald, 2006; Goodman-Delahunty et al., 2017a,b). Several studies have documented juror uncertainty and/or lack of knowledge about children's reactions to sexual assault which is incongruent with responses of sexually abused children, especially when the abuser is known to the complainant (Cossins et al., 2009; Seymour et al., 2013). Jurors may disregard counter-intuitive evidence which contradicts common CSA beliefs and stereotypes, and may rely on misperceptions and erroneous stereotypes in the absence

of forensic evidence (Cossins and Goodman-Delahunty, 2013). This view is consistent with dual processing social persuasion theories of jury decision making showing that jurors may resort to quick, heuristic peripheral information processing in the absence of motivation or time to engage in more effortful central processing of substantive, scientific information (Salerno et al., 2017).

Prior studies have examined the effectiveness of specialized knowledge to counteract individual jurors' CSA misconceptions (Cossins et al., 2009; Goodman-Delahunty et al., 2010, 2011a). Specialized educative summaries were derived from results of empirical studies of the counter-intuitive behaviors of sexually abused children as well as information about children's memory, reliability and suggestibility (Goodman-Delahunty et al., 2017a). Two intervention sources presented the educative information to mock jurors: (a) expert witness evidence; or (b) the presiding judge, in the form of a specially drafted educative judicial direction to jurors. Expert evidence in CSA trials is permitted in five out of six Australian jurisdictions¹, but remains under-utilized in practice (Shead, 2014). The second source is not permissible under Australian law, but is allowed in New Zealand when a complainant is <6 years of age [Section 21(3), *Evidence Act 1908 (NZ)*]. A comparison of the effectiveness of these two interventions is important to inform legal practitioners about the efficacy of expert evidence and to consider law reform proposals regarding judicial directions. Other legal mechanisms to reduce jury bias, such as jury selection, were not tested since prospective jurors cannot be questioned before empanelment in Australian courts, where juror selection is limited to a few peremptory challenges based on the appearance of the juror, or challenges for cause (Horan and Goodman-Delahunty, 2010).

Our prior research using written simulated CSA trial materials demonstrated that specialized knowledge reduced CSA misconceptions, enhanced credibility ratings of the complainant and increased the conviction rate (Cossins and Goodman-Delahunty, 2013). However, these findings were based on individual mock-juror decisions without jury group deliberation. Since deliberation is a critical legal procedure expected to reduce jury errors and individual biases (Levett and Devine, 2017), adding deliberation to a jury research program is vital to assess its impact on misconceptions that may influence case outcomes in CSA trials. An important question is whether changes in research procedures, such as adding group deliberation, interact with substantive variables to influence the outcomes of simulated jury studies because "the presence of interaction effects may indicate that aspects of the research method limit the external validity or generalizability of the research conclusions" (Penrod et al., 2011, p. 197). Accordingly, research testing the relationship between construct, external, and ecological validity is needed (Wiener et al., 2011). In this study, we consider the example of CSA, since these cases constitute the highest proportion of all criminal offenses in Australian courts where the most indictable offenses

are prosecuted (NSW Bureau of Crime Statistics Research, 2013). A recent crime report showed an increase of 5.3% in sexual assault and indecent assault incidents in the past 60 months (and an increase of 9.4% in 24 months), while rates of other major offenses remained stable or decreased, with the exception of domestic violence (NSW Bureau of Crime Statistics Research, 2020). Despite their prevalence, CSA cases and adult sexual assault cases produce the lowest conviction rates at trial (61% and 66% respectively), compared to 89% for all other offenses (e.g., 70% for assault, 73% for robbery, 94% for illicit drugs) (Fitzgerald, 2006; Browne, 2017; Cashmore et al., 2019). The number of CSA convictions decreased by 8% between 2016 and 2020 (NSW Bureau of Crime Statistics and Research, 2021).

The Influence of Individual Juror Characteristics in Cases of Child Sexual Assault

Meta-analyses of the influence of individual juror characteristics in specific cases have generally yielded results showing little difference between students and non-students (Bornstein and Greene, 2017). However, in certain types of cases, jurors with different pretrial attitudes and beliefs produce different verdicts. For example, individual jurors who were more authoritarian and who supported capital punishment were more prone than other jurors to convict; and in sentencing decisions, students were more lenient than non-student mock jurors (Field and Barnett, 1978). A meta-analysis that tested the influence of individual juror characteristics on verdicts showed a weak but statistically significant gender effect regardless of crime type, such that women were more likely to convict than men; in particular, among student mock-jurors (Devine and Caughlin, 2014).

Gender effects in sex offense cases are commonplace (Krauss et al., 2012). One meta-analysis of sexual assault cases showed that women were more prone than men to convict (Schutte and Hosch, 1997). Women in the role of mock-jurors rated child complainants more credible than did their male counterparts (Tabak and Klettke, 2014). Although some past studies have yielded mixed results based on juror demographics such as age and gender (possibly attributable to the study sample, Devine and Caughlin, 2014), a robust relationship between susceptibility to CSA misconceptions and verdict emerged among jury-eligible undergraduate students and community volunteers who served as mock-jurors (Goodman-Delahunty et al., 2011a). Their demographic profiles and beliefs about CSA differed from those of citizens who respond to a summons for jury duty, in terms of age, educational levels, parenting experience and other attitudinal measures (Goodman-Delahunty et al., 2017b). Accordingly, further research into the impact of juror attitudes and demographic features on case outcomes in CSA cases is required to determine whether CSA cases comprise a specific type of legal case where variations in jury beliefs and demographic composition are associated with trial outcomes, and to assess the generalizability of results obtained with jury eligible students (Henrich et al., 2010) and other non-jury community samples to actual jury samples (MacCoun, 2005; McCabe et al., 2010; Lieberman et al., 2011).

¹The Evidence Act, 1995, section 79(2) admits expert evidence as an exception to the opinion rule which generally excludes opinion evidence. These provisions apply in the ACT, NSW, the Northern Territory, Tasmania, the Commonwealth and Victoria.

The Form of Expert Evidence Proffered in CSA Cases

To develop policies to guide courts in appointing expert witnesses in CSA cases, research on the most effective expert witnesses is helpful (Cossins and Goodman-Delahunty, 2013). Several studies have examined the impact of the type of expertise and credentials of expert witnesses who testify in CSA cases (Kovera et al., 1994, 1997; Klettke et al., 2009). An expert who is an experimental psychologist will provide a summary of relevant research pertinent to the case, often described as “social framework” testimony (Monahan et al., 2009), but typically does not offer an explicit ultimate opinion as to whether the complainant was or was not sexually assaulted (Faigman et al., 2014). By comparison, a clinical psychologist who interviews the complainant may offer an ultimate opinion about whether the child has been sexually abused. Past studies which varied the credentials of social framework vs. diagnostic experts revealed that jurors were more readily persuaded by a clinician than an experimental researcher in death penalty and in sex offender cases (Krauss and Sales, 2001; Krauss et al., 2012).

Results of our prior CSA jury simulation study using written trial materials yielded no statistically significant difference between the perceived credibility of a social framework vs. a diagnostic expert, but the conviction rate following evidence from the diagnostic expert (71%) exceeded that in response to the social framework expert (65%; *Odds Ratio [OR]* = 1.32) and was significantly higher than that in the jury group exposed to no expert evidence (37.5%; *OR* = 4.08) (Goodman-Delahunty et al., 2011a). A case study examining juror responses to expert evidence in a real CSA trial that ended in acquittal revealed that jurors complained that the social framework expert had never seen the child, and was unhelpful because his evidence was non-specific (Horan and Goodman-Delahunty, 2020). Moreover, where the social framework evidence was a poor fit for specific case facts, some jurors cited those gaps as reasons to discount the evidence and credibility of the complainant (Horan and Goodman-Delahunty, 2020). Further research is needed to examine whether observed differences in conviction rates are attributable to unmeasured differences in the perceived credibility of the two types of experts, or the fact that the diagnostic expert interviewed the child, and whether this finding is replicated in a sample of actual jurors. Use of videotaped trial materials in which the same actor portrays either a social framework or a diagnostic expert can tease apart these factors.

The Impact of Deliberation in Child Sexual Assault Cases

As was noted above, a key component of jury decision-making is deliberation with fellow jurors. Interestingly, in six Australian jurisdictions, majority verdicts are permitted in relation to some offenses. Jurors are first instructed to deliberate to a unanimous verdict, and if unable to do so within a specified time, they are then instructed that a majority verdict of 11-1 or 10-2 will suffice, depending on the jurisdiction (*Jury Act, 1977* (NSW), s55F; *Criminal Code Act, 1983* (NT), s368; *Juries Act, 1927* (SA),

s57; *Jury Act, 1899* (Tas), s48(2); *Juries Act, 2000* (Vic), s46; *Juries Act, 1957* (WA), s41).

Overall, deliberation studies have yielded diverse outcomes. Although one meta-analysis reported that the impact of expert evidence did not differ as a function of deliberation (Nietzel et al., 1999), none of the studies examined jury deliberation in a CSA case following the presentation of expert witness testimony. Some indication of the effectiveness of expert evidence emerged in a study of an adult sexual assault: student mock-jurors rated the complainant more credible when exposed to expert evidence, and preferred an expert who linked evidence to case facts over one who did not (Brekke and Borgida, 1998). To date, few studies have examined deliberation about CSA. One exception is an Australian study that incorporated online rather than in person deliberations (Tabak et al., 2013; Tabak and Klettke, 2014). Deliberation content analyses revealed a focus on the perceived truthfulness of the victim, the context of the allegation, the behavior of the victim and defendant, and the inconclusive nature of word-against-word evidence.

Prior research reviews indicated that the strength of pre-deliberation attitudes may be reduced by deliberation (Penrod et al., 2011; Levett and Devine, 2017). For example, the magnitude of correlations of predeliberation attitudes and verdict among empaneled jurors serving on a criminal case was larger than that following deliberation (Moran and Comfort, 1982). However, mock-jury research on other topics conducted in North America (Devine, 2012), South Korea (Park et al., 2005) and Taiwan (Huang and Lin, 2014) demonstrated a “leniency effect” following jury deliberation, with more decisions to acquit when verdicts before and after group deliberation were compared (Peter-Hagene et al., 2019). Similarly, a recent study of a case of historical child sexual assault showed that individual pretrial attitudinal biases were associated with mock-juror decisions (culpability and verdict) at the individual juror level, while this effect disappeared at the jury group level (Goodman-Delahunty and Martschuk, 2020). One explanation posited for the lower postdeliberation conviction rates is that informational biases held by individual jurors exert a stronger influence than normative biases, or conformity effects in group decision making (Peter-Hagene et al., 2019). These researchers called for studies exploring the qualitative differences observed between individual juror and jury groups verdicts, using techniques such as multi-level modeling (Lovis-McMahon, 2015). Whether deliberation after juries are exposed to specialized CSA knowledge will decrease the conviction rate is the topic of the present study.

A common feature of mock jury research is the use of written trial summaries or case transcripts instead of a live trial enactment. Differences between types of trial simulations may affect mock-jurors’ engagement with the case and their capacity to assess witness credibility, a key component of the decision-making process to reach a verdict, particularly in word-against-word cases. In CSA cases, the method of evidence presentation can impact jury responses in assessing the credibility of the complainant and accused (Eaton et al., 2001; Landström et al., 2010). Comparisons of written and videotaped methods of presentation in simulated trials showed less impact of juror attitudes when more realistic videotaped trial materials were

used (Nietzel et al., 1999; Penrod et al., 2011). Reviews of the method of trial presentation yielded mixed outcomes (Penrod et al., 2011), including results of a meta-analysis of cases that included presentations of expert witness testimony (Nietzel et al., 1999). Accordingly, a videotaped simulated trial may diminish the influence of jury beliefs about CSA on credibility assessments, as was observed in response to written trial simulation materials.

The trial simulation experience is a further issue to consider when conducting mock-jury research. For example, if materials are administered online or in a laboratory setting, participating mock-jurors miss the experience of coming to court, engaging with court personnel, attending the court's jury orientation and induction training, all of which emphasize the solemnity and gravity of jurors' responsibilities, and have been shown to influence jury motivations (Bornstein and McCabe, 2005) and attitudes (O'Brien et al., 2008). Some researchers contend that these additional contextual features of ecological validity should not be overlooked (Vidmar, 2008; Ceci et al., 2010) as they may impact mock-jurors' motivation and the decision criteria applied in assessing the consequences of the verdict. The process of group deliberation has yielded conflicting outcomes about jurors' cognitive performance (Peter-Hagene et al., 2019).

Aims of the Present Study

The present study had four aims: First it explored the demographics of a sample of non-empaneled jurors and measured their attitudes to CSA to discern whether individual juror characteristics were systematically related to jury verdicts. Second, it compared the effectiveness of educative interventions in increasing juror CSA knowledge, namely (a) a specially drafted judicial direction, and (b) social framework vs. diagnostic expert testimony. Third, the study compared individual juror verdicts with those of deliberating jurors to assess the impact of decision type. A fourth exploratory aim was to test whether the perceived credibility of the child complainant and corroborative witness, separate and apart from CSA knowledge, contributed to decisions to convict as psychological mediators. The dependent measures were CSA knowledge, assessments of witness credibility, and verdicts.

The study incorporated ecologically realistic components of the jury task into the research method by (a) inviting jurors who reported for jury duty to participate in a simulated trial (in lieu of jury eligible students and community volunteers); (b) conducting the study in District and Supreme Courts of NSW (in lieu of online or laboratory settings); (c) using a professionally-acted video trial (in lieu of written trial materials); and (d) inviting half the participants who watched the video trial to deliberate in jury groups. In addition, the study tested a fresh set of case facts, based on a real CSA case, to determine the external validity or generalizability of prior findings to other CSA cases.

Research Hypotheses

This study tested seven hypotheses drawn from the foregoing literature review:

1. Female jurors, older jurors and better educated jurors will rate the complainant's credibility more favorably than their male (hypothesis 1a), younger (hypothesis 1b) and less well-educated counterparts (hypothesis 1c);
2. Exposure to educative interventions will increase juror post-trial CSA knowledge compared to that of jurors who are not exposed to any intervention (hypothesis 2);
3. Jurors with less CSA knowledge will make unfavorable assessments of the complainant's credibility and acquit the accused while jurors with more CSA knowledge will assess the complainant's credibility favorably and convict the accused (hypothesis 3);
4. The credibility of the diagnostic psychologist will be rated more favorably than that of the social framework expert and will produce statistically significantly more convictions compared to jury groups exposed to other educative interventions (hypothesis 4);
5. The acquittal rate among deliberating jurors will exceed that of non-deliberating jurors (hypothesis 5);
6. Credibility perceptions of the complainant and a corroborative witness will mediate the effect of post-trial CSA knowledge on the likelihood to convict (hypothesis 6).

METHOD

Participants

Participants were 885 jurors (58% men, 42% women) who reported for jury duty in the District and Supreme Courts of New South Wales (NSW), Australia, but were later excused. Aged between 18 and 74 years ($M = 43.4$, $SD = 13.33$), more than half the participants held a university degree (61.7%), 17.1% had a tertiary level diploma, 7.2% had a trade certificate, 10.5% finished high school, and 3.6% reported fewer than 12 years of formal education. English was the first language for 84% of participants. More than half the participants reported that they were a parent or guardian of a child (55%).

Research Design and Procedure

A mixed study design was applied in which the first variable, CSA knowledge, was a within-subjects factor, and two variables were between-subjects factors, namely Decision Type (Deliberation in jury groups vs. Non-deliberating individual juror decision) and Source of Specialized CSA Knowledge (None, Judicial directions, Social framework expert, Diagnostic expert). A total of 443 deliberating jurors and 442 non-deliberating jurors were assigned to one of eight experimental groups. See **Table 1**.

All jurors completed a pretrial questionnaire. After the trial, non-deliberating jurors completed a post-trial questionnaire about CSA knowledge, rated the credibility of the complainant, the corroborating lay witness (her grandmother), the expert witness (where applicable), the judge, and rendered individual verdicts.

Deliberating participants were allocated to one of 43 juries, with 10 or 11 juries per experimental condition. Juries, comprised of 8–12 jurors, were instructed to choose a foreperson, deliberate as a jury and render a unanimous decision before completing the same post-trial questionnaire. Participants were given a maximum of 90 minutes to reach a verdict. Because the courts excused jurors from jury duty and invited them to participate in

TABLE 1 | Illustration of experimental groups and number of participants in each condition.

	No intervention	Judicial direction	Social framework expert	Diagnostic expert	Overall
Deliberating juries	$n = 109$	$n = 109$	$n = 109$	$n = 116$	$n = 443$
Non-deliberating jurors	$n = 113$	$n = 115$	$n = 108$	$n = 106$	$n = 442$
Overall	$n = 222$	$n = 224$	$n = 217$	$n = 222$	$N = 885$

the study just before lunch hour, all deliberating participants were provided with sandwiches. Deliberations lasted between 11 and 87 min ($M = 42.43$, $Mdn = 40.4$, $SD = 22.49$).

Study Materials

A simulated trial was scripted based on an actual CSA case involving a 12-year-old female complainant, Bridget. The accused, the complainant's grandfather, was charged with one count of sexual penetration. The case facts were constant in all experimental conditions. The complainant reported that her grandfather penetrated her with his finger while she was sitting on a chair reading a book in the living room. Her grandmother was outside in the garden at the time. Before entering the living room, the grandmother heard the complainant say, "Grandpa, stop it, it hurts." When she entered the room, the complainant's pants were down and the accused was doing up the belt on his pants. The complainant ran to her grandmother, crying, and made an immediate disclosure of sexual assault. She was 13 years old when she testified at trial.

The video trial lasted 40–55 min depending on the intervention condition. Professional actors played the roles of the parties, the witnesses and the judge. In all conditions, the trial included opening and closing addresses by the prosecution and defense, evidence-in-chief and cross-examination of the complainant and a corroborating witness for the prosecution (the complainant's grandmother), and the judge's summing-up.

Educative specialized CSA knowledge was presented by a social framework expert (an experimental psychologist), a diagnostic expert (a clinical psychologist) or the presiding judge during her summing up. The educative information summarized empirical findings on counter-intuitive behaviors of sexually abused children, developmental aspects of children's memory, their reliability in reporting sexual abuse and suggestibility when questioned by adults (The **Supplementary Material** contains the full trial script.) The judge reported these findings but made no statement that the behavior of the complainant was consistent with that of a sexually abused child. Both experts presented the educative information after the complainant's evidence. Both stated explicitly that the complainant's behavior was consistent with that of a child who has been sexually abused². In addition, the diagnostic expert stated that he had interviewed the complainant.

The verbatim testimony of the social framework expert was:

Prosecution: Based on your review of the research findings, and your examination of the police interviews of Bridget, in your

professional opinion, is Bridget's behavior consistent with that of a child who has been sexually abused?

Experimental psychologist: There are factors in this case which are consistent with the research findings indicative of child sexual abuse.

The verbatim testimony of the diagnostic expert was:

Prosecution: Based on your experience and your interview with Bridget, in your professional opinion is Bridget's account of events and behavior consistent with that of a child who has been sexually abused?

Clinical psychologist: Yes, it is.

Questionnaire on Juror Knowledge About Child Sexual Assault

A questionnaire to assess participants' CSA knowledge (Goodman-Delahunty et al., 2017a,b; Reliability: $\rho_y = 0.76^3$; Cronbach's $\alpha = 0.67$) was administered before and after jurors viewed the simulated trial. The nine items in the questionnaire were based on empirical findings and measured jurors' knowledge about behavioral responses to sexual abuse and the suggestibility of children. Participants provided their agreement on a 5-point Likert scale from (1) *strongly disagree* to (5) *strongly agree*. A lower score indicated less CSA knowledge and greater endorsement of CSA misconceptions. Examples of items measuring the first factor, Impact of Sexual Abuse on Children (Reliability: $\rho_y = 0.70$; $\alpha = 0.63$), are: (a) "A sexually abused child typically cries out for help and tries to escape"; (b) "A child victim of sexual abuse will avoid his or her abuser"; or (c) "Child victims of sexual abuse respond in a similar way to the abuse." Examples of items measuring the second factor, Contextual Influences on CSA Reports (Reliability: $\rho_y = 0.80$; $\alpha = 0.67$), are: (a) "Children are easily coached to make false claims of sexual abuse"; (b) "Repeating questions such as 'What happened? What else happened?' leads children to make false abuse claims."

The Witness Credibility Scale

The Witness Credibility Scale (WCS; Brodsky et al., 2010; Cronbach's $\alpha = 0.95$) was used to measure jurors' perceptions of the credibility of the witnesses and the judge. The WCS contains 20 semantic differential items measured on a 10-point

²Prior researchers noted that this language conflates commonality with relevance (Lyon and Koehler, 1996). We used it because it remains a standard admitted formulation of expert evidence on this topic.

³The reliability coefficient ρ_y was used because the CSA-KQ questionnaire format violated assumptions for Cronbach's α (Cronbach, 1951; Raykov, 1997, 2002), leading to an underestimation of the reliability of the CSA-KQ (Lord and Novick, 1968; Raykov, 1997, 2002), while ρ_y was specifically developed to counteract these limitations by considering true variability, error variances, and indicator-construct weights (see Goodman-Delahunty et al., 2017a, p. 402). We added Cronbach's α for readers more familiar with this measure.

continuum, and participants are instructed to rate the witness on each of paired contrasting adjectives such as from (1) *unfriendly* to (10) *friendly*; (1) *dishonest* to (10) *honest*; (1) *inarticulate* to (10) *well-spoken*; or (1) *illogical* to (10) *logical*. The WCS includes four subscales reflecting the perceived confidence ($\alpha = 0.89$), likeability ($\alpha = 0.86$), trustworthiness ($\alpha = 0.93$), and knowledge ($\alpha = 0.86$) of a witness, respectively. Credibility was assessed by removing one item with the descriptor “scientific” from the WCS since this item was inapplicable to lay witnesses. A higher total score indicated greater perceived credibility of the witness, with a maximum possible score of 190.

Before conducting the analyses, we tested the principal component analyses of the WCS with our data, revealing that all items loaded on the same component. In addition, the WCS subscales were highly correlated with each other, and with the overall witness credibility score, creating problems of multicollinearity, i.e., correlations ranged from $r = 0.40$ to $r = 0.68$ for the complainant, and $r = 0.50$ to $r = 0.70$ for the grandmother. Subscale correlations with the overall witness credibility score ranged from $r = 0.74$ to $r = 0.85$ for the complainant, and $r = 0.78$ to $r = 0.88$ for the grandmother. For these reasons, and because the combined measure had higher internal consistency than each of the subscales alone (see above), we did not conduct analyses with the separate WCS subscales.

Other Dependent Measures

Juries and individual jurors rendered a binary verdict (guilty/not guilty) and provided demographic information (gender, age, educational level, parental status).

Analyses

For multilevel structural equation modeling with mediation analyses, a sample size of 440 was initially suggested based on simulation guidelines (Wolf et al., 2013) for power of 0.94 regarding the direct path and 0.82 for the indirect path. The conventional rule-of-thumb of 10–15 cases per parameter indicated a sample size of $10 \times 15 = 150$. All power analysis results were integrated to select a far more conservative power strategy, by securing 800 participants, particularly to conduct multilevel analysis.

The impact of the educative intervention independently of decision type was assessed by calculating individual CSA knowledge gain scores after controlling for juror pretrial CSA knowledge. The CSA knowledge gain score was calculated by subtracting a juror’s post-trial CSA knowledge score from their pretrial CSA knowledge score. Negative values indicated that CSA misconceptions increased after exposure to the videotrial; positive values indicated that CSA misconceptions decreased after exposure to the videotrial. Pretrial CSA knowledge scores were added as covariate because of statistically significant differences at the outset in mean CSA knowledge scores between some of the experimental groups. For example, before trial, non-deliberating jurors who were later exposed to specialized CSA knowledge from a diagnostic expert endorsed statistically significantly fewer CSA misconceptions ($M = 30.74$, $SD = 5.15$) than jurors in the similar non-deliberating control group ($M =$

27.86, $SD = 5.54$). No pretrial differences in CSA knowledge emerged among deliberating groups.

Preliminary analyses tested the association between the different independent variables (e.g., age, gender, educational level, intervention condition) and dependent variables (e.g., knowledge about CSA, perceptions of the witnesses, factual culpability ratings, verdict). Depending on the nature of the variables and the combination of the association, correlations between continuous, or continuous and categorical variables, χ^2 analyses between categorical or binary variables, and paired t -test analyses for pretrial and post-trial CSA knowledge. Further, analyses of covariance (ANCOVA) between demographic information, intervention condition and CSA knowledge scores were conducted, as well as separate between-subject ANCOVAs that examined the effects of source of intervention and decision type on juror CSA knowledge and perceived witness credibility. ANCOVA results that yielded different outcomes to the multilevel structural equation modeling (SEM; see below) are summarized in the online **Supplementary Material**.

Multilevel SEM examined the relationship between CSA knowledge and verdict at both juror and jury levels to accommodate the intercorrelations in the variables among jurors in each jury. The credibility perceptions of both the child complainant and the corroborating witness were modeled as double mediators to test why and how the impact of CSA knowledge and expert interventions occurred. Demographic covariates, pre-trial CSA knowledge, decision type (individual vs. jury group), and intervention source were considered as predictors of post-trial CSA knowledge. The non-independence of the nested jurors within a jury was addressed with multilevel modeling using Mplus V8, while variance in the verdict at the jury level was estimated. The non-deliberating jurors were analyzed as one jury, as were the other 43 deliberating jurors.

RESULTS

Preliminary analyses indicated the presence of 12 out of 885 multivariate outliers. These participants were excluded from all further analyses. Scores for the perceived credibility of the experts and the judge violated normality assumptions (positively skewed with a positive kurtosis). Accordingly, log transformations of the values were performed to achieve a normal distribution (Tabachnick and Fidell, 2013).

Juror CSA Knowledge About Child Sexual Assault

Analyses to test for differences between juror demographics (gender, age, educational level), their pre- vs. post-trial CSA knowledge and perceived witness credibility revealed that female jurors in the sample were somewhat more formally educated than their male counterparts, with 63.9% of women and 60.8% of men holding a university degree, 20.0% of women and 14.4% of men had some tertiary and further education (TAFE) diploma, and 11.0% of men and 1.9% of women held a trade certificate. The remaining 14.1% of women and 13.8% of men reported finishing high school or less. No differences in age emerged between men

and women. On average, older jurors were less educated (overall, $r_s = -0.14$, $p < 0.001$). Jurors with a university degree were younger on average ($M = 41.79$ years, $SD = 12.51$) than jurors who had a TAFE diploma ($M = 46.82$ years, $SD = 14.16$) or who had not finished high school ($M = 50.63$ years, $SD = 11.76$). The average age of jurors holding a trade certificate ($M = 43.42$ years; $SD = 13.73$), and of jurors who reported the highest level of education were similar ($M = 44.09$ years old; $SD = 15.01$).

Juror CSA knowledge was related to their demographic characteristics in several ways. Female jurors had statistically significant greater CSA knowledge, both pretrial ($M = 29.47$, $SD = 5.31$) and post-trial ($M = 32.23$, $SD = 5.31$) than male jurors [pretrial: $M = 27.93$, $SD = 4.49$, $t(857) = 4.59$, $p < 0.001$; post-trial: $M = 30.13$, $SD = 4.95$, $t(868) = 5.68$, $p < 0.001$] and perceived the complainant to be more credible ($M = 123.09$, $SD = 23.10$) than did male jurors [$M = 117.76$; $SD = 51.93$, $t(852) = -3.20$, $p = 0.001$] (hypothesis 1a). There was no main effect of juror gender on the overall conviction rate [$\chi^2(1, 869) = 2.09$, $p = 0.148$, $\phi = 0.05$]. This finding was moderated by decision type. Whereas there was no effect of juror gender on convictions by deliberating jurors [women: 31.1%; men: 31.7%; $\chi^2(1, 436) = 0.02$, $p = 0.894$, $\phi = -0.01$], women who rendered an individual verdict were significantly more likely to convict (53.3%) than their male counterparts [41.0%; $\chi^2(1, 433) = 6.27$, $p = 0.012$, $\phi = 0.12$]⁴.

Juror age was positively correlated with perceived complainant credibility, such that older jurors rated the complainant as more credible than younger jurors, $r = 0.17$, $p < 0.001$ (hypothesis 1b). Further, juror age was positively correlated with CSA knowledge gains between the time of the pre- and post-trial measures, $r = 0.10$, $p = 0.005$. This effect was moderated by decision type, such that CSA knowledge gain was associated with age only among non-deliberating participants, $r = 0.14$, $p = 0.005$. There was no correlation between age and CSA knowledge gain among participants who deliberated as a jury, $p > 0.10$. Finally, juror educational level was correlated with CSA knowledge both pretrial (overall: $r_s = 0.19$, $p < 0.001$) and post-trial (overall: $r_s = 0.18$, $p < 0.001$), such that jurors with higher educational qualifications held fewer CSA misconceptions. Education was, however, not correlated with CSA knowledge gains or perceived complainant credibility, $p > 0.05$ (hypothesis 1c). Neither juror age nor education level was associated with the conviction rate, independently of the decision type. **Table 2** displays correlations between juror demographic characteristics, CSA knowledge and perceived complainant credibility (measured by the WCS) separately for deliberating and non-deliberating mock-jurors.

Juror CSA knowledge was assessed pre- and post-trial using the CSA Knowledge Questionnaire. Before trial, jurors had a moderate degree of CSA knowledge, with average scores of ~28 out of a possible total of 45. The group scores ranged from a low of $M = 27.86$, $SD = 5.54$ (Control, non-deliberation), to a high of $M = 30.74$, $SD = 5.15$ (Intervention 3, non-deliberation).

Increases and decreases in CSA knowledge within each of the 43 deliberating juries revealed that CSA knowledge remained consistent or increased in the 10 deliberating juries, and decreased in one deliberating jury where no specialized educative CSA information was presented (hypothesis 2). Furthermore, mean CSA knowledge scores increased statistically significantly or tended to increase after deliberation in seven out of 32 juries (21.9%), while mean CSA Knowledge scores remained consistent within the remaining 23 juries (71.9%). Mean CSA knowledge scores declined statistically significantly in two of the 32 juries who were exposed to specialized educative knowledge (via a judicial direction and a social framework expert). **Table 3** presents the pre- and post-trial CSA knowledge change scores and verdicts for each jury deliberation group and for non-deliberating jurors.

Perceived Witness Credibility

Table 4 displays the perceived witness credibility of the complainant, her grandmother, the expert witness, and the judge as a function of source of intervention and decision type (For detailed statistical analyses, consisting of ANCOVAs, see **Supplementary Material**). In the absence of any specialized information, deliberating jurors perceived the complainant to be more credible than did non-deliberating jurors. Among non-deliberating jurors exposed to diagnostic expert evidence, the perceived credibility of the complainant exceeded that of non-deliberating jurors in the control group (hypothesis 3). Specialized CSA knowledge presented by the judge or by the social framework expert did not affect the perceived credibility of the complainant. When participants deliberated as a jury, the perceived credibility of the complainant was constant in all experimental groups. These results are displayed in **Figure 1A**. Similarly, credibility of the grandmother, the corroborating witness, was greater when specialized educative information was presented by an expert witness of either type than by the judge in a judicial direction. These results are displayed in **Figure 1B**. Error bars are 95% confidence intervals.

Decision type was not associated with the expertise of the psychologist, although non-deliberating jurors rated the experts as more credible ($M = 162.89$, $SD = 17.63$, $Mdn = 165$) than did deliberating jurors ($M = 158.69$, $SD = 19.03$, $Mdn = 161$) (hypothesis 4). By contrast, the perceived credibility of the judge decreased when the judge provided specialized information in a judicial direction ($M = 163.24$, $SD = 24.55$, $Mdn = 169$) compared to trials in which the same information was provided by an expert, irrespective of whether the expert was a social framework ($M = 168.89$, $SD = 17.82$, $Mdn = 172$) or diagnostic psychologist ($M = 168.51$, $SD = 17.68$, $Mdn = 173$). In the two latter conditions, the judge was rated more credible than the experts. However, the judge was perceived as more credible by non-deliberating jurors ($M = 167.73$, $SD = 19.84$, $Mdn = 171$) than by deliberating jurors ($M = 166.05$, $SD = 19.08$, $Mdn = 171$).

The Impact of CSA Knowledge and Interventions on Verdict

Results revealed an increase in the conviction rate when jurors rendered individual verdicts without deliberation following

⁴Differences in degrees of freedom arose for two reasons: (a) some participants did not answer all questions, and (b) findings are presented for subsamples (deliberating juries vs. non-deliberating jurors).

TABLE 2 | Intercorrelations between juror demographic characteristics, CSA knowledge, and perceived complainant credibility.

	1	2	3	4	5	6
1. Juror age	–	–0.11*	–0.01	–0.03	0.06	0.15**
2. Juror education	–0.15**	–	0.19**	0.23**	0.01	0.08
3. Pre-trial CSA knowledge	–0.05	0.17**	–	0.63**	–0.39**	0.17**
4. Post-trial CSA knowledge	0.04	0.16**	0.69**	–	0.47**	0.33**
5. CSA knowledge gain	0.14**	–0.00	–0.33**	0.46**	–	0.23**
6. Complainant credibility	0.16**	–0.08	0.26**	0.39**	0.20**	–

Correlations below the diagonal are for non-deliberating jurors; correlations above the diagonal are for deliberating jurors. Higher numbers for education indicate more formal education. For juror education the statistic is Spearman’s Rho, the remainder are Pearson correlations. * $p < 0.05$; ** $p < 0.01$.

TABLE 3 | Mean pre- and post-trial CSA knowledge and verdict for each deliberating jury and non-deliberating jurors, by experimental condition.

	No intervention			Judicial direction			Social framework expert			Diagnostic expert		
	M _{pre}	M _{post}	Verdict	M _{pre}	M _{post}	Verdict	M _{pre}	M _{post}	Verdict	M _{pre}	M _{post}	Verdict
Deliberating juries												
1	27.78	29.67	6NG 3G	28.00	31.00	9NG	25.25	27.75	12NG	29.17	31.00	12NG
2	27.70	27.80	10NG	26.89	29.11	9NG	29.67	31.50	12NG	29.00	30.67	11NG 1G
3	27.87	31.25	8G	28.55	34.08	12G	29.91	33.45	11G	28.42	32.67	5NG 7G
4	30.11	30.33	2NG 7G	29.40	30.90	10NG	31.82	33.08	9NG 3G	29.33	29.78	9NG
5	28.08	29.91	12G	26.92	33.25	10NG 2G	30.13	32.13	1NG 7G	29.22	36.20	10G
6	27.42	29.67	1NG 11G	28.44	30.89	9NG	28.13	31.25	8NG	28.60	32.55	10NG 2G
7	29.56	32.90	9NG 1G	30.20	29.40	5NG 5G	26.36	28.09	12NG	27.25	29.75	12NG
8	29.14	26.80	9NG 1G	26.75	28.89	8NG 1G	29.82	35.18	1NG 11G	27.63	34.38	8G
9	27.38	27.25	7NG 1G	27.27	29.73	5NG 6G	29.36	30.67	12NG*	27.55	29.64	11NG
10	27.00	28.00	9NG	30.44	32.33	9NG	27.30	29.10	10NG	26.64	31.55	10NG 1G
11	26.42	27.08	5NG 7G	30.00	31.38	7NG 2G	–	–	–	27.00	30.37	8G
All	28.03	29.12	58NG 51G	28.41	31.10	81NG 28G	28.74	31.20	77NG 32G	28.18	31.62	80NG 37G
Non-deliberating jurors												
All	27.97	27.87	68NG 44G	28.48	32.38	64NG 51G	28.14	31.07	58NG 49G	30.65	33.46	48NG 58G

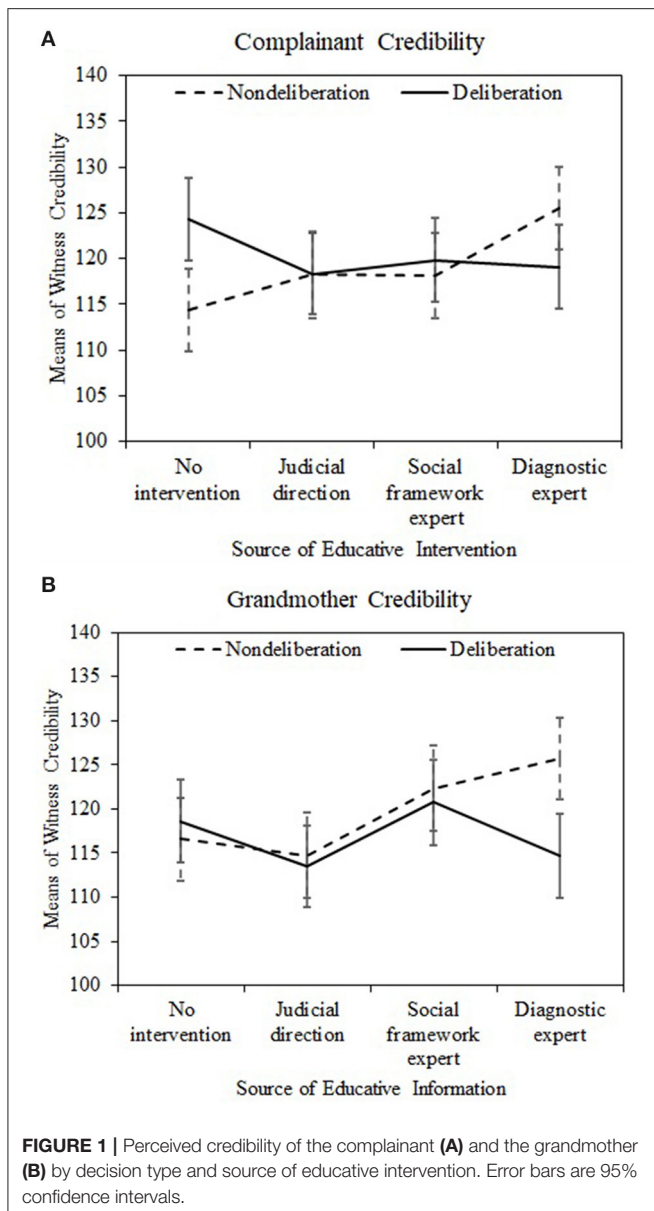
G, guilty; NG, not guilty. *Some jurors pressured others to change their views.

TABLE 4 | Perceived credibility of witnesses and the judge by decision type and experimental group.

Decision type	Source of educative intervention							
	No intervention		Judicial direction		Social framework expert		Diagnostic expert	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Non-deliberation								
Complainant	115.37	29.12	118.86	24.46	118.11	22.83	126.42	23.98
Grandmother	118.35	27.01	114.90	24.57	122.04	26.01	125.97	25.86
Expert	–	–	–	–	160.86	18.50	165.19	16.63
Judge	168.00	15.39	162.83	28.07	169.22	15.32	171.16	16.42
Deliberation								
Complainant	123.35	22.11	118.43	25.62	121.46	22.44	118.19	20.16
Grandmother	117.89	23.18	113.18	24.30	121.44	21.99	114.54	22.81
Expert	–	–	–	–	160.81	18.71	156.33	20.04
Judge	165.91	17.31	164.68	20.30	168.57	20.11	166.09	18.49

The descriptor “scientific” was removed from the WCS to enhance comparability of scores; maximum possible score = 190.

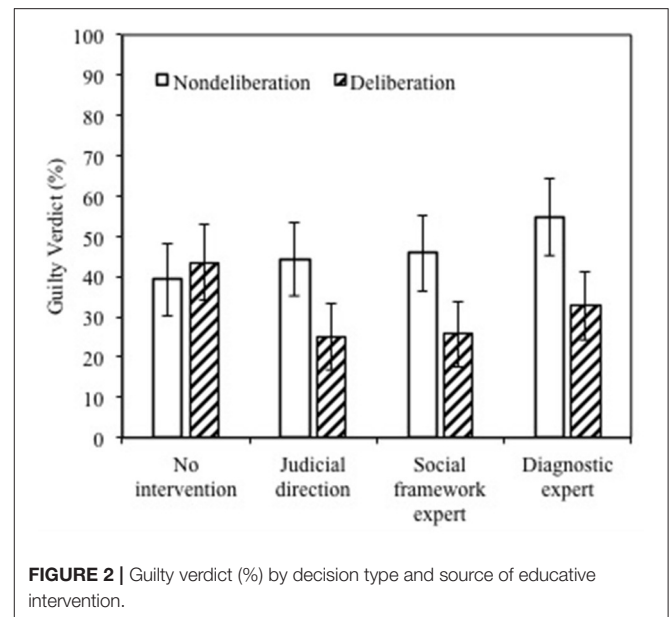
exposure to specialized knowledge from either the judge (44.3%), the social framework expert (45.4%) or the diagnostic expert (54.7%), compared to the no intervention control condition (38.9%). However, these differences were not statistically significant [$\chi^2(3, N = 440) = 5.40, p = 0.145$]. The verdicts of deliberating jurors showed that in comparison with the



control group (43.1%), the individual conviction rate dropped statistically significantly following exposure to all types of interventions [$\chi^2(3, N = 440) = 11.08, p = 0.011$], as shown in **Figure 2** (hypothesis 5). These results were further qualified by more advanced analyses as described in the following sections.

When considering jury group verdicts, almost a quarter of deliberations (23.3%) resulted in hung juries (no unanimous or majority decision was reached in the available time). Overall, 44.2% of juries reached a unanimous verdict and three accepted a majority decision, as shown in **Table 2**.

In the absence of educative information, three juries voted unanimously to convict the accused, five juries acquitted (two unanimously) and three juries were hung. Juries with less CSA knowledge voted to acquit. Following exposure to specialized



knowledge presented in a judicial direction, one jury with the highest post-trial CSA knowledge ($M = 34.08, SD = 6.07$) convicted; six juries with mixed levels of CSA knowledge acquitted (five unanimously), and the remaining four juries were hung. Following exposure to specialized knowledge presented by a social framework expert, three juries with higher CSA knowledge scores convicted (one unanimously), six acquitted, although in two of the six juries CSA knowledge scores were high, and one jury was hung. Similarly, after exposure to specialized knowledge presented by a diagnostic expert, three juries with moderate to high CSA knowledge scores convicted, six juries in which overall levels of CSA knowledge were low acquitted (four unanimously), and two juries were hung.

The Impact of CSA Knowledge, Interventions, and Witness Credibility on Verdict

Multilevel SEM analyzed psychological mechanisms reflecting the impact of CSA knowledge, educative interventions and deliberation effects. **Tables 5, 6** show hierarchical multilevel regression SEM results with statistically significant path coefficients explaining the impact of CSA knowledge on witness credibility and the subsequent final verdict. Model 1 was a simple regression model to explain post-trial CSA knowledge. In most models, the three intervention conditions were contrast coded with the control group and multiplied with the deliberation variable to test the interaction effects. Models 1–3 tested the significance of predictors of post-trial CSA knowledge that in turn examined its impact on the credibility of the child complainant and the corroborating witness.

In Model 1, the interaction effects were omitted due to convergence issues at Level 1, the individual juror level. Demographic variables of gender, age, education, and pretrial

TABLE 5 | Multilevel SEM analysis predicting CSA knowledge and witness credibility: unstandardized coefficients (b).

Predictor/model fit	Model 1	Model 2	Model 3
Juror level predictors of post-trial-CSA-K			
Juror age	0.02**	0.02**	0.02*
Female juror	1.05**	1.08**	1.08**
Education	0.27**	0.28**	0.29**
Deliberation	-0.44	0.50	-0.54
Intervention contrast			
Control vs. Intervention (C1)	0.90**	0.90**	0.90**
Judicial instr. vs. Experts (C2)	0.23**	0.23**	0.23**
Social vs. Diagnostic expert (C3)	0.47**	0.37**	0.37**
Interaction: Deliberation × Intervention			
Deliberation × C1		-0.52**	-0.48**
Deliberation × C2		-0.31	-0.32
Deliberation × C3		0.13	0.79
Pretrial CSA-K	0.65**	0.65**	0.65**
Juror level paths			
Post-trial CSA-K→WCS Victim		1.83**	
Post-trial CSA-K→WCS Witness			1.77**
Jury level predictors of post-trial CSA-K			
Control vs. Intervention (C1)	0.40**	18.64**	-10.80
Judicial instr. vs. Experts (C2)	-0.12	11.22**	9.67
Social vs. Diagnostic expert (C3)	0.33	3.43**	65.25
CSA-K intercept	11.72**	11.25**	11.18
CSA-K variance	0.77	0.63	0.32
Model fit: Loglikelihood	-5594.51	-9152.18	-9193.78
Akaike information criterion	11217.05	18344.15	18427.47
Sample-size adjusted BIC	11238.90	18375.57	18458.96

CSA-K, Child sexual abuse knowledge; Education on a 5-point scale from 1 "less than Year 12 certificate" to 5 "University degree or higher." Deliberation: No jury deliberation = -1. Jury deliberation = 1. Control vs. Intervention (C1): Control group = -3, Three intervention groups = 1 × 3. Judicial direction vs. Experts (C2): Judicial direction group = 2, Social Framework Expert and Diagnostic Expert = 1 × 2. Social vs. Diagnostic expert (C3): Social Framework Expert = -1, Diagnostic Expert = 1. WCS, Witness Credibility Scale; BIC, Bayesian Information Criterion. * $p < 0.05$; ** $p < 0.01$; Number of jurors ranged from 815 to 835; Number of juries = 44.

CSA knowledge were statistically significant and explained the variance in post-trial CSA knowledge. However, decision type did not predict post-trial CSA knowledge, while all intervention contrast variables were statistically significantly associated with post-trial CSA knowledge. Specifically, jurors in all three intervention groups had statistically significantly higher CSA knowledge after the trial than the control group jurors. Jurors were more persuaded by the judicial direction (gained more CSA knowledge) than by the expert testimony, while the diagnostic expert intervention predicted higher CSA knowledge scores after trial than the social framework expert intervention. Yet, at Level 2, the jury level, only juries in the three intervention groups showed more CSA knowledge than the control group juries after the trial. The positive effects of the judicial direction and diagnostic expert were not statistically significant at the jury level.

In Model 2, all demographic variables were statistically significantly associated with post-trial CSA knowledge while the intervention contrast between the control group and intervention groups was moderated by the impact of deliberation.

The impact of the interventions was stronger when jurors did not deliberate: jurors without any intervention had lower CSA knowledge scores ($M = 27.87$, $SD = 5.67$) after trial than jurors exposed to one of the interventions ($M = 32.30$, $SD = 5.40$). Among jurors who deliberated, post-trial differences in CSA knowledge scores between the intervention groups ($M = 31.32$, $SD = 4.95$) and the control group ($M = 29.12$, $SD = 4.78$) were smaller. However, the judicial direction compared to the expert witness intervention predicted more post-trial CSA knowledge, while the diagnostic expert was more persuasive (as shown in higher post-trial CSA knowledge scores) than the social framework expert. At the jury level, though, the control group showed a higher level of post-trial CSA knowledge compared to the three intervention groups, while the other intervention effects were in the same direction as at the juror level. When the perceived credibility of the corroborating witness was included in Model 3, it was statistically significantly explained by post-trial CSA knowledge. The impact of all other variables and interaction effects produced statistically similar results. Because the jury level effect of the intervention was no longer statistically

TABLE 6 | Multilevel mediation SEMs predicting conviction with post-trial CSA knowledge and mediators of witness credibility: unstandardized coefficients and odd ratios.

Predictor/model fit	<i>b</i> or Odds Ratio (OR)			
	Model 4	Model 5	Model 6	Model 7
Juror level predictors on post-trial-CSA-K				
Juror age	0.03**	0.03**	0.03**	0.03**
Female jurors	1.07**	1.08**	1.08**	1.08**
Education	0.28**	0.28**	0.28**	0.28**
Deliberation	-0.21	-0.22	-0.22	-0.22
Intervention contrast				
Control vs. Intervention (C1)	0.90**	0.90**	0.90**	0.90**
Judicial vs. Experts (C2)	0.23**	0.23**	0.23**	0.23**
Social vs. Diagnostic expert (C3)	0.36**	0.35**	0.36**	0.36**
Interaction: Deliberation × Intervention				
Deliberation × C1	-0.47**	-0.48**	-0.47**	-0.47**
Deliberation × C2	-0.31	-0.30	-0.30	-0.30
Deliberation × C3	0.09	0.10	0.09	0.09
Pretrial-CSA-K	0.66**	0.65**	0.65**	0.65**
Juror level paths				
Post-trial-CSA-K→WCS Victim	1.80**		1.79**	1.79**
Post-trial-CSA-K→WCS Witness		1.75**	1.76**	1.76**
Post-trial-CSA-K→Convict	1.08**(OR)	1.08**(OR)		1.06**(OR)
WCS Victim→Convict	1.04**(OR)		1.02**(OR)	1.01**(OR)
Indirect via WCS Victim	1.07**(OR)		1.03**(OR)	1.03**(OR)
WCS Witness→Convict		1.05**(OR)	1.04**(OR)	1.04**(OR)
Indirect via WCS Witness		1.09**(OR)	1.07**(OR)	1.07**(OR)
Jury level				
Convict threshold	7.88**	9.01**	8.47**	9.67**
Convict between-juries variance	3.57**	3.85**	4.12**	3.50**
Model fit: Loglikelihood				
	-6517.51	-6536.03	-10350.61	-10345.04
Akaike information criterion				
	13075.02	13112.06	20747.22	20738.07
Sample-Size Adjusted BIC				
	13106.43	13143.48	20783.35	20775.77

CSA-K: Child sexual abuse knowledge; Education on 5-point scale from 1 "less than Year 12 certificate" to 5 "University degree or higher." Deliberation: No jury deliberation = -1. Jury deliberation = 1. Control vs. Intervention (C1): Control group = -3, Three intervention groups = 1 × 3. Judicial direction vs. Experts (C2): Judicial direction group = 2, Social Framework Expert and Diagnostic Expert = 1 × 2. Social vs. Diagnostic expert (C3): Social Framework Expert = -1, Diagnostic Expert = 1. WCS: Witness Credibility Scale. BIC, Bayesian Information Criterion. ***p* < 0.01; Number of jurors ranged from 815 to 835; Number of juries = 43. CI: Model 7: 95% confidence intervals of the coefficients—Age, 0.004 0.04; Female jurors, 0.65–1.52; Education, 0.11–0.45; Deliberation, -0.66 0.22, C1, 0.88–0.91; C2, 0.21–0.25; C3, 0.30–0.42; Deliberation × C1, -0.71–0.24; Deliberation × C2, -0.72 0.11; Deliberation × C3, -0.50–0.69; Post-trial-CSA-K→WCS Victim, 1.52–2.06; Post-trial-CSA-K→WCS Witness, 1.47–2.05; Post-trial-CSA-K→Convict, 1.04–1.09; WCS Victim→Convict, 1.01–1.02; Indirect via WCS Victim, 0.01–0.04; WCS Witness→Convict, 1.03–1.05; Indirect via WCS Witness, 1.05–1.09. Confidence intervals for other models are available by request to the authors (omitted due to space limitations).

significant in Model 3 due to the large standard errors of the parameter estimates, the variables (i.e., predictors of Post-trial CSA-Knowledge: C1, C2, C3) were omitted from Models 4–7.

Models 4–7 further examined the relationship between post-trial CSA knowledge and guilty verdicts in a dual mediation model, with credibility ratings of the complainant and her grandmother as mediators, and pre-trial knowledge scores and demographic variables as covariates. Model 4 yielded a statistically significant direct effect of post-trial CSA knowledge on conviction and a statistically significant indirect effect through victim credibility as a psychological mediator. All other effects, including the interaction effects, remained similar to those in the previous model. Higher post-trial knowledge scores were

associated with higher perceived complainant credibility, which in turn increased the odds ratio to convict. When the credibility of the grandmother as a corroborating witness was added, Model 5 showed similar results. Post-trial CSA knowledge was directly associated with an increased odds ratio to convict with its statistically significant indirect effect through perceived witness credibility. Further, Model 6 and Model 7 compared whether the direct effect of CSA knowledge on the odds ratio to convict was statistically significant when both credibility variables were tested as dual mediators (Figure 3). In terms of model fit, Model 4 fit the data best, with the smallest Akaike Information Criterion (AIC) and sample-size adjusted Bayesian Information Criterion (BIC) among Models 2–5.

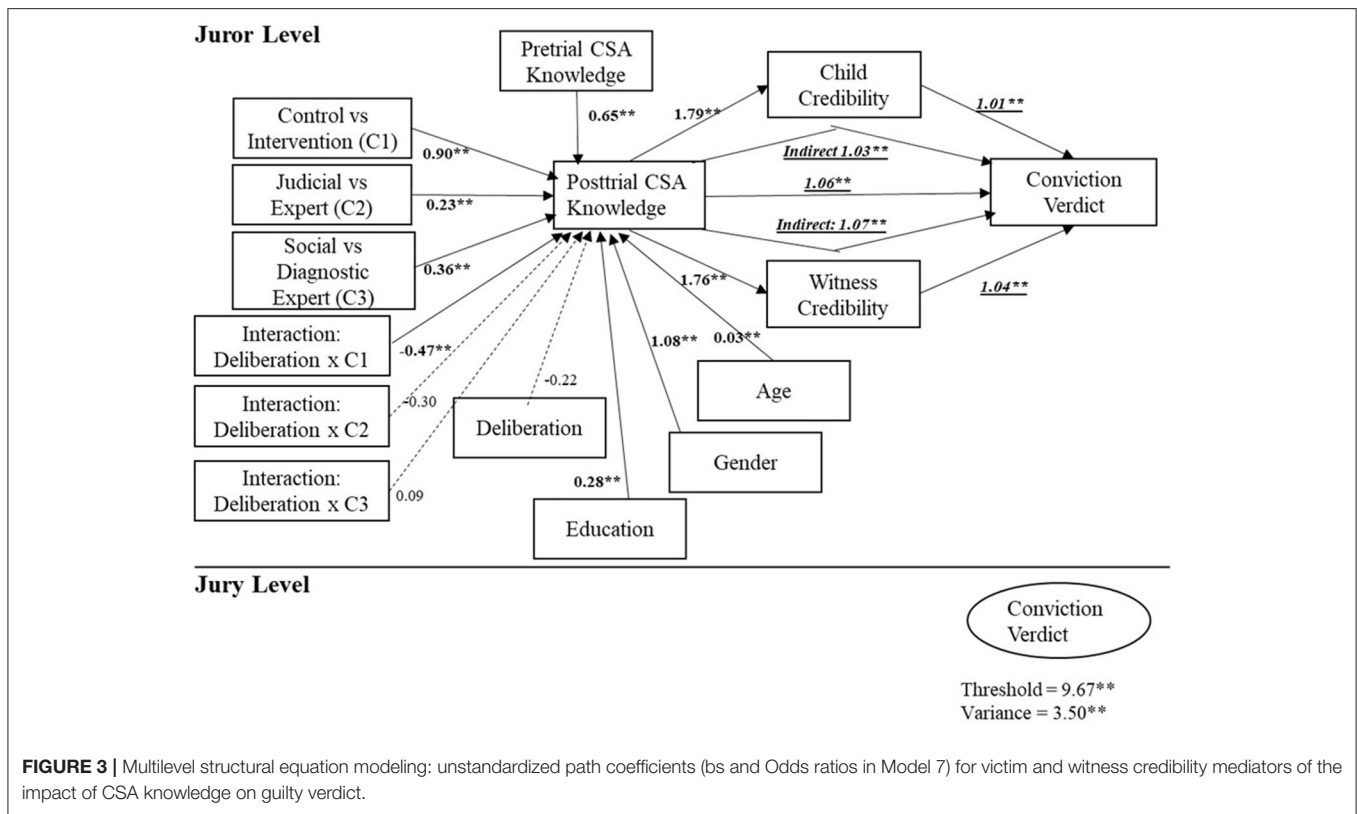


FIGURE 3 | Multilevel structural equation modeling: unstandardized path coefficients (bs and Odds ratios in Model 7) for victim and witness credibility mediators of the impact of CSA knowledge on guilty verdict.

To further test the dual mediation (hypothesis 4), Model 6 and Model 7 were compared. The results showed that Model 7 was superior to Model 6 with a better model fit, that is, smaller AIC and sample-size adjusted BIC, which suggested partial mediation of the credibility of both the child victim and the corroborating witness. Partial mediation was supported because of the statistically significant paths of both the direct impact of CSA knowledge and the indirect impact through the perceived credibility upon conviction rates. Older jurors, female jurors, more educated jurors, and jurors already knowledgeable about CSA were more likely to show greater post-trial CSA knowledge. Similar patterns to the results in Model 2 were observed in this final dual mediation model regarding the impact of interventions during the trial. The impact of all the three interventions was moderated by deliberation with a statistically significant interaction effect, deliberation × C1. Specifically, the intervention effect of specialized educative information on CSA knowledge was stronger when jurors did not deliberate than when they did. The remaining two interaction terms were not statistically significant, supporting the main effects of interventions. In particular, the judicial direction predicted a higher level of post-trial CSA knowledge in jurors than other expert interventions with the positive coefficient of the contrast dummy variable, C2. When interventions by the diagnostic expert and social framework expert were compared with the C3 contrast variable, more post-trial CSA knowledge emerged among jurors exposed to the diagnostic expert.

In turn, jurors with greater post-trial CSA knowledge were ~1.06 times more likely to convict per each point of increase

in their CSA knowledge score. This path from post-trial CSA knowledge to conviction was statistically significantly mediated by the perceived credibility of both the complainant and the corroborative witness. First, a one-point increase in the post-trial CSA knowledge score was statistically significantly associated with a score higher by 1.79 points in ratings of the credibility of the child complainant and with a score higher by 1.76 points in rating the credibility of the corroborative witness. Third, higher ratings of the perceived credibility of the child complainant in turn yielded statistically significantly greater odds of conviction. That is, jurors were 1.01 times more likely to convict per each increase of a single point on the credibility scale. Fourth, jurors with a score higher by one point on the perceived credibility of the corroborative witness were 1.04 times more likely to convict. These four statistically significant paths comprised statistically significant indirect effects of CSA knowledge via the perceived credibility of the child complainant, 1.03 times more likely to convict, and via the perceived credibility of her grandmother, 1.07 times more likely to convict. This finding suggested a double partial mediation, that is, higher post-trial CSA knowledge was associated with a higher likelihood of a conviction on its own (a statistically significant direct effect) and also indirectly through credibility perceptions of both prosecution witnesses (two statistically significant indirect effects).

In light of the two-factor structure of the CSA knowledge measure, supplementary multilevel SEM was conducted. Similar partial mediation results emerged: when the first factor of the CSA-KQ (the subscale score on the Impact of CSA on Children), was used as the main predictor variable, compared to total

CSA-KQ scores, the larger impact of witness credibility on convictions (odds ratios up to 1.06) was statistically significant. Regarding the second factor (subscales scores on Contextual Influences on CSA Reports), a similar increase in the impact of witness credibility (odds ratios up to 1.16) was statistically significant. Both models showed better fit to the data than Model 7 in the main analysis.

DISCUSSION

The present study explored jurors' pre-trial attitudes toward complainants in CSA cases and tested the effects of educative interventions to increase jurors' CSA knowledge by providing specialized information within a realistic trial setting. Jurors attending the District and Supreme Courts in NSW participated in the study, and verdicts rendered by non-deliberating individual jurors were compared with those of jurors who deliberated in jury groups.

Inspections of jury groups revealed that CSA knowledge gains varied by group both between and within each of the experimental conditions. These findings indicated that the combination of the variability in juror CSA misperceptions at the outset of the experiment, the intervention source, and the decision process were related to final levels of juror CSA knowledge and verdicts.

Multilevel SEM analyses presented novel insights into psychological mechanisms showing why and how jurors' CSA knowledge impacted their verdicts. When the variance in jurors' verdicts was analyzed, at both juror and jury levels, the impact of CSA knowledge was partially mediated by the perceived credibility of both the child complainant and the corroborative witness. Greater CSA knowledge after the interventions increased the odds ratio to convict by itself, whereas greater CSA knowledge was also associated with heightened credibility perceptions as psychological mechanisms which in turn further predicted a higher odds ratio to convict the defendant. In these mediation models, older age, being female, more formal education, and more pre-trial CSA knowledge were associated with higher CSA post-trial knowledge scores. Whether or not the jurors had deliberated moderated the effect of interventions, such that the interventions had a greater impact on non-deliberating jurors. The judicial direction had a greater impact on post-trial CSA knowledge than diagnostic or social framework expert interventions, while the diagnostic expert was more persuasive than the social framework expert. These results are discussed in relation to the research hypotheses.

The Influence of Juror Demographic Characteristics on the Perceived Credibility of the Complainant and Verdict

Our first hypotheses, that juror demographic characteristics would affect perceived witness credibility assessments and verdict, were partially supported in a number of ways. Correlations between juror gender and CSA knowledge showed that women's knowledge of CSA was statistically significantly greater than that of men, before and after exposure to

the videotrial, replicating previous findings with Australian community volunteers (Goodman-Delahunty et al., 2010). Further, CSA knowledge was significantly correlated with jurors' formal education levels, such that jurors with higher educational qualifications had statistically significantly more accurate CSA knowledge. Women and older jurors gained most benefit from the educative trial interventions, reflected in their higher knowledge gain scores and post-trial reductions in CSA misconceptions, compared to male and younger jurors. These findings on demographic influences in understanding and responding to CSA knowledge remained consistent in the multilevel SEMs. Moreover, women and older jurors rated the complainant statistically significantly more credible than did men and younger jurors.

Similarly, conviction rates were related to juror gender, such that women rendering individual decisions were more likely to convict the accused than were their male counterparts. A similar pattern has been shown meta-analytically in cases involving CSA, adult sexual assault (Schutte and Hosch, 1997) and other types of criminal cases (Devine and Caughlin, 2014), namely that women are more prone to convict than men. This effect disappeared in the present study when jurors deliberated in groups to a verdict. These results indicated that before deliberation, women had a higher propensity than men to convict, but the influence of deliberation with other jurors exerted a more powerful effect on their verdict than juror demographic characteristics.

The second hypothesis was confirmed, namely that independently of the educative interventions, jurors who arrived for jury duty with numerous CSA misconceptions would rate the complainant low in credibility and tend to acquit the accused, while jurors with fewer CSA misconceptions at the outset would rate the complainant's credibility more favorably and be more inclined to convict the accused. Juror pre-trial CSA knowledge was positively correlated with perceived complainant credibility, showing a medium to strong effect. As expected, less CSA knowledge was associated with lower credibility ratings of the complainant. Moreover, jurors' CSA knowledge predicted the perceived credibility of the complainant, the corroborating witness, and verdicts, such that jurors with more CSA knowledge were more likely to convict. These results were consistent in the multilevel models, supporting previous findings obtained with psychology undergraduates and community members, confirming that jury eligible citizens with greater CSA knowledge were more likely to assess a child complainant as credible and more likely to convict (Gabora et al., 1993; Goodman-Delahunty et al., 2010, 2017b).

The Impact of CSA Knowledge on the Perceived Credibility of the Witnesses

Although deliberating jurors who were not exposed to any educative CSA knowledge were less likely to convict than non-deliberating jurors in the parallel control condition, deliberating jurors in the control condition perceived the complainant as more credible than their non-deliberating counterparts. While deliberation appeared to enhance credibility perceptions in the control condition, that effect did not translate into convictions,

suggesting that the deliberation process and possibly group consideration of the meaning of the criminal standard of proof (MacCoun and Kerr, 1988; Wright and Hall, 2007) increased jurors' doubt of the accused's guilt, or their willingness to convict, even when they perceived him to be factually culpable. Reluctance by deliberating juries to convict the accused in a CSA case in the face of perceived factual culpability is not unusual (Goodman-Delahunty and Martschuk, 2020).

Unexpectedly, the educative interventions had little impact on the perceived credibility of the complainant among deliberating jurors: ratings of the complainant's credibility were constant in all experimental conditions. For non-deliberating jurors, however, the perceived credibility of the complainant was highest in response to the diagnostic expert condition and lowest in the control condition. Further, for non-deliberating jurors, the grandmother's credibility was influenced more favorably by the two expert witnesses than by the judicial direction, although no similar effect emerged for the credibility of the complainant. As noted above, the educative interventions impacted the verdict, but were not the sole predictors of verdict.

The mediation analyses provided an explanation for these results. Specifically, it revealed that the extent of jurors' post-trial CSA knowledge predicted the perceived credibility of the complainant and the grandmother, in parallel with the source effects of the educative intervention. The interaction between deliberation and interventions was partially supported in that the impact of judicial or expert interventions was stronger in non-deliberating jurors when the variance in the final verdict was analyzed at both juror and jury levels. These findings emphasize the importance of interventions to enhance jurors' CSA knowledge during the trial while jurors who are deliberating may find their group discussion more persuasive than the expert interventions. More importantly, the mediation analysis showed that the combination of CSA knowledge scores and increases in the perceived credibility of the complainant and her grandmother was statistically significantly associated with guilty verdicts. The more jurors knew about CSA post-trial, the higher the perceived credibility of both the complainant and her grandmother, the more likely the jurors were to convict the accused. Because both the direct impact of CSA knowledge on verdict and the indirect effects through two credibility scores were statistically significant, the mediation was partial rather than full. However, the indirect paths through credibility variables showed stronger effects than the direct effects. Hence, the credibility perceptions as mechanisms of CSA knowledge impacting on verdict appeared important, and call for theoretical and practical attention. Prior research demonstrated that the credibility of a complainant who was the sole prosecution witness apart from the expert witness, mediated the effect of CSA knowledge change on verdict (Goodman-Delahunty et al., 2011a). The interaction impact of jury deliberation may indicate that other factors that were not measured in this model should be considered in future studies. Specifically, unique factors within each of the deliberating juries (such as interpretations of the evidence and the criminal standard of proof, the overall extent of CSA misconceptions in the group, and group-specific dynamic factors) may further explain

additional variance in CSA knowledge acquisition and final verdict decisions.

As a novel analytic attempt, the mediation models were tested using multilevel modeling. These types of rigorous methods need to be adopted widely to deal with the troublesome interdependence in juror data given their nested nature (Lovis-McMahon, 2015; Peter-Hagene et al., 2019).

The Impact of Educative Interventions on Juror CSA Knowledge

The third hypothesis that the educative interventions would increase jurors' CSA knowledge was confirmed. In the absence of any intervention, both deliberating and non-deliberating jurors endorsed fewer CSA misconceptions after viewing the videotrial than before, and the decrease in CSA misconceptions was greater for non-deliberating than for deliberating jurors. Similarly, analyses of jurors' CSA knowledge scores showed that jurors in the control group acquired less accurate information about CSA in the course of the trial than did their counterparts who were exposed to specialized educative information.

Previous research showed similar statistically significant increases in the CSA knowledge of jury eligible citizens who were exposed to specialized knowledge interventions (Goodman-Delahunty et al., 2011a). Unlike the present study, CSA knowledge in the control group in our previous study was unchanged post-trial. That study differed in a number of respects that may account for this difference, including juror demographic characteristics (jury eligible students and community members vs. jurors), the presentation mode (written vs. video-recorded trial) and decision type (individual non-deliberating jurors vs. deliberating juries). The findings in the present study more closely approximate real juror pre-trial CSA knowledge and responses to educative interventions. Although the educative information did not statistically significantly increase CSA knowledge among the non-deliberating jurors, this information protected these juries from susceptibility to CSA misconceptions observed to increase among juries in the control condition who were not exposed to this information.

The post-trial increase in juror CSA misconceptions in the control condition in which no specialized educative information was presented, regardless of whether they deliberated, is an important finding since it is likely to reflect the everyday trial circumstances in the majority of CSA trials conducted in Australia and elsewhere. In other words, prosecutors typically do not call expert witnesses to provide educative information to jurors about the counter-intuitive behaviors of sexually abused children and the reliability of child witnesses, nor do judges routinely provide this information in a judicial direction. One potential source of the observed post-trial increase in CSA misconceptions was the stereotypical misconceptions introduced by the defense lawyer during her vigorous cross-examination of the complainant in the simulated trial. For example, the complainant was asked about continuing to live with her grandfather after the alleged assault and she confirmed that he took her to school each day. Defense counsel also asserted that the complainant had given three conflicting versions of the events,

that she had fabricated her assault allegation after coaching by her grandmother, and had the knowledge to do so because she had attended sex education classes at school. Thus, jurors' CSA misconceptions, and those introduced by defense lawyer during cross-examination of the complainant and other witnesses, were left unchallenged. Absent exposure to educative information to correct CSA misconceptions, these misconceptions intensified when jurors deliberated in jury groups to a verdict.

The Impact of Type of Expert Witness on Juror CSA Knowledge and Verdict

The fourth hypothesis, that jurors would prefer a diagnostic over a social framework expert and that trials involving the diagnostic expert would yield statistically significantly more convictions compared to other educative interventions, was partially confirmed. The simple difference test in jurors' individual verdicts showed the effect of educative judicial and expert intervention did not support the hypothesis. However, further advanced models showed that the control group without any educative intervention had significantly lower post-trial CSA knowledge which in turn decreased witness credibility perception and subsequently the odds ratio to convict the defendant when the interaction effect of deliberation and educative intervention and demographic covariates such as education and gender were taken into account, particularly with the variance in the verdict variable analyzed both at the juror and jury levels with the strength of multilevel modeling.

Jurors' assessments of the experts as measured by the WCS revealed that the perceived credibility of the social framework and the diagnostic experts was equivalent. Ratings of their credibility may have been similar because the study did not vary attributes of the experts intrinsic to the WCS. Both experts were portrayed by the same actor who conveyed similar evidence in a uniform manner in direct and cross-examination. The experts' level of education and experience in the field establishing pertinent credentials were parallel. Thus it is understandable that they were perceived by jurors as equivalently likable, confident, trustworthy and knowledgeable. In testifying, both stated that the behavior of the complainant was consistent with that of a sexually abused child, although the social framework expert's statement was more cautious than that of the diagnostic expert, perhaps unnecessarily so. The major difference between the experts was that one reviewed only police records (the social framework expert), whereas the other reviewed these records and personally interviewed the complainant (diagnostic expert). The fact that the diagnostic expert interviewed the complainant appeared to enhance the credibility ratings of the complainant. Specifically, educative information presented by the diagnostic expert increased the perceived credibility of the complainant compared to ratings by jurors in the control condition, whereas educative information presented by the social framework expert or the trial judge did not impact the perceived credibility of the complainant. However, this effect was statistically significant only for non-deliberating jurors. The conviction rate revealed a similar pattern of results: both deliberating and non-deliberating individual jurors tended to convict more often in response to the

diagnostic expert who stated that he had interviewed the child, than in response to the social framework expert who had only reviewed the police records. However, among deliberating jurors, the number of juries voting to convict the accused did not differ in response to the type of expert witness.

The Persistence of CSA Misconceptions Following Jury Deliberation

The hypothesis, that CSA misconceptions would decrease after exposure to one of the three educative interventions, was partially confirmed. CSA knowledge scores of jurors in all non-deliberating conditions either increased slightly or remained stable, unlike those of their deliberating counterparts. Following deliberations, CSA knowledge persisted at a level equivalent to pre-trial CSA knowledge in all intervention groups. The increase in CSA misconception scores of deliberating jurors who were not exposed to any educative information (control condition) far exceeded that of jurors in other deliberating groups. While the increase in CSA misconceptions was moderated by the presence and source of educative interventions, these findings demonstrated that deliberation did not reliably reduce juror errors and CSA misconceptions. In some juries, CSA knowledge increased after a discussion of the case facts as a group, but other juries endorsed CSA misconceptions in the course of their deliberations. Deliberation provided an opportunity for many jurors to repeat and reinforce CSA misconceptions introduced by defense lawyer during cross-examination of the complainant, or by other deliberating jurors. These findings reflect the impact within each jury of unmeasured factors arising from group dynamics, such as cohesion (Cialdini and Goldstein, 2004), norms arising within each group (Schulz et al., 2007), or the impact of dominant individual jurors on group decisions (Gordon, 2014).

The frequency of hung juries was greater among deliberating jurors who received specialized educative information from the judge in a judicial direction compared to those who received it from an expert witness. This finding suggested that jurors were more polarized by educative information in the form of a judicial direction compared to that provided by an expert witness, whose opinion they could disregard.

The post-trial persistence of CSA misconceptions in deliberating jurors who were exposed to three different sources of educative interventions was unexpected. These findings may be due to the persistence of discredited information (Anderson et al., 1980), a confirmation bias (Nickerson, 1998), or attitude polarization (Myers and Lamm, 1976), all of which have been tested and observed previously in the context of mock-jury research on topics other than CSA (Salerno et al., 2017; Peter-Hagene et al., 2019). Alternatively, misconceptions in statements by the jury foreperson or other influential jurors in the group may have dominated the discussion (Gordon, 2014). The findings are also consistent with deliberation theories such as the liberation hypothesis which postulates that when the evidence is ambiguous, jurors resort to extra-legal information such as their own experiences and beliefs, to reach a verdict (MacCoun and Kerr, 1988). Alternatively, the findings may



Non-intimate Relationships and Psychopathic Interpersonal and Affective Deficits as Risk Factors for Criminal Career: A Comparison Between Sex Offenders and Other Offenders

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Sex-offenders are at risk of criminal recidivism. For the treatment to be truly effective, it must be individualized. For this purpose, an accurate assessment should focus on criminological, psychological, and psychopathological features. The present study compared sex offenders with other offenders on historical experiences (i.e., problems with violence, anti-social behaviors, problems with personal relationships, problems with substance use, traumatic experiences, and parenting style). In addition, given the association between life events and psychopathy, we explored whether the relation between life events and crime type (sexual crime vs. other types of crime) might be moderated by psychopathy traits (interpersonal and affective deficits and antisocial behavior). Eighty-eight sex offenders (76% of whom child molesters) and 102 other offenders were included. The Historical, Clinical and Risk Management - 20 item Version 3 (HCR-20V3) and Psychopathy Checklist-Revised (PCL-R) were administered. The scores of the HCR-20V3 Historical scale items were computed to assess life events. The scores of the PCL-R factors, F1 Interpersonal affective deficits and F2 Antisocial behavior, were recorded. The presence of a history of problems with non-intimate relationships was the only significant risk factor for sexual crime compared with other crimes. Interpersonal and affective deficits provided an increased likelihood of being sex offenders as compared with other offenders when problems with non-intimate relationships were possibly/partially or certainly present.

Keywords: sex offenders, risk factors, psychopathy, personality traits, life events

INTRODUCTION

The history of criminal perpetrators, the developmental pattern of their careers, and the risk factors for criminal behaviors have always been considered a central topic in criminological research.

The relationship between the traumatic experiences of the sexually abused victims and the arising of dysfunctional sexual behaviors was investigated by several scholars, with the conclusion

that additional causes underlying sexual offenses must be searched and that the so-called Victim/Perpetrator Paradigm is too reductive (Burton, 2008; Rasmussen, 2012).

Psychiatric disorders play an important role as well. Schizophrenia and bipolar disorder (Carabellese et al., 2012; Pozza et al., 2019, 2020) and mood and personality disorders (Dunsieth et al., 2004; Coluccia et al., 2020) were detected in sex offenders. In their research on a sample of 1346 sex offenders, Eher et al. (2019) found that 50.1% of them suffered from personality disorders. Carabellese et al. (2012) confirmed these results, highlighting the role of schizoid, narcissistic, and avoidant personality disorders.

The relevance of psychopathy on criminal behavior and violent conduct is widely recognized in the literature, and it is generally assessed by the gold standard measure Psychopathy Checklist-Revised (PCL-R; Hare and Neumann, 2006) which covers two main factors, i.e., interpersonal and affective deficits and antisocial behavior (Carabellese et al., 2008; Leistico et al., 2008; Campbell et al., 2009; Campobasso et al., 2009; Kennealy et al., 2010; Yang et al., 2010; Ismail and Looman, 2018; Mazzoni et al., 2018). The association between psychopathy and sexual crimes emerged in several studies, including a meta-analysis conducted by Hanson et al. (2009) which found that the presence of psychopathy in sex offenders constitutes a predictive factor for criminal recidivism in sexual offenses and other types of offenses. High scores on the PCL-R were found to be associated with experiences of neglect and abuse (Kimonis et al., 2011; Schraft et al., 2013; Ometto et al., 2016; Sevecke et al., 2016). Other studies (e.g., Schimmenti et al., 2020) have shown that the relational failure of caregivers in the attachment system, due to experiences of neglect, early abandonment or loss of caregivers, can lead the child to difficulty in interpersonal self-regulation skills. These interpersonal difficulties can in turn represent a risk factor in adults for aggressive behavior, difficulties in emotion regulation and sexual problems, as it can be found in many cases of psychopathy, sadism, or paraphilia.

Such a kaleidoscope of different situations makes it difficult to identify those risk factors that can affect the dysfunctional sexual behavior of sex offenders. Due to the variety of factors that must be considered when studying sexual crimes, investigating sex offenders' criminal career through different risk factors is a topic that still deserves the attention of researchers. Although the evidence about these relationships is still controversial, at least partly, sex offenders seem to show a higher prevalence of physical, sexual, and emotional abuse during their childhood (Lee et al., 2002; Jespersen et al., 2009; Seto and Lalumière, 2010; Drury et al., 2019) and a history of family dysfunctions (Lee et al., 2002), poor parenting style (Sigre-Leirós et al., 2016) and symptoms of social anxiety (Porter et al., 2015). In their review, Kraanen and Emmelkamp (2011) reported that sex offenders' criminal career is associated with substance abuse, alcohol, and drug misuse.

Among the psychometric instruments for professional risk assessment, the Historical, Clinical and Risk Management - 20 item Version 3 (HCR-20 Version 3; Douglas et al., 2013) represents a psychometrically sound instrument, designed to give a comprehensive framework for the entire process of risk assessment (Douglas et al., 2013). The historical items

of the HCR-20V3 provide a series of information on the subject's existential path. The items recall some factors among those mentioned (items H1, H2, H3, H5, H8) that could have a significant role in the criminal career. Moreover, the historical items of HCR-20V3 take into consideration other factors, in particular personality disorders (H7) and major mental disorders (H6). In addition to being correlated with violent behavior (Carabellese et al., 2020a) and sexual offenses (Somma et al., 2020), such disorders can interact with the psychopathic dimension (Wong and Olver, 2016), another personality factor notoriously correlated with the risk of criminal recidivism (Hanson and Morton-Bourgon, 2005). Cartwright et al. (2018) suggested that the HCR-20V3 plays an important role in the assessment and management of sex offenders beyond the assessment of the risk of relapse. The HCR-20V3 has proved to be a valid predictor of violent conduct in perpetrators of crimes, and its use as a predictive tool has also been suggested in sex offenders (Cartwright et al., 2018). The factors that the HCR-20V3 takes into consideration, especially in the historical items, represent a valid support for a professional judgment aimed to develop a personalized therapeutic project (Yates, 2013; Gannon et al., 2019).

The aim of this study was to explore the relevance of life events in criminal outcome, comparing sex offenders with other offenders about historical experiences assessed by the HCR-20V3 related to problems with violence, anti-social behaviors, problems with personal relationships, problems with substance use, traumatic experiences, and parenting style. This is the first study which explored risk factors in sex offenders by using HCR-20V3 in its validated Italian version (Caretto et al., 2019) and one of the few studies which investigated the discriminant role of these life events comparing sex offenders (SO) with other offenders (OO). In addition, given the association between life events and psychopathy, we explored whether the relation between certain life events measured by the HCR-20 V3 and the type of crime (sexual crime vs. other types of crime) might be moderated by psychopathy traits, i.e., interpersonal and affective deficits and antisocial behavior.

MATERIALS AND METHODS

Participants and Setting

This research is part of a national multicenter project authorized by the Penitentiary Administration Department of the Ministry of Justice. The study was reviewed and approved by the Director and ethical board of Penitentiary Administration Department of Ministry of Justice in accordance with the current ethical standards and in compliance with the rules concerning the privacy of data related to the perpetrators of sexual crimes. This multicenter study was realized with the collaborations of the penitentiary institutions of six Italian regions (Lombardia, Veneto, Toscana, Lazio, Puglia e Sicilia). The regions involved were chosen for the presence of university centers that planned the enrollment of the sample, the collection and analysis of the data. The researchers had previously been trained in the use of the tools. All the prisoners enrolled in the study received

a final conviction for their crimes. Data were collected during 2015 and 2016 and only the prisoners who had previously given their consent to meet the researchers were included in the study. For legal and privacy-related reasons, data will not be made available.

The exclusion criteria were applied to both the SO and the OO groups and consisted of the lack of provision of the informed consent and the presence of a lifetime psychiatric diagnosis which was considered by the Penitentiary Administration an exclusion criterion to prevent the fact that the relation between life events and sexual crime might be attributed to a psychiatric history as psychiatric disorders are observed in sex offenders (Dunsieth et al., 2004; Carabellese et al., 2012; Eher et al., 2019). The presence of a lifetime psychiatric diagnosis was established by the penitentiary administration if the individual had received or was receiving a psychiatric treatment, i.e., psychiatric medications or psychotherapeutic treatments prescribed or delivered by a mental health professional in any period during his life.

In Italy, the number of sexual offenses leading to the internment of the offenders in the so-called High-Security Forensic Psychiatry Residences (i.e., the psychiatric facilities hosting socially dangerous offenders with a mental disorder) is relatively low (3.4%) (Catanesi et al., 2019). As for the sex offenders with mental disorders not serious enough to exclude criminal responsibility, in Italy they are sentenced in prison, but in this case, we had no data concerning them because the prisoners with psychiatric disorders were excluded from the study by the Penitentiary Administration.

Eighty-eight SO and 102 OO were assessed by researchers trained in the administration of the tools, to guarantee uniformity and homogeneity in data collection. The category SO was declined according to the definition given by Myers et al. (2005), even though the majority (76%) of these inmates were child molesters. The final sample of 88 sex offenders did not commit any other crimes than sexual offenses, possibly in relapse. The data concerning the fact that the SOs had been convicted for the first time or they were recidivists, though, was kept confidential by the prison management. It must also be said that SOs in Italy are either detained in separate prisons (as happens for example in Puglia), or they are placed in special sections within the individual prisons.

The category OO included a heterogeneous set of crimes, such as personal crimes (homicide, assault), property crimes (robbery, fraud), and crimes against the State, but not sex offenses.

A preliminary meeting with prisoners and social workers was scheduled before the assessment, to present the research project and collect participants' written consent (Mandarelli et al., 2017). At this stage, about 18% of prisoners refused to give informed consent and participate. However, the researchers did not know the number of those who had initially refused to participate to the preliminary meeting in which the project was presented. In fact, the request as to whether the prisoners intended to participate to the preliminary meeting had been made by the penitentiary institutions and kept confidential. The various stages of sample recruitment are shown in **Supplementary Material**.

Measures

The Psychopathy Checklist-Revised (PCL-R; Hare and Neumann, 2006) in its validated Italian version (Caretto et al., 2011) was administered to assess the presence of psychopathy. PCL-R factor 1 captures traits dealing with the interpersonal and affective deficits of psychopathy (e.g., shallow affect, superficial charm, manipulativeness, and lack of empathy), whereas factor 2 deals with symptoms relating to antisocial behavior (e.g., criminal versatility, impulsiveness, irresponsibility, poor behavior controls, and juvenile delinquency) (Hare et al., 1989). The scores of the two different components of factors F1 and F2 were recorded, as well as the values of the different components within factors F1 and F2. A threshold score of PCL-R equal to or greater than 25 was established to identify the condition of psychopathy, as indicated in studies conducted on European populations (Grann et al., 1998; Andersen et al., 1999; Jüriloo et al., 2013).

The HCR-20V3 Italian version (Douglas et al., 2013; Caretto et al., 2019), a tool assessing the risk of violence, was administered. Some items of the Historical Scale were considered to analyze the existence of lifetime problematic experiences that can be considered risk factors for the development of sexually based crimes. According to the literature about risk factors for sex offending, the following items were selected among those belonging to the Historical Scale: (a) H1 – problems with violence; (b) H2 – problems with other antisocial behavior; (c) H3 – problems with relationships; (d) H5 – problems with substance use; (e) H8 – problems with traumatic experiences. Items H1 and H2 are divided in sub-items expressing three age classes: (1) child, 12 years and younger; (2) adolescent, 13–17 years; (3) adult, 18 years and older. The item H3 is divided in two sub-items (intimate and non-intimate relationships), and the item H8 is also divided in two sub-items (victimization/trauma and adverse child rearing experiences). Every item is scored 0, 1, or 2: 0 if the item is definitely absent, 1 if the item possibly is present, or present to a minor/moderate degree, and 2 if the item is definitely present. All the researchers involved had been trained through role-playing and internships to administer the tools before the research was initiated.

Together with the assessment scales, the anamnestic and criminological data were collected through the examination of the personal data sheets.

Statistical Analysis

Descriptive statistics were used to describe subjects' characteristics (mean and standard deviation for continuous measures, frequencies, and relative frequencies for categorical variables). In accordance with the manual of the instrument (Caretto et al., 2019), the presence of the risk factors was measured by the HCR-20V3 Historical item scores which were coded as a categorical variable (i.e., response categories: "No" vs. "Possibly/Partially" vs. "Yes").

The characteristics of incarcerated groups (SO vs. OO) and their risk factors assessed with HCR-20V3 were compared using parametric tests for the continuous variables (Student's *t*-test,

once verified the assumption of normality with Kolmogorov-Smirnov test) and non-parametric tests for categorical variables (Chi-square and Fisher's Exact Test).

A binary logistic model was used to estimate the effect of the HCR-20V3 historical risk factors in predicting criminal careers, with being SO or OO as the dichotomous dependent variable. Only those risk factors that showed a significant difference in the comparison of the two groups were included as predictors in the regression model. The assumptions related to the sample size adequacy, the independence of observations, and the lack of multicollinearity among the independent variables were verified. Model fit was assessed through Hosmer-Lemeshow test. The Wald's statistic was used to analyze the predictors' contribution to the explanation of the dependent variable. The Odds Ratio and their 95% confidence intervals were computed for each predictor's category. A second binary logistic model was fitted to assess the interaction effects with PCL-R's Factors 1 and 2.

Data analysis was performed with SPSS-IBM v25 software, setting significance at $p < 0.05$.

RESULTS

Table 1 summarizes the characteristics of the two groups of subjects (SO vs. OO). The total mean age was 45.12 ± 12.732 , and it was significantly higher in the SO group ($t_{(188)} = -3.947$; $p = 0.000$). About half of the convicted was unemployed (46.8%), and a percentage of 11.1% showed a diagnosis of psychopathy (PCL-R score ≥ 25). No association was found between the employment status, or the diagnosis of psychopathy, and the two groups of subjects.

Considering the educational attainment, the secondary school was the most frequent (41.1%), followed by high school (38.4%). A higher school level was associated with the SO group ($\chi^2_{(3)} = 24.186$; $p = 0.000$). Chi-Square *post hoc* tests were performed by checking the significance of the adjusted residuals of the contingency table cells, with Bonferroni correction. The results of the *post hoc* tests showed that SO and OO groups showed significant adjusted residuals for secondary school and university degree (both, respectively: $p = 0.022$ and $p = 0.001$).

The results of the comparisons on the HCR-20 V3 between SO and OO on the risk factors carried out by non-parametric tests are presented in **Table 2**. *Post hoc* analysis results are displayed in the note of **Table 3**. Some of the risk factors assessed as definitely present (coded as "Yes") showed a high prevalence in the total group of subjects. A history of problems with violence as an adult (18 and over) was detected in the 62.1% of subjects, and problems with antisocial behavior, once again as an adult, pertained to the 46.3% of the prisoners enrolled in the study. Problems with relationships showed a high prevalence in this sample, intimate and non-intimate as well (respectively: 47.9 and 35.8%). A history of problems with substance use was definitely found in the 34.2% of the subjects, whilst risk factors related to traumatic experiences

were detected in a lower proportion: 30.0% experienced a victimization or trauma, and 26.8% reported experiences of adverse child rearing.

Six out of eleven risk factors considered in the analysis displayed a significant association with the groups: (a,b) problems with violence (as a child and as an adult), (c,d) problems with other antisocial behavior (as a child and as an adult), (e) problems with non-intimate relationships and (f) problems with substance use. Prisoners included in the OO group seemed to be portrayed by a history of problems with violence. Considering the subscale "as an adolescent (13–17)" and summing the relative frequencies of the two categories "Possibly/Partially" or "Yes", this risk factor was observed in the 47.1% of the OO group, against the 19.4% of the SO group ($\chi^2_{(2)} = 19.285$; $p = 0.000$). Although a history of problems with violence as an adult was more frequent in the SO group than in the OO group (respectively: 65.9 and 58.8%), the lack of this risk factor proved to be double than that of the OO group (respectively: 20.5 and 11.8%; $\chi^2_{(2)} = 7.960$; $p = 0.019$). Also the other antisocial behaviors characterized the OO group: during the adolescence, this problem was detected ("Possibly/Partially" or "Yes") in the 56.8% of the OO group (SO = 27.2%; $\chi^2_{(2)} = 17.288$; $p = 0.000$), and, as an adult, this percentage was 77.4% (SO = 50.0%; $\chi^2_{(2)} = 16.615$; $p = 0.000$). The last risk factor associated with the OO group concerned substance use ($\chi^2_{(2)} = 25.697$; $p = 0.000$).

Finally, a history of problems with non-intimate relationships was the only risk factor linked to the criminal career of the SO: in this group, it was definitely assessed in the 43.2% of the subjects, against the 29.4% of the OO group ($\chi^2_{(2)} = 7.416$; $p = 0.025$).

The results of Student's *t*-tests showed that as compared with OO, the group of SO had significantly higher and lower scores, respectively, on the PCL-R F1 Interpersonal and Affective Deficits and PCL-R F2 Antisocial Behavior. In both groups, the scores on the PCL-R factors were moderately correlated to each other. The results of the comparisons on the PCL-R factor scores and the correlations in the two groups are presented in **Supplementary Material**.

These six mentioned factors presenting a significant association with the study groups were included as predictors in a binary logistic regression model. The results of the logistic regression analysis are presented in **Table 3** where the role of HCR-20V3 historical risk factors is entered as predictors and the criminal career (defined as being a SO or OO) is entered as dichotomous outcome. The lack of significance of the Hosmer-Lemeshow test ($\chi^2_{(8)} = 7.078$; $p = 0.528$) proved the goodness of the model fitting. The percentage of predicted cases was 73% out of the total group.

Three risk factors did not show a significant contribution to the dependent variable: problems with violence (as an adult) and problems with antisocial behavior (as an adolescent and as an adult).

Two risk factors provided a significant effect on the dependent variable but in favor of the "other offenders" criminal career: the possible, or partial, presence of problems with violence as an adolescent ($\beta = -1.237$; Wald's $\chi^2_{(1)} = 5.090$; $p = 0.024$) and the certain history of substance use ($\beta = -1.615$; Wald's $\chi^2_{(1)} = 11.092$; $p < 0.001$). According to these results, the

TABLE 1 | “Sex Offenders” (SO) and “Other Offenders” (OO) characteristics: age, employment status, educational attainment, and diagnosis of psychopathy.

		Total	SO (n = 88)	OO (n = 102)	Statistic	p
Age (mean ± SD)		45.12 ± 12.732	48.90 ± 13.281	41.85 ± 11.232	$t_{(188)} = -3.947$	0.000
Employment status n.(%)	Employed	101 (53.2)	50 (56.8)	51 (50.0)	Fisher's Exact Test	0.383
	Unemployed	89 (46.8)	38 (43.2)	51 (50.0)		
Educational attainment n.(%)	Primary school	13 (6.8)	2 (2.3)	11 (10.8)	$\chi^2_{(3)} = 24.186$	0.000
	Secondary school	78 (41.1)	26 (29.5)	52 (51.0)		
	High school	73 (38.4)	39 (44.3)	34 (33.3)		
	University degree	26 (13.7)	21 (23.9)	5 (4.9)		
Diagnosis of psychopathy (PCL-R ≥ 25) n.(%)	Yes	21 (11.1)	9 (10.2)	12 (11.8)	Fisher's Exact Test	0.819
	No	169 (88.9)	79 (89.8)	90 (88.2)		

Bold values represent statistically significant p-values.

detection of these risk factors was associated with a lower likelihood of being “SO”.

The presence of a history of problems with non-intimate relationships was the only significant risk factor explaining the outcome “SO”. The high value of the Wald’s statistic (6.325) expressed its relevant contribution to the regression model. Looking at the odds ratio, the prisoners experiencing problems with non-intimate relationships were 3.610 (95% CI 1.327–9.819) times more likely to be a “SO” than another type of offender.

Although no significant difference was found between SO and OO on their psychopathological conditions, a second logistic regression was estimated, using the only significant predictor for the SO category in interaction with the two PCL-R factors: (F1) interpersonal and affective deficits, (F2) antisocial behavior. The results of the logistic regression analysis are shown in **Table 4** where the interaction effects between the significant risk factor (i.e., Non-Intimate Relationships) and the two PCL-R factors (i.e., Interpersonal and Affective Deficits and Antisocial Behavior, respectively) were included as predictors and the sexual career (i.e., being a SO vs. OO) is included as dichotomous outcome. The lack of significance of the Hosmer-Lemeshow test ($\chi^2_{(6)} = 2.896$; $p = 0.822$) confirmed the goodness of fit, even if the percentage of predicted cases was quite low (66% out of the total group). In other words, a 29% of the variance between the SO and OO groups was attributed to the psychopathy factors when we considered problems with non-intimate relationships.

Both PCL-R factors showed a significant interaction with the existence of problems with the non-intimate relationships detected with HCR-20 V3, but with opposite effects. Increasing values of the PCL-R Factor 1 (interpersonal and affective deficits) provided an increased likelihood of being SO when problems with the non-intimate relationships were possibly/partially or certainly present (“Possibly/partially”: $\beta = 0.358$, Wald’s $\chi^2_{(1)} = 9.493$, $p = 0.002$; “Yes”: $\beta = 0.251$, Wald’s $\chi^2_{(1)} = 10.824$, $p = 0.001$). On the contrary, increasing values of the PCL-R Factor 2 (antisocial behavior) were associated to a decreased likelihood of being SO when problems with the non-intimate relationships were possibly/partially or certainly present (“Possibly/partially”:

$\beta = -0.533$, Wald’s $\chi^2_{(1)} = 13.396$, $p = 0.000$; “Yes”: $\beta = -0.231$, Wald’s $\chi^2_{(1)} = 10.291$, $p = 0.001$).

DISCUSSION

The challenge of this study was to border the investigation concerning the association between risk factors and criminal career, to the identification of those lifetime events that can discriminate sex offenders from other offenders. The risk factors were assessed by a set of items of the HCR-20 V3 Historical scale. As compared with the SO, the OO group showed a greater likelihood of having a history of problems with violence and antisocial behavior (as adolescents and adults), together with problems with substance abuse. These findings were in line with the literature evidence. Only one risk factor, i.e., the presence of problems in non-intimate relationships, discriminated the criminal career of sex offenders from other types of criminals. In the HCR-20 V3 manual, non-intimate relationships are depicted as the bonds with the family members, the friends, or with generic acquaintances which do not involve the sexual dimension. Social isolation, emotional distance, instability or conflict, manipulation of others, inappropriate sexualization and violence in non-intimate relationships and escalation of problems are indicators of the presence of such problems. As compared with the OO group, SO showed higher and lower levels, respectively, of psychopathic interpersonal and affective deficits and antisocial behavior. Finally, the present findings confirmed the importance of deficient non-intimate relationships in predicting the criminal career of sex offenders.

Furthermore, this association was boosted by psychopathic traits related to interpersonal and affective deficits, but not by antisocial behavior. The moderator role of interpersonal/affective deficits in the relation between problems in non-intimate relationships and the risk of being SO vs. OO seems to be partially in line with a meta-analysis which indicates that this psychopathy facet is associated with violence (Kennealy et al., 2010). The present findings suggest that during clinical practice the assessment of SO should focus on social isolation,

TABLE 2 | Comparison among “sex offenders” (SO) and “other offenders” (OO) about the risk factors assessed with HCR-20-historical scale (items: H1a, H1b, H1c, H2a, H2b, H2c, H3a, H3b, H5, H8a, H8b).

		Total	SO (n = 88)	OO (n = 102)	Statistic	p
HCR-20V3 H1a Violence: as a child (12 and under) n.(%)	No	144 (75.8)	71 (80.7)	73 (71.6)	$\chi^2_{(2)} = 5.436$	0.066
	Possibly/Partially	32 (16.8)	9 (10.2)	23 (22.5)		
	Yes	14 (7.4)	8 (9.1)	6 (5.9)		
HCR-20V3 H1b Violence: as an adolescent (13–17) n.(%)	No	125 (65.8)	71 (80.7)	54 (52.9)	$\chi^2_{(2)} = 19.285$	0.000
	Possibly/Partially	40 (21.1)	7 (8.0)	33 (32.4)		
	Yes	25 (13.2)	10 (11.4)	15 (14.7)		
HCR-20V3 H1c Violence: as an adult (18 and over) n.(%)	No	30 (15.8)	18 (20.5)	12 (11.8)	$\chi^2_{(2)} = 7.960$	0.019
	Possibly/Partially	42 (22.1)	12 (13.6)	30 (29.4)		
	Yes	118 (62.1)	58 (65.9)	60 (58.8)		
HCR-20V3 H2a Other antisocial behavior: as a child (12 and under) n.(%)	No	151 (79.5)	72 (81.8)	79 (77.5)	$\chi^2_{(2)} = 1.882$	0.390
	Possibly/Partially	19 (10.0)	6 (6.8)	13 (12.7)		
	Yes	20 (10.5)	10 (11.4)	10 (9.8)		
HCR-20V3 H2b Other antisocial behavior: as an adolescent (13–17) n.(%)	No	108 (56.8)	64 (72.7)	44 (43.1)	$\chi^2_{(2)} = 17.288$	0.000
	Possibly/Partially	46 (24.2)	12 (13.6)	34 (33.3)		
	Yes	36 (18.9)	12 (13.6)	24 (23.5)		
HCR-20V3 H2c Other antisocial behavior: as an adult (18 and over) n.(%)	No	67 (35.3)	44 (50.0)	23 (22.5)	$\chi^2_{(2)} = 16.615$	0.000
	Possibly/Partially	35 (18.4)	10 (11.4)	25 (24.5)		
	Yes	88 (46.3)	34 (38.6)	54 (52.9)		
HCR-20V3 H3a Relationships: intimate n.(%)	No	43 (22.6)	19 (21.6)	24 (23.5)	$\chi^2_{(2)} = 0.293$	0.864
	Possibly/Partially	56 (29.5)	25 (28.4)	31 (30.4)		
	Yes	91 (47.9)	44 (50.0)	47 (46.1)		
HCR-20V3 H3b Relationships: non-intimate n.(%)	No	68 (35.8)	33 (37.5)	35 (34.3)	$\chi^2_{(2)} = 7.416$	0.025
	Possibly/Partially	54 (28.4)	17 (19.3)	37 (36.3)		
	Yes	68 (35.8)	38 (43.2)	30 (29.4)		
HCR-20V3 H5 Substance use n.(%)	No	88 (46.3)	55 (62.5)	33 (32.4)	$\chi^2_{(2)} = 25.697$	0.000
	Possibly/Partially	37 (19.5)	19 (21.6)	18 (17.6)		
	Yes	65 (34.2)	14 (15.9)	51 (50.0)		
HCR-20V3 H8a Traumatic experiences: victimization/trauma n.(%)	No	97 (51.1)	50 (56.8)	47 (46.1)	$\chi^2_{(2)} = 2.272$	0.321
	Possibly/Partially	36 (18.9)	14 (15.9)	22 (21.6)		
	Yes	57 (30.0)	24 (27.3)	33 (32.4)		
HCR-20V3 H8b Traumatic experiences: adverse child rearing experiences n.(%)	No	82 (43.2)	44 (50.0)	38 (37.3)	$\chi^2_{(2)} = 3.866$	0.145
	Possibly/Partially	57 (30.0)	21 (23.9)	36 (35.3)		
	Yes	51 (26.8)	23 (26.1)	28 (27.5)		

Post hoc tests and the significance of the standardized adjusted residuals (ns = not significant).

a: No-SO: p = 0.000; No-OO: p = 0.000; Possibly/Partially-SO: p = 0.000; Possibly/Partially-OO: p = 0.000; Yes-SO = ns; Yes-OO = ns.

b: No-SO: p = ns; No-OO: p = ns; Possibly/Partially-SO: p = ns; Possibly/Partially-OO: p = ns; Yes-SO: p = ns; Yes-OO: p = ns.

c: No-SO: p = 0.000; No-OO: p = 0.000; Possibly/Partially-SO: p = 0.008; Possibly/Partially-OO: p = 0.000; Yes-SO: p = ns; Yes-OO: p = ns.

d: No-SO: p = 0.001; No-OO: p = 0.001; Possibly/Partially-SO: p = ns; Possibly/Partially-OO: p = ns; Yes-SO: p = ns; Yes-OO: p = ns.

e: No-SO: p = ns; No-OO: p = ns; Possibly/Partially-SO: p = ns; Possibly/Partially-OO: p = ns; Yes-SO: p = ns; Yes-OO: p = ns.

f: No-SO: p = 0.000; No-OO: p = 0.000; Possibly/Partially-SO: p = ns; Possibly/Partially-OO: p = ns; Yes-SO: p = 0.000; Yes-OO: p = 0.000.

Bold values represent statistically significant p-values.

TABLE 3 | Results of the binary logistic model fitting: predictive effects of HCR-20V3 Historical items.

Predictors	β	S.E.	Wald's statistic	p	OR	OR 95% CI	
						Lower limit	Upper limit
HCR-20V3 H1b Violence: as an adolescent (13–17)							
Violence: (13–17) - No			Wald's $\chi^2_{(2)} = 5.100$	0.078			
Violence: (13–17) - Possibly/Partially	-1.237	0,548	Wald's $\chi^2_{(1)} = 5.090$	0.024	0.290	0.099	0.850
Violence: (13–17) - Yes	-0.389	0.617	Wald's $\chi^2_{(1)} = 0.398$	0.528	0.678	0.202	2.270
HCR-20V3 H1c Violence: as an adult (18 and over)							
Violence: (18 and over) - No			Wald's $\chi^2_{(2)} = 2.953$	0.228			
Violence: (18 and over) - Possibly/Partially	-0.508	0.608	Wald's $\chi^2_{(1)} = 0.700$	0.403	0.602	0.183	1.979
Violence: (18 and over) - Yes	0.330	0.495	Wald's $\chi^2_{(1)} = 0.445$	0.505	1.391	0.527	3.672
HCR-20V3 H2b Other antisocial behavior: as an adolescent (13–17)							
Other antisocial behavior: (13–17) - No			Wald's $\chi^2_{(2)} = 0.756$	0.685			
Other antisocial behavior: (13–17) - Possibly/Partially	-0.480	0.579	Wald's $\chi^2_{(1)} = 0.687$	0.407	0.619	0.199	1.926
Other antisocial behavior: (13–17) - Yes	-0.160	0.694	Wald's $\chi^2_{(1)} = 0.053$	0.817	0.852	0.218	3.323
HCR-20V3 H2c Other antisocial behavior: as an adult (18 and over)							
Other antisocial behavior: (18 and over) - No			Wald's $\chi^2_{(2)} = 3.669$	0.160			
Other antisocial behavior: (18 and over) - Possibly/Partially	-0.948	0.567	Wald's $\chi^2_{(1)} = 2.793$	0.095	0.388	0.128	1.178
Other antisocial behavior: (18 and over) - Yes	-0.840	0.537	Wald's $\chi^2_{(1)} = 2.448$	0.118	0.432	0.151	1.236
HCR-20V3 H3b Non-intimate relationships							
Relationships: non-intimate - No			Wald's $\chi^2_{(2)} = 8.127$	0.017			
Relationships: non-intimate - Possibly/Partially	0.005	0.47	Wald's $\chi^2_{(1)} = 0.000$	0.991	1.005	0.400	2.524
Relationships: non-intimate - Yes	1.284	0.51	Wald's $\chi^2_{(1)} = 6.325$	0.012	3.610	1.327	9.819
HCR-20V3 H5 Substance use							
Substance use - No			Wald's $\chi^2_{(2)} = 14.402$	0.001			
Substance use - Possibly/Partially	0.351	0.515	Wald's $\chi^2_{(1)} = 0.465$	0.495	1.421	0.518	3.898
Substance use - Yes	-1.615	0.485	Wald's $\chi^2_{(1)} = 11.092$	0.001	0.199	0.077	0.515

Dichotomous dependent variable: type of group (SO vs. OO).

Abbreviations: HCR-20 V3 = Historical, Clinical and Risk Management, OO = Other offenders, OR = Odds Ratio, SO = Sex Offenders.

Bold values represent statistically significant p-values.

emotional distance, instability or conflict, manipulation of others, inappropriate sexualization and violence, particularly in non-intimate relationships. Tailored treatment programs aimed to prevent relapse in SO (Carabellese et al., 2020b; Gualtieri et al., 2020b) should address these deficits in non-intimate relationships and target psychopathic traits, specifically interpersonal and affective traits. Cognitive behavioral therapy has been found to be an effective treatment for psychopathic traits (Salekin et al., 2010). The fact that SO showed specific interpersonal deficits in the domain of non-intimate relationships suggests that a group format of treatment might be more helpful in addressing such difficulties in this population. In a group setting, the process of confronting with the experiences of other offenders might improve emotional awareness and regulation (Jennings and Sawyer, 2003; Levenson et al., 2009), and it might reduce the risk of drop-out from treatment, like for other clinical populations with impulsive traits (Pozza and Dèttore, 2017).

The result showing that SO had higher and lower levels of, respectively, interpersonal and affective deficits and antisocial behavior suggests that psychopathic traits could be differentially related to sex crimes and other types of crimes. This result appears consistent with literature data which extensively showed that sex offenders would be characterized by severe

deficits in interpersonal empathy and emotion regulation (Gillespie et al., 2018; Schuler et al., 2021), while other types of offenders would show antisocial personality traits (Mazzoni et al., 2018; Azevedo et al., 2020).

The greater likelihood of a history of violence and antisocial behavior (as adolescents and adults), together with problems with substance abuse amongst OO as compared with SO, is a result in line with the literature evidence (e.g., Gottfredson et al., 2008). The importance of violence during the adolescence as predictor of offending patterns in adulthood is still debated (Cardwell and Piquero, 2018), even if violent behaviors during the childhood, for example the presence of aggressions (Juon et al., 2006), seem to predict serious offending in adulthood. The link between drug use and criminal behavior has received attention from scholars (Tonry and Wilson, 1990; Bennett et al., 2008; Gottfredson et al., 2008; Liu et al., 2018).

Although several studies related to sex offenders' criminal career provided evidence of the effects of traumatic experiences during their childhood, also defined as Adverse Childhood Experiences (ACE), this relationship was not confirmed by the findings illustrated in this paper. Considering the studies which compare male sex offenders with the general population (Levenson et al., 2016; Kingston et al., 2017), sex offenders

TABLE 4 | Results of the binary logistic model with SO/OO as outcome and the HCR20-V3 item H8 non-intimate as predictor, in interaction with the PCL-R Factor 1 Interpersonal and affective deficits and Factor 2 Antisocial behavior; Odds Ratio and 95% confidence interval of the Odds Ratio.

Predictors	β	S.E.	Wald's statistic	P	OR	OR 95% CI	
						Lower limit	Upper limit
Interaction effects between HCR-20V3 H3b non-intimate relationships and PCL-R factor 1							
Non-intimate relationships: No * PCL-R F1 Interpersonal and Affective Deficits interaction			Wald's $\chi^2_{(2)} = 19.766$	0.000			
Non-intimate relationships: Possibly/Partially * PCL-R F1 Interpersonal and Affective Deficits interaction	0.358	0.116	Wald's $\chi^2_{(1)} = 9.493$	0.002	1.430	1.139	1.796
Non-intimate relationships: Yes * PCL-R F1 Interpersonal and Affective Deficits interaction	0.251	0.076	Wald's $\chi^2_{(1)} = 10.824$	0.001	1.286	1.107	1.493
Interaction effects between HCR-20V3 H3b non-intimate relationships and PCL-R factor 2							
Non-intimate relationships: No * PCL-R F2 Antisocial Behavior interaction			Wald's $\chi^2_{(2)} = 23.521$	0.000			
Non-intimate relationships: Possibly/Partially * PCL-R F2 Antisocial Behavior interaction	-0.533	0.146	Wald's $\chi^2_{(1)} = 13.396$	0.000	0.587	0.441	0.781
Non-intimate relationships: Yes * PCL-R F2 Antisocial Behavior interaction	-0.231	0.072	Wald's $\chi^2_{(1)} = 10.291$	0.001	0.794	0.689	0.914

Abbreviations. HCR-20V3 = Historical, Clinical and Risk Management PCL-R = Psychopathy Checklist-Revised, SO = Sexual offenders, OO = Other offenders, OR = Odds ratio. Bold values represent statistically significant p-values.

showed a larger odd of being victims of sexual abuse, verbal or physical abuse and emotional neglect, but also signals of adverse child-rearing experiences (incarcerated family members, parental dysfunctions, disordered familiar environment). Victimization or other traumatic experiences during the childhood, like physical, sexual and emotional abuse, were more prevalent in sex offenders than in other kinds of offenders (Lee et al., 2002; Jespersen et al., 2009; Seto and Lalumière, 2010; Reavis et al., 2013; Drury et al., 2019; Gualtieri et al., 2020a). In addition, evidence of adverse child-rearing experiences was more frequent as well, like a history of family dysfunctions or a condition of poor parenting style (Lee et al., 2002; Reavis et al., 2013; Sigre-Leirós et al., 2016).

Many reasons can explain the divergent findings reported in this paper. First, the methodological issues that affect this research topic. The review of McMillan et al. (2008), specifically carried out on sexual offenders against children, pointed out a series of problems related to the temporal relationship between a putative risk factor and sexual perpetration, the effects of other variables, and the complexity in modeling developmental phenomena.

Secondarily, this lack of evidence may be due to the measurement scale administered to the participants, in particular

the HCR-20 V3 used to assess the risk factors. The Historical Clinical Risk Management-20 (HCRS-20) has been criticized for its low field validity in clinical forensic psychiatry settings (Jeandarme et al., 2017; Tully, 2017). On the contrary, other studies supported the psychometric validity and the clinical utility of the scale (Judges et al., 2016), highlighting that the scoring subjectivity of the scale did not impair its reliability, above all for the HCR-20 V3 historical scale (Rufino et al., 2011).

A third problem can be associated to the method used by this scale to assess the risk factors, which are described by a wide variety of lifetime events such as trauma or victimization related to parental and non-parental sexual abuse during childhood/adolescence, witnessing of domestic violence, bullying, or lifetime interpersonal victimization. As much heterogeneity of events is also listed to measure the presence of adverse child-rearing experiences (overly rigid parenting styles, unstable family relations, conviction of parents before the subject reached 10 years of age, death of a parent during childhood or adolescence, separation from parents before 17 years of age, parental substance abuse). Probably, this wide set of experiences describing a single indicator can reduce its specificity in detecting the risk factors.

Some limitations of the study should be pointed out. Firstly, the recruitment of the sample might be subjected to a bias as this process took place in agreement with the Penitentiary Administration of the Ministry of Justice. The first stage of recruitment was carried out exclusively by the prison administration, which asked the prisoners if they were interested in participating to a preliminary meeting with the researchers. On that occasion, the researchers presented the project in detail and asked the prisoners for the informed consent. However, other information that could have been useful for the purpose of the research was not provided to the researchers by the prison administration. In particular, no data were provided about the specific types of crime of the OO group or how many of both the groups of offenders were recidivists. However, it was well-established that those prisoners belonging to the group of SO did not commit any other crimes than sexual ones.

Secondly, the cross-sectional design did not allow us to draw firm conclusion about the role of the risk factors in the likelihood of being SO or OO, particularly in the risk of recidivism. Future research should use a longitudinal design to ascertain problems in non-intimate relationships and whether interpersonal/affective deficits can predict a higher risk of recidivism in sexual crime as compared with the risk of recidivism in other types of crime.

Another relevant limitation concerns the fact that individuals with a psychiatric history were excluded. This aspect reduced the external validity of this research. The findings observed in the present sample may be applied to a minority of the SO population. In fact, SO with no other criminal record and no lifetime psychiatric diagnosis typically represent only a small proportion of SO that is lower than 20%, as the lack of psychiatric comorbidities is generally observed in a 7–15% proportion of the SO population (e.g., Raymond et al., 1999; Dunsieath et al., 2004). Future studies should also include individuals with lifetime psychiatric disorders and control the effect of the presence of psychiatric conditions in the risk of being SO or OO, particularly severe psychiatric disorders such as psychosis/bipolar and personality disorders (Van Wijk et al., 2007; Coluccia et al., 2015; Chen et al., 2016; Eastman et al., 2019). However, the role of psychiatric disorders in the risk of violence has been questioned as a dimensional approach is considered more informative (Graz et al., 2009). Finally, an area that deserves further exploration regards the moderator effect of protective factors in the relation between life events and crime type. It would be interesting to examine whether certain protective factors such as the capacity to forgive oneself (Barcaccia et al., 2019) could protect the individual from the criminal behavior.

REFERENCES

- Andersen, H. S., Sestoft, D., Lillebaek, T., Mortensen, E. L., and Kramp, P. (1999). Psychopathy and psychopathological profiles in prisoners on remand. *Acta Psychiatr. Scand.* 99, 33–39. doi: 10.1111/j.1600-0447.1999.tb05382.x
- Azevedo, J., Vieira-Coelho, M., Castelo-Branco, M., Coelho, R., and Figueiredo-Braga, M. (2020). Impulsive and premeditated aggression in male offenders with antisocial personality disorder. *PLoS One* 15:e0229876. doi: 10.1371/journal.pone.0229876
- Barcaccia, B., Pallini, S., Pozza, A., Milioni, M., Baiocco, R., Mancini, F., et al. (2019). Forgiving adolescents: far from depression, close to well-being. *Front. Psychol.* 10:1725. doi: 10.3389/fpsyg.2019.01725
- Bennett, T., Holloway, K., and Farrington, D. (2008). The statistical association between drug misuse and crime: a meta-analysis.

CONCLUSION

The role of life events as risk factors for sexual crime is a complex and long-debated topic in criminological research. The present study is the first contribution which compared SO and OO on the risk factors assessed by the HCR-20V3 and explored the role of psychopathic traits as moderators of the relation between specific life events and the risk of having committed sexual crime or other types of crime. The present findings shed further light on this issue showing the role of deficient non-intimate relationships in predicting the criminal career of sex offenders, and suggesting that specific psychopathic traits, i.e., interpersonal/affective deficits, but not antisocial behavior, can moderate the relation between a history of problems in non-intimate relationships and sexual crime.

DATA AVAILABILITY STATEMENT

The original contributions presented in the study are included in the article/**Supplementary Material**, further inquiries can be directed to the corresponding author.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Director of Penitentiary Administration Department of Ministry of Justice. The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

FF performed the statistical analysis. AP interpreted the results of the analyses and wrote the manuscript with support from FF, FuC, and FeC. AS and GS took care of the bibliographic research. FuC was the corresponding author. GM collected the data. GG contributed to the bibliographic research. FeC conceived of the presented idea and collected the data. RC and AC performed a general review. All authors contributed to the article and approved the submitted version.

SUPPLEMENTARY MATERIAL

The Supplementary Material for this article can be found online at: <https://www.frontiersin.org/articles/10.3389/fpsyg.2021.600370/full#supplementary-material>

- Aggress. Violent Behav.* 13, 107–118. doi: 10.1016/j.avb.2008.02.001
- Burton, D. L. (2008). An Exploratory Evaluation of the Contribution of Personality and Childhood Sexual Victimization to the Development of Sexually Abusive Behavior. *Sex. Abuse* 20, 102–115. doi: 10.1177/1079063208315352
- Campbell, M. A., French, S., and Gendreau, P. (2009). The prediction of violence in adult offenders: a meta-analytic comparison of instruments and methods of assessment. *Crim. Justice Behav.* 36, 567–590. doi: 10.1177/0093854809333610
- Campobasso, C., Colonna, M., Carabellese, F., Grattagliano, I., Candelli, C., Morton, R. J., et al. (2009). A serial killer of elderly women: analysis of a multi-victim homicide investigation. *Forensic Sci. Int.* 185, 7–11. doi: 10.1016/j.forsciint.2008.12.023
- Carabellese, F., Felthous, A. R., Mandarelli, G., Montalbò, D., La Tegola, D., Parmigiani, G., et al. (2020a). Women and Men who Committed Murder: male/Female Psychopathic Homicides. *J. Forensic Sci.* 65, 1619–1626. doi: 10.1111/1556-4029.14450
- Carabellese, F., Urbano, M., Carabellese, F., Gualtieri, G., Pozza, A., Ferretti, F., et al. (2020b). Il trattamento giudiziario del sex offender: vecchi limiti, nuove opportunità. *Ital. J. Criminol.* 14, 229–241.
- Carabellese, F., Rocca, G., Candelli, C., La Tegola, D., and Birkhoff, J. (2012). La gestione degli autori di reati sessuali tra psicopatologia e rischio di recidiva. Prospettive trattamentali. *Rassegna Ital. di Criminol.* 2, 70–83.
- Carabellese, F., Vinci, F., and Catanesi, R. (2008). Compatibility Between Mental Disorder and Mental Capacity: analysis of a Particular Case of Group Sexual Homicide. *J. Forensic Sci.* 53, 1450–1454. doi: 10.1111/j.1556-4029.2008.00897
- Cardwell, S. M., and Piquero, A. R. (2018). Does Violence in Adolescence Differentially Predict Offending Patterns in Early Adulthood? *Int. J. Offender Ther. Comp. Criminol.* 62, 1603–1628. doi: 10.1177/0306624x16688978
- Caretti, V., Ciappi, S., Scarpa, F., Castelletti, L., Catanesi, R., Carabellese, F., et al. (2019). *HCR 20-3 Checklist per la valutazione del rischio di recidiva di un crimine violento. Adattamento Italiano*. Firenze: Hogrefe.
- Caretti, V., Manzi, G. S., Schimmenti, A., and Seragusa, L. (2011). *PCL-R. Hare Psychopathy Checklist Revised*. Firenze: Giunti.
- Cartwright, J. K., Desmarais, S. L., Hazel, J., Griffith, T., and Azizian, A. (2018). Predictive validity of HCR-20, START, and static-99R assessments in predicting institutional aggression among sexual offenders. *Law Hum. Behav.* 42, 13–25. doi: 10.1037/lhb0000263
- Catanesi, R., Mandarelli, G., Ferracuti, S., Valerio, A., and Carabellese, F. (2019). The new residential forensic psychiatric system (REMS): a one-year population study. *Ital. J. Criminol.* 13, 7–23. doi: 10.7347/RIC.NS2019
- Chen, Y. Y., Chen, C. Y., and Hung, D. L. (2016). Assessment of psychiatric disorders among sex offenders: prevalence and associations with criminal history. *Crim. Behav. Ment. Health* 26, 30–37. doi: 10.1002/cbm.1926
- Coluccia, A., Ferretti, F., Fagiolini, A., and Pozza, A. (2015). Incidenza e fattori di rischio per disturbi psicotici nelle popolazioni migranti in Europa: una meta-analisi di studi trasversali. *Ital. J. Criminol.* 9, 29–39.
- Coluccia, A., Pozza, A., Ferretti, F., Carabellese, F., Masti, A., and Gualtieri, G. (2020). Online romance scams: relational dynamics and psychological characteristics of the victims and scammers. A scoping review. *Clin. Pract. Epidemiol. Ment. Health* 16, 24–35. doi: 10.2174/1745017902016010024
- Douglas, K. S., Hart, S. D., Webster, C. D., and Belfrage, H. (2013). *HCR-20V3. Assessing Risk for Violence*. Burnaby: Mental Health, Law, and Policy Institute, Simon Fraser University.
- Drury, A. J., Elbert, M. J., and DeLisi, M. (2019). Childhood sexual abuse is significantly associated with subsequent sexual offending: new evidence among federal correctional clients. *Child Abuse Negl.* 95:104035. doi: 10.1016/j.chiabu.2019.104035
- Dunsieth, N. W. Jr., Nelson, E. B., Brusman-Lovins, L. A., Holcomb, J. L., Beckman, D., Weldge, J. A., et al. (2004). Psychiatric and legal features of 113 men convicted of sexual offenses. *J. Clin. Psychiatry* 65, 293–300. doi: 10.4088/jcp.v65n0302
- Eastman, O., Craissati, J., and Shaw, J. (2019). Young adult sexual offenders with emerging personality disorders: developmental and offence-related characteristics and treatment engagement. *J. Sex. Aggress.* 25, 105–115. doi: 10.1080/13552600.2018.1551501
- Eher, R., Rettenberger, M., and Turner, D. (2019). The prevalence of mental disorders in incarcerated contact sexual offenders. *Acta Psychiatr. Scand.* 139, 572–581. doi: 10.1111/acps.13024
- Gannon, T. A., Olver, M. E., Mallion, J. S., and James, M. (2019). Does specialized psychological treatment for offending reduce recidivism? A meta-analysis examining staff and program variables as predictors of treatment effectiveness. *Clin. Psychol. Rev.* 73:101752. doi: 10.1016/j.cpr.2019.101752
- Gillespie, S. M., Garofalo, C., and Velotti, P. (2018). Emotion regulation, mindfulness, and alexithymia: specific or general impairments in sexual, violent, and homicide offenders? *J. Crim. Justice* 58, 56–66. doi: 10.1016/j.jcrimjus.2018.07.006
- Gottfredson, D. C., Kearley, B. W., and Bushway, S. D. (2008). Substance use, drug treatment, and crime: an examination of intra-individual variation in a drug court population. *J. Drug Issues* 38, 601–630. doi: 10.1177/00220426080380211
- Grann, M., Langstrom, N., Tengstrom, A., and Stalenheim, E. G. (1998). Reliability of File-Based Retrospective Ratings of Psychopathy With the PCL-R. *J. Pers. Assess.* 70, 416–426. doi: 10.1207/s15327752jpa7003_2
- Graz, C., Etschel, E., Schoech, H., and Soyka, M. (2009). Criminal behaviour and violent crimes in former inpatients with affective disorder. *J. Affect. Disord.* 117, 98–103. doi: 10.1016/j.jad.2008.12.007
- Gualtieri, G., Ferretti, F., Masti, A., Pozza, A., and Coluccia, A. (2020a). Post-traumatic Stress Disorder in Prisoners' Offspring: a Systematic Review and Meta-analysis. *Clin. Pract. Epidemiol. Ment. Health* 16, 36–45. doi: 10.2174/1745017902016010036
- Gualtieri, G., Traverso, S., Pozza, A., Ferretti, F., Carabellese, F., Gusinu, R., et al. (2020b). Clinical risk management in High-Security Forensic Psychiatry Residences. Protecting patients and health professionals: perspectives and critical issues of the Law 81/2014. *Clin. Ter.* 171, e97–e100.
- Hanson, R. K., Bourgon, G., Helmus, L., and Hodgson, S. (2009). *A Meta-analysis of the Effectiveness of Treatment for Sexual Offenders: Risk, Need, and Responsivity*. Ottawa: Corrections Research, Public Safety Canada.
- Hanson, R. K., and Morton-Bourgon, K. E. (2005). The characteristics of persistent sexual offenders: a meta-analysis of recidivism studies. *J. Consult. Clin. Psychol.* 73, 1154–1163. doi: 10.1037/0022-006X.73.6.1154
- Hare, R. D., Harpur, T. J., and Hakstian, A. R. (1989). Two-factor conceptualization of psychopathy: construct validity and assessment implications. *Psychol. Assess.* 1, 6–17. doi: 10.1037/1040-3590.1.1
- Hare, R. D., and Neumann, C. N. (2006). “The PCL-R Assessment of Psychopathy: development, Structural Properties, and New Directions,” in *Handbook of Psychopathy*, ed. C. Patrick (New York: Guilford), 58–88.
- Ismail, G., and Looman, J. (2018). Field Inter-Rater Reliability of the Psychopathy Checklist-Revised. *Int. J. Offender Ther. Comp. Criminol.* 62, 468–481. doi: 10.1177/0306624X16652452
- Jeandarme, I., Pouls, C., De Laender, J., Oeic, T. I., and Bogaerts, S. (2017). Field validity of the HCR-20 in forensic medium security units in Flanders. *Psychol. Crime Law* 23, 305–322. doi: 10.1080/1068316x.2016.1258467
- Jennings, J. L., and Sawyer, S. (2003). Principles and techniques for maximizing the effectiveness of group therapy with sex offenders. *Sex. Abuse* 15, 251–267. doi: 10.1177/107906320301500403
- Jespersen, A. F., Lalumière, M. L., and Seto, M. C. (2009). Sexual abuse history among adult sex offenders and non-sex offenders: a meta-analysis. *Child Abuse Negl.* 33, 179–192. doi: 10.1016/j.chiabu.2008.07.004
- Judges, R., Egan, V., and Broad, G. (2016). Critique of the Historical Clinical Risk-20, Version 3, Risk Assessment Instrument. *J. Forensic Psychol. Pract.* 16, 304–320. doi: 10.1080/15228932.2016.1196102
- Juon, H. S., Doherty, E. E., and Ensminger, M. E. (2006). Childhood Behavior and Adult Criminality: cluster Analysis in a Prospective Study of African Americans. *J. Quant. Criminol.* 22, 193–214. doi: 10.1007/s10940-006-9008-9

- Jüriloo, A., Lauerma, H., Holmalahti, T., Tyni, S., Aarnio, J., Viitanen, P., et al. (2013). Psychopathic traits in a representative sample of Finnish male prisoners. *Nord. J. Psychiatry* 68, 117–122. doi: 10.3109/08039488.2013.780259
- Kennealy, P. J., Skeem, J. L., Walters, G. D., and Camp, J. (2010). Do core interpersonal and affective traits of PCL-R psychopathy interact with antisocial behavior and disinhibition to predict violence? *Psychol. Assess.* 22, 569–580. doi: 10.1037/a0019618
- Kimonis, E. R., Skeem, J. L., Cauffman, E., and Dmitrieva, J. (2011). Are secondary variants of juvenile psychopathy more reactively violent and less psychosocially mature than primary variants? *Law Hum. Behav.* 35, 381–391. doi: 10.1007/s10979-010-9243-3
- Kingston, D. A., Graham, F. J., and Knight, R. A. (2017). Relations Between Self-Reported Adverse Events in Childhood and Hypersexuality in Adult Male Sexual Offenders. *Arch Sex. Behav.* 46, 707–720. doi: 10.1007/s10508-016-0873-5
- Kraanen, F. L., and Emmelkamp, P. M. G. (2011). Substance misuse and substance use disorders in sex offenders: a review. *Clin. Psychol. Rev.* 31, 478–489. doi: 10.1016/j.cpr.2010.11.006
- Lee, J. K. P., Jackson, H. J., Pattison, P., and Ward, T. (2002). Developmental risk factors for sexual offending. *Child Abuse Negl.* 26, 73–92. doi: 10.1016/S0145-2134(01)00304-0
- Leistico, A. R., Salekin, R. T., De Coster, J., and Rogers, R. (2008). A large-scale meta-analysis relating the hare measures of psychopathy to antisocial conduct. *Law Hum. Behav.* 32, 28–45. doi: 10.1007/s10979-007-9096-6
- Levenson, J. S., Macgowan, M. J., Morin, J. W., and Cotter, L. P. (2009). Perceptions of sex offenders about treatment: satisfaction and engagement in group therapy. *Sex. Abuse* 21, 35–56. doi: 10.1177/1079063208326072
- Levenson, J. S., Willis, G. M., and Prescott, D. S. (2016). Adverse Childhood Experiences in the Lives of Male Sex Offenders: implications for Trauma-Informed Care. *Sex. Abuse* 28, 340–359. doi: 10.1177/1079063214535819
- Liu, L., Chui, W. H., and Chen, Y. (2018). Violent and Non-Violent Criminal Behavior among Young Chinese Drug Users: a Mixed Methods Study. *Int. J. Env. Res. Public Health* 15:432. doi: 10.3390/ijerph15030432
- Mandarelli, G., Carabellese, F., Parmigiani, G., Bernardini, F., Pauselli, L., Quartesan, R., et al. (2017). Treatment decision-making capacity in non-consensual psychiatric treatment: a multicentre study. *Epidemiol. Psychiatr. Sci.* 9, 1–8.
- Mazzoni, G. P., Contena, B., Fanciullacci, S., and Pozza, A. (2018). Analisi comparativa dei profili di personalità di pazienti affetti da disturbo borderline e detenuti con diagnosi di disturbo antisociale di personalità ottenuti tramite l'MMPI-2. *Riv. Psichiatr.* 53, 267–273. doi: 10.1708/3000.30006
- McMillan, D., Hastings, R. P., Salter, D. C., and Skuse, D. H. (2008). Developmental risk factor research and sexual offending against children: a review of some methodological issues. *Arch. Sex. Behav.* 37, 877–890. doi: 10.1007/s10508-007-9193-0
- Myers, W. C., Marrero, L., and Herkov, M. J. (2005). “Forensic Psychiatry and Forensic Psychology,” in *Encyclopedia of Forensic and Legal Medicine*, ed. J. Payne-James (Cambridge: Elsevier Academic Press), 444–451.
- Ometto, M., de Oliveira, P. A., Milioni, A. L., Dos Santos, B., Scivoletto, S., Busatto, G. F., et al. (2016). Social skills and psychopathic traits in maltreated adolescents. *Eur. Child Adolesc. Psychiatry* 25, 397–405. doi: 10.1007/s00787-015-0744-y
- Porter, S., Newman, E., Tansey, L., and Quayle, E. (2015). Sex offending and social anxiety: a systematic review. *Aggress. Violent Behav.* 24, 42–60. doi: 10.1016/j.avb.2015.04.005
- Pozza, A., Coluccia, A., Gualtieri, G., Carabellese, F., Masti, A., and Ferretti, F. (2020). Post-traumatic stress disorder secondary to manic episodes with hypersexuality in bipolar disorder: a case study of forensic psychotherapy. *Clin. Neuropsychiatry* 17, 181–188.
- Pozza, A., Coluccia, A., Kato, T., Gaetani, M., and Ferretti, F. (2019). The ‘Hikikomori’ syndrome: worldwide prevalence and co-occurring major psychiatric disorders: a systematic review and meta-analysis protocol. *BMJ Open* 9:e025213. doi: 10.1136/bmjopen-2018-025213
- Pozza, A., and Dèttore, D. (2017). Drop-out and efficacy of group versus individual cognitive behavioural therapy: what works best for Obsessive-Compulsive Disorder? A systematic review and meta-analysis of direct comparisons. *Psychiatry Res.* 258, 24–36. doi: 10.1016/j.psychres.2017.09.056
- Rasmussen, L. A. (2012). - Victim and Victimizer: the Role of Traumatic Experiences as Risk Factors for Sexually Abusive Behavior. *Isr. J. Psychiatry Relat. Sci.* 49, 270–279.
- Raymond, N. C., Coleman, E., Ohlerking, F., Christenson, G. A., and Miner, M. (1999). Psychiatric comorbidity in pedophilic sex offenders. *Am. J. Psychiatry* 156, 786–788.
- Reavis, J. A., Looman, J., Franco, K. A., and Rojas, B. (2013). Adverse childhood experiences and adult criminality: how long must we live before we possess our own lives? *Perm. J.* 17, 44–48. doi: 10.7812/TPP/12-072
- Rufino, K. A., Boccaccini, M. T., and Guy, L. S. (2011). Scoring subjectivity and item performance on measures used to assess violence risk: the PCL-R and HCR-20 as exemplars. *Assessment* 18, 453–463. doi: 10.1177/1073191110378482
- Salekin, R. T., Worley, C., and Grimes, R. D. (2010). Treatment of psychopathy: a review and brief introduction to the mental model approach for psychopathy. *Behav. Sci. Law* 28, 235–266. doi: 10.1002/bsl.928
- Schimmenti, A., Carabellese, F. F., and Caretti, V. (2020). “Child maltreatment and psychopathy,” in *The International Handbook of Psychopathic Disorders and the Law, Volume I: Diagnosis and Treatment, Second Edition*, eds A. R. Felthous and H. Saß (Chichester: John Wiley & Sons, Ltd).
- Schraft, C. V., Kosson, D. S., and McBride, C. K. (2013). Exposure to violence within home and community environments and psychopathic tendencies in detained adolescents. *Crim. Justice Behav.* 40, 1027–1043. doi: 10.1177/0093854813486887
- Schuler, M., Mohnke, S., Amelung, T., Dziobek, I., Borchardt, V., Gerwin, H., et al. (2021). Empathy in paedophilia and sexual offending against children: a longitudinal extension. *J. Sex. Aggress.* 1–18. doi: 10.1080/13552600.2021.1931721
- Seto, M. C., and Lalumière, M. L. (2010). What is so special about male adolescent sexual offending? A review and test of explanations through meta-analysis. *Psychol. Bull.* 136, 526–575. doi: 10.1037/a0019700
- Sevecke, K., Franke, S., Kosson, D., and Krischer, M. (2016). Emotional dysregulation and trauma predicting psychopathy dimensions in female and male juvenile offenders. *Child Adolesc. Psychiatry Ment. Health* 10:43. doi: 10.1186/s13034-016-0130-7
- Sigre-Leirós, V., Carvalho, J., and Nobre, P. J. (2016). Early parenting styles and sexual offending behavior: a comparative study. *Int. J. Law Psychiatry* 46, 103–109. doi: 10.1016/j.ijlp.2016.02.042
- Somma, A., Fossati, A., Carabellese, F., Santoro, G., Schimmenti, A., Caretti, V., et al. (2020). Dysfunctional Personality Traits and Demographic Variables Associated with Violence Risk in Male Sexual Offenders: a Study on Italian Adult Inmates. *J. Forensic Psychiatry Psychol.* 32, 242–260. doi: 10.1080/14789949.2020.1857425
- Tonry, M., and Wilson, J. Q. (1990). *Drugs and Crime*. Chicago: University of Chicago Press.
- Tully, J. (2017). HCR-20 shows poor field validity in clinical forensic psychiatry settings. *Evid. Based Ment. Health* 20, 95–96. doi: 10.1136/eb-2017-102745
- Van Wijk, A. P., Blokland, A. A. J., Duits, N., Vermeiren, R. R. J. M., and Harkink, J. (2007). Relating psychiatric disorders, offender and offence characteristics in a sample of adolescent sex offenders and non-sex offenders. *Crim. Behav. Ment. Health* 17, 15–30. doi: 10.1002/cbm.628

- Wong, S. C. P., and Olver, M. E. (2016). "Risk reduction treatment of psychopathy and applications to mentally disordered offenders," in *Violence in Psychiatry*, eds K. D. Warburton and S. M. Stahl (Cambridge: Cambridge University Press), 323–331.
- Yang, M., Wong, S., and Coid, J. (2010). The efficacy of violence prediction: a meta-analytic comparison of nine risk assessment tools. *Psychol. Bull.* 136, 740–767. doi: 10.1037/a0020473
- Yates, P. M. (2013). Treatment of sexual offenders: research, best practices, and emerging models. *Int. J. Behav. Consult. Ther.* 8, 89–95. doi: 10.1037/h0100989

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Acceptance of Sexual Interest in Minors in Self-Referred Individuals Under Treatment – An Exploratory Pilot Study

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Some therapists/scientists argue that “acceptance” of sexual interest in minors (SIM), i.e., the integration of the sexual preference into the individual self-concept, is a prerequisite for dealing with SIM in a responsible way. However, if one assumes that – even in some persons – SIM might change over time, “acceptance” could also run counter to therapeutic targets because the motivation to change as well as the specific self-efficacy for modifying SIM might be reduced. This exploratory pilot study analyzes the relationship between acceptance of SIM and (1) dynamic risk for contact sexual reoffending, (2) SIM and frequency of the use of child/adolescent (sexual abuse) imagery, (3) frequency of sexual desire/behavior toward children/adolescents, and (4) the change of the level of acceptance of SIM during the course of treatment. The majority of the participants ($N = 79$) was not exclusively interested in children (85%) and used child pornography but did not commit child sexual abuse (54%). Acceptance of SIM, frequency of the use of child/adolescent (sexual abuse) imagery and frequency of sexual desire/behavior toward children/adolescents are assessed via self-report questionnaires, dynamic risk for contact sexual reoffending is measured by STABLE-2007. Pretreatment data are analyzed via Spearman’s correlation ($N = 79$). Intragroup analysis compares acceptance of SIM from pre- and posttreatment ($n = 35$). There was no correlation between acceptance of SIM and dynamic risk for contact sexual reoffending. However, there was a medium, positive correlation between acceptance of SIM and the frequency of the use of legal imagery of children, a positive correlation between the item “My inclination is an integral part of my personality” and the frequency of the use of legal imagery of children, and a positive correlation between acceptance of SIM and the frequency of sexual activities with minors. Acceptance of SIM did not change during the course of treatment. The results suggest that “acceptance” of SIM has to be discussed in a differentiated way, i.e., as possibly being associated with positive and negative outcomes as well.

Keywords: child abuse material, pedophilia, prevention of child sexual abuse, psychotherapy, risk of offending

INTRODUCTION

Findings from an online survey with 8,718 German males indicate that 4.1% have sexual fantasies about children and that 3.2% have offended against prepubescent children. But only 0.1% reported a pedophilic sexual preference (Dombert et al., 2016). The sites of the German network “Kein Täter werden” (means: not become an offender) offer treatment for people seeking therapeutic help because of sexual interest in minors (SIM) and distress or a risk of sexual (re-)offending (Netzwerk “Kein Täter werden”, 2018). It is a formal requirement in this network that individuals who receive treatment are currently not in contact with the criminal justice system.

The construct “acceptance,” as it is understood in this exploratory pilot study, means that sexual preference is accepted as a “stable and therefore constantly challenging part of the own personality” which, being “fate rather than choice,” “cannot be changed by any treatment” (Institute for Sexology and Sexual Medicine of the Charité, 2013, pp. 65–66). Going further, it means “the recognition of reality [...], one’s way of easing the pain, when realizing that things are unchangeable [...] [, and] abandonment of the wish to change given reality” (Institute for Sexology and Sexual Medicine of the Charité, 2013, p. 67). Thus, it goes along with an ego syntonic concept of sexual preference which allows therapy right away to focus on aspects other than sexual preference (Institute for Sexology and Sexual Medicine of the Charité, 2013).

Some therapists and scientists argue that “acceptance” of pedophilic interest is needed for individuals with sexual interest in minors (SIM) for dealing in a responsible way with their sexual interest and thus preventing sexual abuse (Ahlers et al., 2008; Institute for Sexology and Sexual Medicine of the Charité, 2013). Other therapists and scientists, however, argue that – even in some persons, and maybe more often in men with non-exclusive pedophilia (Tozdan and Briken, 2019) – SIM might change over time and that “acceptance” might run counter to prevention goals because motivation to change as well the specific self-efficacy for modifying sexual interest in children may be reduced by it (Tozdan and Briken, 2015a; Fedoroff, 2020).

Seto (2012) argues that sexual orientation is characterized by an age of onset before the beginning of puberty and by stability over time, and that pedophilia is similar in these respects. He refers to findings on identified and self-identified child sexual abuse offenders with pedophilia of whom a considerable proportion report an age of onset of sexual interest in children before adulthood (e.g., Li, 1991; Marshall et al., 1991; Freund and Kuban, 1993). Furthermore, he cites studies which suggest that pedophilia is predictive for future sexual behavior involving children even one to three decades later (Hanson et al., 1993), and that treatment-related decrease of sexual arousal related to children does not reduce recidivism rates (Rice et al., 1991), i.e., does not persist (Seto, 2012). Due to these findings, he makes the case for “conceptualizing pedophilia as a type of sexual orientation in males” (Seto, 2012, p. 231). Cantor (2018) also takes the position that pedophilia is immutable. He claims that lines of indirect evidence referring to the following “all have much more parsimonious and mundane

explanations” (Cantor and Fedoroff, 2018, p. 205): “Sex crime rates are dropping [...]. The incidence of sex crime rates decreases as people age [...]. The likelihood that (known) high-risk sex offenders will re-offend decreases the longer they commit no crime [...]. The self-report of men and women with paraphilic disorders [...]. As people grow older, their interests shift to partners similar in age” (Cantor, 2018, p. 205). He argues that these findings reflect “aging populations,” “the decrease in sex drive that accompanies aging,” “the absence of critical thinking,” and “sexual behavior with partners of increasing age as they [people] themselves age” (Cantor, 2018, p. 205). Researchers who assume that pedophilia is immutable usually infer that treatment should “focus on [...] management” of pedophilia (Seto, 2017, p. 18), i.e., on developing the skills that are needed to regulate and control pedophilic urges (Institute for Sexology and Sexual Medicine of the Charité, 2013; Lehmiller, 2019).

Marshall (2008) assumes that pedophilia is not immutable because after treatment phallometric data show a reduction of arousal to children and an increase of arousal to adults in “quite deviant child molesters” (Marshall, 2008, p. 42). Marshall et al. (2009) describe behavioral procedures for modifying sexual interests, i.e., different aversion and masturbatory-based techniques, and the evidence base for these procedures. Marshall et al. (2011) opt for identifying “individualized appropriate (i.e., non-deviant) sexual scripts that can serve as both templates for actual sexual relations and as images for masturbation activities” and refer to the fact that “[U]nreinforced habitual behavior (in this case, deviant sexual interests) has been shown to extinguish such habits” (Marshall et al., 2011, p. 152). Recent research on age of onset of sexual interest in children with individuals from different contexts (with and without treatment, explicitly and not explicitly advocating against acting on sexual interest in children) shows broad ranges from 6 to 44 years and 7 to 66 years, with a mean value of 17 and 20 years (Tozdan and Briken, 2015b, 2019). It also shows that a later age of onset is associated with more perceived flexibility of sexual interest in children, that more perceived flexibility is related to more motivation to change sexual interest in children (Tozdan and Briken, 2019), and that an increasing specific self-efficacy for modifying a sexual interest in children is related to a decreasing sexual interest in children in a considerable number of individuals (Tozdan et al., 2018b)¹. Researchers who assume that pedophilia is mutable usually conclude that therapeutic interventions should target patients’ specific self-efficacy (Briken et al., 2014; Tozdan and Briken, 2015a; Tozdan et al., 2018a), empower them (Fedoroff, 2018), and work on “relationship skills and healthy sexuality [...], self-esteem, empathy, prosocial sexual attitudes, and coping skills”

¹The findings mentioned were criticized as insufficient because of still unclear definitions (e.g., defining pedohebephilic interests as a SIM who are at least five years younger than oneself vs. defining pedohebephilic interest on the basis of a developmental approach involving biological, social, psychological, and experiential aspects that started before experiencing a SIM for the first time), not enough consideration of developmental processes (e.g., transitional processes, the fact that age of onset is maybe a part of ongoing developmental processes instead of a discrete event) and not sufficiently precise operationalization of age of onset (i.e., asking about age of first SIM might be misunderstood because almost every person is attracted to minors at some point in life) (McPhail, 2018).

(Marshall et al., 2011, p. 152). Briken et al. (2018) argue that, under the assumption of mutability of deviant sexual interests in at least a part of patients, therapists should clarify what their patients' motivation and goal in treatment is. As many patients do not have a desire for change, therapists should be open to adapt treatment to assignment, risk of (re-)offending, and exclusiveness of SIM (Briken et al., 2018).

In summary, at the present stage of research, one can assume that there are patients in which SIM might change over time or not, depending on, for example, flexibility, exclusivity, and age of onset of SIM (Tozdan and Briken, 2019). Hence, it can be expected that acceptance is a differentiated construct, too.

STUDY AIM

We can safely assume that a therapist's attitude concerning the necessity of accepting SIM is considered rather relevant for the therapeutic process. Indeed, it already has been shown that there is a relation between therapists' attitude toward the immutability of SIM and their patients' self-efficacy to change their SIM (Tozdan et al., 2018a). That means, the more therapists are convinced that SIM is mutable, the more their patients believe they can change it and vice versa. It is lively debated if patients should be told that SIM can change, if patients should be told that SIM is unchangeable (Cantor, 2018; Cantor and Fedoroff, 2018; Fedoroff, 2018), or if this question can only be answered in the course of the therapeutic process, because there are very different courses of SIM.

What we do not know is if the acceptance of SIM is related to patients' motivation to control sexual urges, to change their SIM, or to behavioral treatment outcomes, such as consumption of sexual imagery of minors and/or sexual abuse of minors. Furthermore, it has not yet been studied if there is a difference between acceptance of SIM and behavior outcomes that correspond to pedophilic or to hebephilic interests. We also do not know if acceptance of SIM is related to dynamic risk factors which are linked with sexual self-regulation (Hanson et al., 2007). Moreover, it has not yet been clarified if acceptance of SIM is associated with sexual desire. Furthermore, we do not know if acceptance of SIM changes in the course of treatment, i.e., is affected by treatment.

Therefore, the purpose of this exploratory pilot study is to investigate the following research questions:

- (1) Is there a relationship between the acceptance of SIM and dynamic risk factors?
- (2) (a) Is there a relationship between the acceptance of SIM and the frequency/intensity of the use of child abuse/exploitation material? (b) Is there a relationship between the acceptance of SIM and the frequency/intensity of the use of adolescent abuse/exploitation material?
- (3) Is there a relationship between the acceptance of SIM and the frequency/intensity of sexual desire/behavior toward minors?
- (4) Does the level of acceptance of SIM change in the course of treatment?

MATERIALS AND METHODS

Participants

This exploratory pilot study included 84 adult men with SIM who underwent initial diagnostic procedures between autumn 2011 and autumn 2019, gave their informed consent, and started treatment at the Institute for Sex Research, Sexual Medicine and Forensic Psychiatry in Hamburg. Thirteen men who had not given their informed consent were not included. The study was approved by the Ethics Committee of the Chamber of Psychotherapists Hamburg (09/2019-PTK-HH, 02/2015-PTK-HH). Data were prepared for analysis by two researchers (UL and ST) working at the research unit of the institute. Their work was independent of the processes of treatment indication and psychotherapeutic care.

All of the participants fulfilled the preconditions for receiving treatment in the program offered by the Prevention Network "Kein Täter werden" (see **Table 1** one for demographic characteristics of the participants). These are:

- not (yet) having offended and/or never having consumed child sexual abuse images, though fearing doing so, or
- already having offended and/or having consumed child sexual abuse images, but not being known to the legal system, or
- previously having been charged with and/or found guilty of relevant offenses and having fully served any sentence received as a result, and fearing committing further offenses (Netzwerk "Kein Täter werden", 2018).

Treatment involved 90 min of group therapy led by two group therapists weekly, or individual therapy sessions every 1 or 2 weeks. Every individual had to participate in an initial diagnostic procedure that comprised diagnostic interviews, a risk assessment, and a battery of self-report questionnaires. Hereafter, every participant was introduced to the therapeutic team by the therapist who conducted the initial diagnostic procedure. Referral for group vs. individual therapy was debated and decided within the whole team, i.e., medical doctors and psychologists [see Lampalzer et al. (2020) for more detailed information on indicators for group vs. individual treatment in this sample].

The treatment program at the Institute for Sex Research, Sexual Medicine and Forensic Psychiatry is based on the risk-need-responsivity model (Andrews et al., 1990) since, in addition to reducing possible distress from SIM, its main objective is to prevent sexual abuse of children and the use of abusive images. The risk principle determines therapy intensity. According to the need principle therapy focuses on the three most important dynamic risk factors that are related to the individual's modifiable risk of (re-)offending, e.g., in the realm of intimacy deficits or poor self-regulation. With regard to the responsivity principle referral to group vs. individual treatment, therapeutic technique, and decision for psychiatric treatment or medication in addition to psychotherapy are considered important. In the initial phase of treatment motivation and aims are clarified and biography work is done. In the intermediate phase risk factors and behavioral

TABLE 1 | Sample characteristics for the total sample ($N = 79$) when undergoing initial diagnostic procedure.

Variables	Total ($N = 79$, 100%)	
	N^a	% ^b
Education level		
Less than 10 years	13	16.5
More than 10 years	66	83.5
Employed		
Yes	63	79.7
No	16	20.3
Relationship status		
In a relationship	39	49.4
Currently single	40	50.6
Living alone		
Yes	38	48.1
No	41	51.9
Own children		
Yes	17	21.5
No	62	78.5
Self-reported exclusiveness (Interest is . . .)		
. . . exclusively in children	11	13.9
. . . not exclusively in children	67	84.8
. . . not specified	1	1.3
Self-reported age group attracted to		
Prepubertal (pedophile)	1	1.3
Pubertal (hebephile)	3	3.8
Prepubertal and pubertal (pedophile and hebephile)	8	10.1
Prepubertal and adult (pedophile and teleiophile)	4	5.1
Pubertal and adult (hebephile and teleiophile)	27	34.2
Prepubertal, pubertal and adult (pedophile, hebephile, and teleiophile)	35	44.3
Not specified	1	1.3
Self-reported sexual orientation		
Attracted to males	14	17.7
Attracted to females	48	60.8
Attracted to both sexes	16	20.3
Not specified	1	1.3
Self-reported prior lifetime sexual offenses^c		
Non-offending	6	7.6
Child sexual abuse only	7	8.9
Child pornography use only	43	54.4
Mixed offenses	23	29.1
Previously known to justice^c		
Child pornography offenses	11	13.9
Child sexual abuse offenses	5	6.3
Child pornography and child sexual abuse offenses	2	2.5
Not previously known to justice	61	77.2

^aAbsolute share in the sample.

^bPercentage share in the sample.

^cStatus when entering the treatment program.

change are focused, particularly sexual self-regulation, emotional congruence with children, awareness and handling of risk situations, abuse related attitudes, hypersexuality and sexual urges, increase in interpersonal abilities, improvement of coping strategies, and empathy. The final phase concentrates on preventing relapses, considering support groups, and developing future plans (Briken et al., 2018).

After their last treatment session participants normally, i.e., if they were willing to do so, underwent a final diagnostic procedure which consisted, except for some updates, of the same questionnaires as the initial diagnostic procedure.

Five participants, who were included in the present study, had not filled in the Inventory of the Acceptance of Sexual Inclination (IASI rev, Mundt et al., 2011). For this reason, they were excluded from the analysis. The final sample consisted of 79 participants. Their age ranged from 19 to 61 years ($M = 35.99$, $SD = 11.25$). One participant did not indicate his age. Twenty-four (30%) participants were still in treatment, and 55 (70%) had partly or fully completed the treatment program. Of these participants who had partly or fully completed the treatment program 35 (64%) had completed the final diagnostic procedure, including IASI rev. Only these 35 men could be included into pre-post comparison analysis. Treatment duration ranged from 7 to 67 months ($M = 30.66$, $SD = 15.39$).

Measures

Inventory of the Acceptance of Sexual Inclination

The IASI rev is an unpublished self-report questionnaire designed to assess the extent of acceptance or integration of a sexual inclination into the individual self-concept (Ahlers et al., 2008). Sexual inclination is understood as the third of three axes of sexual preference²: “our *sexual inclination* toward a (i) preferred specific *type* of sexual partner and (ii) a preferred specific *mode* of sexual activity” (Schaefer and Ahlers, 2018, p. 88). According to Schaefer and Ahlers, it “resembles the current definition of paraphilias in the DSM-5” which refers to erotic activities (modes) such as spanking and whipping, and erotic targets (types), such as children, corpses or inanimate objects (Schaefer and Ahlers, 2018, p. 89). The IASI rev is a short version of the Inventory of the Acceptance of Sexual Preference (“Inventar zur Akzeptanz der sexuellen Präferenz”; cf. Ahlers et al., 2008) which has four subscales: *Attitude* (subjective attitude toward the acceptance of one’s own sexual preference, extent to which the attitude can become relevant for behavior), *Perceived Acceptance* (extent of real acceptance), *Emotion* (emotional processing of one’s own sexual preference), and *Fantasy and Control* (handling fantasies and needs that correspond to the sexual preference). The IASI rev has 15 items that are answered on a 5-point scale (e.g., “My sexual fantasies scare me.”; “I am aware of my sexual inclination.”) (see **Appendix 1** for an English translation including all items). Total scores range from 15 to 75, with higher values indicating a greater acceptance. The IASI rev has not been validated yet. For the present pilot study the IASI rev was found to be highly reliable (15 items; Cronbach’s $\alpha = 0.88$). The items of the IASI rev do not specifically refer to SIM. However, in the context of the battery of questionnaires that was filled in by the participants of the present study, it is rather unlikely that sexual inclination was not interpreted as SIM. Because the battery is explicitly designated for individuals with SIM and all of the

²The other two axes are: “(a) our *sexual orientation* towards the preferred sex of the desired sexual partner [. . .], (b) our *sexual alignment* towards the preferred stage of physical development of the sexual partner’s body” (Schaefer and Ahlers, 2018, p. 88).

participants turned to the network site specifically due to their SIM. In this study, we used the IASI rev total score for analyzing “acceptance” as a multidimensional construct and Item 5 of IASI rev (“My inclination is an integral part of my personality.”) for focusing even more on the aspect of (im-)mutability of SIM. This item of IASI rev (hereinafter also referred to as “Integral Part Item”) most closely corresponds to this aspect.

STABLE-2007

The STABLE-2007 (Hanson et al., 2007; Matthes and Rettenberger, 2008) is a 13-item risk assessment tool to measure dynamic risk for contact sexual recidivism among adult males who have been charged with a sexual offense. The 13 risk factors are evaluated by third party. They have been shown to be associated with sexual recidivism and are systematized into five sections: *Significant Social Influences*, *Intimacy Deficits* (capacity for relationship stability, emotional identification with children, hostility toward women, general social rejection, lack of concern for others), *General Self-Regulation* (impulsivity, poor problem-solving skills, negative emotionality), *Sexual Self-Regulation* (sex drive and preoccupations, sex as coping, deviant sexual preference), and *Cooperation with Supervision*. All of the items are scored on a 3-point scale. Total scores range from 0 to 26 (exception: emotional identification is not scored for offenders not having a child as a victim so that for them total scores only range to 24), with higher values indicating a higher dynamic risk of recidivism. The STABLE-2007 has proven very good interrater reliability for the English version [ICC = 0.79 (Hanson et al., 2007)] and for the German version [ICC = 0.90 for a population of sex offenders with 50.9% being child molesters (Eher et al., 2012); ICC = 0.90 for a population of child molesters (Rettenberger et al., 2011)], too. It has also demonstrated good predictive validity for recidivism [AUC = 0.67–0.71 for sexual, violent and general recidivism (Eher et al., 2012)]. As mentioned above, the STABLE-2007 is designed for contact sexual offenders who have been charged with a sexual offense. The dynamic risk factors of the STABLE-2007 are not validated for recidivism relating to child/adolescent sexual abuse imagery and not for individuals with SIM without or with undetected offences. Nevertheless, the STABLE-2007 is used in this exploratory pilot study because it measures stable dynamic risk factors and there is no established tool available yet for this specific group with SIM. However, data are analyzed for the group of patients in this sample who reported child/adolescent sexual abuse in their past as well as for the whole group. Because one of the tool’s developers, Karl Hanson, explicitly recommended to not use it for internet offenders who only offended with indecent images of children, which might apply to the majority of the sample, and not with identifiable victims (Webb, 2018, p. 107).

Items Assessing the Frequency of the Use of Child Abuse/Exploitation Material and Frequency of Sexual Desire/Behavior Toward Children

A subset of items of questionnaires of the initial diagnostic procedure which assess the frequency of consumption of (sexual) imagery of children, adolescents, adolescents sexually interacting with children, adults sexually interacting with children, and

adults sexually interacting with adolescents is used, as well as a subset of items assessing the frequency of desire for sexual activities, and actual sexual activities with minors. In order to reduce the number of these items and generate six adequate items for the analysis, we amalgamated the relevant items via taking the score of the highest frequency of the relevant items. The six items are (see **Appendix 2** for the specific questions of three different batteries):

- (1) Frequency of Use of Legal Imagery of Children;
- (2) Frequency of Use of Legal Imagery of Adolescents;
- (3) Frequency of Use of Illegal Child Sexual Abuse Imagery;
- (4) Frequency of Use of Illegal Adolescent Sexual Abuse Imagery;
- (5) Frequency of Desire for Sexual Activities with Minors;
- (6) Frequency of Sexual Activities with Minors.

Via these six items common distinctions in the literature are represented: (1) legal vs. illegal imagery, (2) pedophilic interests vs. hebephilic interests, (3) use of child abuse/exploitation material (hands-off) vs. (drive to) child sexual abuse (hands-on). Frequency is rated on a 5-point-Likert scale, with the following answer options: 1 = “never,” 2 = “few times,” 3 = “monthly,” 4 = “weekly,” 5 = “daily.” For amalgamation, the score of the highest frequency of the relevant items was taken because this corresponds to the answer the participant would have given if he had answered to the amalgamated item. The distinction between legal and illegal imagery follows the COPINE scale (Quayle, 2008), with category 1–3 classified as legal imagery and category 4–10 as illegal imagery. **Table 2** shows that inter-item correlations were significant and between 0.23 and 0.68, except for item 6 that was not significantly correlated to the items 2, 3, and 4.

Statistical Analysis

As the battery of questionnaires was revised with regard to the current state of research in the course of data collection, not all questionnaires used in the present study were filled in by all participants. As the STABLE-2007 was only added to the battery of questionnaires in 2014, it was filled in for many participants

TABLE 2 | Results of Pearson correlation tests for inter-item correlations of the items for frequency of the use of child abuse/exploitation material and frequency of sexual desire/behavior toward children inter-item correlation.

Items	1	2	3	4	5	6
(1) Use of Legal Imagery of Children	1					
(2) Use of Legal Imagery of Adolescents	0.53**	1				
(3) Use of Illegal Child Sexual Abuse Imagery	0.66**	0.42**	1			
(4) Use of Illegal Adolescent Sexual Abuse Imagery	0.33**	0.68**	0.62**	1		
(5) Desire for Sexual Activities with Minors	0.45**	0.26*	0.45**	0.29*	1	
(6) Sexual Activities with Minors	0.23**	−0.06	0.10	−0.12	0.32**	1

*Correlation is significant at the 0.05 level.

**Correlation is significant at the 0.01 level.

by the therapists at a later time during the course treatment. Only those participants ($n = 45$) were included in the statistical analysis of correlations regarding the STABLE-2007 for whom the STABLE-2007 was completed not more than 6 months after the participant had completed the self-report questionnaires of the battery, assuming that no substantial change in dynamic risk of sexual recidivism has taken place during this time. In a second analysis of correlations regarding the STABLE-2007, only those ($n = 16$) were included who reported child/adolescent sexual abuse in their past (see section “STABLE-2007” for explanation).

First, the relation between acceptance of SIM and dynamic risk for contact sexual recidivism before treatment, i.e., between IASI rev total score/Item 5 IASI rev score and STABLE-2007 total score of the initial diagnostic procedure, was analyzed using the Spearman's correlation coefficient because variables were ordinally scaled (Upton and Cook, 2014). Second, the relation between acceptance of SIM and frequency/intensity of the use of material of abuse/exploitation of minors, i.e., IASI rev total score/Item 5 IASI rev score and the items of the initial diagnostic procedure assessing the frequency of the use of child abuse/exploitation material, was analyzed using the Spearman's correlation coefficient because variables were ordinally scaled, too (Upton and Cook, 2014). Third, a Spearman's correlation was run to determine the relationship between acceptance of SIM and frequency/intensity of sexual desire/behavior toward minors, i.e., IASI rev total score/Item 5 IASI rev score and items assessing the frequency of sexual desire/behavior toward children, because variables were also ordinally scaled (Upton and Cook, 2014). Fourth, a Wilcoxon signed-rank-test was performed to compare acceptance of SIM, i.e., IASI rev total score, between initial and final diagnostic procedure because the data were not normally distributed. Fifth, a paired-samples t -test was carried out to compare Item 5 IASI rev score between initial and final diagnostic procedure because the data were normally distributed (Kim, 2015). In the final diagnostic procedure, the IASI rev was completed by 35 participants. Significance was set at a value less than 0.05. All statistical analyses were conducted using SPSS (V 24) (IBM SPSS Statistics, IBM Corporation, Armonk, NY, United States).

RESULTS

Relationship Between Inventory of the Acceptance of Sexual Inclination and STABLE-2007

For the whole group, results of the Spearman's correlation indicated that there was no significant correlation between IASI rev total score and STABLE-2007 total score ($r_s = -0.22$, $n = 43$, $p = 0.166$), and that there was no significant correlation between Item 5 IASI rev score and STABLE-2007 total score ($r_s = 0.07$, $n = 45$, $p = 0.642$) (Table 3).

Similarly, for the group of patients who reported child/adolescent sexual abuse in their past, results of the Spearman's correlation indicated that there was no significant correlation between IASI rev total score and STABLE-2007 total

score ($r_s = 0.01$, $n = 16$, $p = 0.961$), and no significant correlation between Item 5 IASI rev score and STABLE-2007 total score ($r_s = -0.18$, $n = 16$, $p = 0.509$), either (Table 3).

Relationship Between Inventory of the Acceptance of Sexual Inclination and Frequency/Intensity of the Use of Material of Abuse/Exploitation of Minors

Results of the Spearman's correlation indicated that there was a medium³, positive correlation between IASI rev total score and Frequency of Use of Legal Imagery of Children score ($r_s = 0.41$, $n = 72$, $p \leq 0.001$), and no significant correlation between IASI rev total score and Frequency of Use of Legal Imagery of Adolescents score ($r_s = 0.22$, $n = 72$, $p = 0.058$). There was also a medium, positive correlation between Item 5 IASI rev score and Frequency of Use of Legal Imagery of Children score ($r_s = 0.32$, $n = 75$, $p = 0.005$), and no significant correlation between Item 5 IASI rev score and Frequency of Use of Legal Imagery of Adolescents score ($r_s = 0.08$, $n = 75$, $p = 0.474$), either. The correlations remained statistically significant after Benjamini–Hochberg correction (Table 3).

Moreover, results of the Spearman's correlation indicated that there was a small, positive correlation between IASI rev total score and Frequency of Use of Illegal Child Sexual Abuse Imagery score ($r_s = 0.27$, $n = 70$, $p = 0.026$), no significant correlation between IASI rev total score and Frequency of Use of Illegal Adolescent Sexual Abuse Imagery score ($r_s = 0.11$, $n = 71$, $p = 0.367$), no significant correlation between Item 5 IASI rev score and Frequency of Use of Illegal Child Sexual Abuse Imagery score ($r_s = 0.18$, $n = 74$, $p = 0.119$), and no significant correlation between Item 5 IASI rev score and Frequency of Use of Illegal Adolescent Sexual Abuse Imagery score ($r_s = -0.11$, $n = 75$, $p = 0.344$). The correlation between IASI rev total score and Frequency of Use of Illegal Child Sexual Abuse Imagery score was not statistically significant after Benjamini–Hochberg correction (Table 3).

Relationship Between Inventory of the Acceptance of Sexual Inclination and Frequency/Intensity of Sexual Tendencies/Behavior Toward Minors

Results of the Spearman's correlation indicated that there was a small, positive correlation between IASI rev total score and Frequency of Desire for Sexual Activities with Minors score ($r_s = 0.23$, $n = 75$, $p = 0.044$). Results of the Spearman correlation also indicated that there was a medium, positive correlation between IASI rev total score and Frequency of Sexual Activities with Minors score ($r_s = 0.30$, $n = 75$, $p = 0.008$). There was no significant correlation between Item 5 IASI rev score and Frequency of Desire for Sexual Activities with Minors score ($r_s = 0.18$, $n = 79$, $p = 0.120$), and a small, positive correlation between Item 5 IASI rev score and Frequency of Sexual Activities

³The Spearman's correlation coefficients are interpreted according to Cohen (1988, 1992).

TABLE 3 | Descriptive statistics and correlations between IASI rev (Item 5 IASI rev) and STABLE-2007, Frequency of Use of Legal Imagery of Children, Frequency of Use of Legal Imagery of Adolescents, Frequency of Use of Illegal Child Sexual Abuse Imagery, Frequency of Use of Illegal Adolescent Sexual Abuse Imagery, Frequency of Desire for Sexual Activities with Minors, and Frequency of Sexual Activities with Minors.

Variable	<i>M</i>	<i>SD</i>	<i>Mdn</i>	<i>Range</i>	<i>r</i> ^a	<i>p</i> ^a	FDR adjusted <i>p</i> _{BH} ^{a,b}	<i>n</i> ^a
(1) IASI rev	51.20	11.03	51	28–73	–	–		–
(a) Item 5 IASI rev	3.30	1.21	3	1–5	–	–		–
(2) STABLE-2007								
(a) Total sample	9.49	2.94	9	4–16	–0.215	0.166	0.266	43
					0.071	0.642	0.685	45
(b) Participants with child sexual abuse in the past	10.75	2.72	11	5–15	0.013	0.961	0.961	16
					–0.178	0.509	0.582	16
(3) Frequency of Use of Legal Imagery of Children	2.75	1.53	3	1–5	0.413*	<0.001	<0.001	72
					0.323*	0.005	0.040	75
(4) Frequency of Use of Legal Imagery of Adolescents	2.35	1.43	2	1–5	0.224	0.058	0.133	72
					0.084	0.474	0.582	75
(5) Frequency of Use of Illegal Child Sexual Abuse Imagery	2.86	1.46	3	1–5	0.265	0.026	0.083	70
					0.183	0.119	0.213	74
(6) Frequency of Use of Illegal Adolescent Sexual Abuse Imagery	2.68	1.42	3	1–5	0.109	0.367	0.489	71
					–0.111	0.344	0.489	75
(7) Frequency of Desire for Sexual Activities with Minors	3.09	1.46	4	1–5	0.234	0.044	0.117	75
					0.176	0.120	0.213	79
(8) Frequency of Sexual Activities with Minors	1.57	1.17	1	1–5	0.304*	0.008	0.043	75
					0.264	0.019	0.076	79

* $p_{BH} < 0.05$.

^aThe first line refers to IASI rev, the second line refers to Item 5 of IASI rev.

^bAdjusted *p*-value using the Benjamini–Hochberg procedure (Benjamini and Hochberg, 1995; Hemmerich, 2016). IASI, Inventory of the Acceptance of Sexual Inclination.

with Minors score ($r_s = 0.26$, $n = 79$, $p = 0.019$). After Benjamini–Hochberg correction, only the correlation between IASI rev total score and Frequency of Sexual Activities with Minors score remained statistically significant (Table 3).

Pre–post Comparison of Inventory of the Acceptance of Sexual Inclination

Results of the Wilcoxon signed-rank tests indicated no statistical difference between IASI rev total score before ($Mdn = 54$) and after (partial) completion of treatment ($Mdn = 55$), $T = 261$, $z = -0.26$, $p = 0.799$, $r = -0.03$ (Table 4). A paired-samples *t*-test indicated no statistical difference between the score of Item 5 of IASI rev before beginning treatment ($M = 3.51$, $SD = 1.07$) and the score of Item 5 of IASI rev after (partial) completion of treatment ($M = 3.57$, $SD = 1.12$), $t(34) = -0.26$, $p = 0.797$, $d = -0.05$, either (Table 4).

DISCUSSION

General Discussion

This exploratory pilot study investigated if acceptance of SIM is associated with pedophilia associated urges and behaviors. Acceptance of SIM as measured by IASI rev total score and the score of the item “My inclination is an integral part of my personality” were not related to dynamic risk factors for contact sexual reoffending as measured by STABLE-2007. It is possible that this is due to the sample which might be characterized by other dynamic risk factors (77% were not previously known to

justice) than forensic samples of contact sexual offenders with a SIM who have been charged with a sexual offense. Maybe the STABLE-2007 is not an adequate instrument for measuring dynamic risk for contact sexual reoffending in this sample. However, there was no correlation between IASI rev total score or Integral Part Item score and STABLE-2007 score, either. This might also be due to a lack of statistical power for finding small effects. Power analyses using G*Power (Faul et al., 2007) indicated that, with 80% power and $\alpha = 0.05$, a sample size of 129 would be required to detect an effect of $r = 0.215$ that was revealed for the whole sample in the present study, and a sample size of 1,222 for an effect of $r = 0.071$ that was revealed for the subsample with child sexual abuse in the past.

Results of the current exploratory pilot study indicate a medium, positive correlation between acceptance of SIM and the frequency of the use of legal imagery of children, and a small, positive correlation between acceptance of SIM and the frequency of the use of illegal child sexual abuse imagery. This means, the more participants report to accept their SIM, the more they also report to use legal imagery of children as well as illegal child sexual abuse imagery, or vice versa. However, the findings reveal no correlation between acceptance of SIM and the frequency of use of legal imagery of adolescents, and no correlation between acceptance of SIM and the frequency of the use of illegal adolescent sexual abuse imagery. Furthermore, they show a small, positive correlation between acceptance of SIM and the reported frequency of desire for sexual activities with minors, and a medium positive correlation between acceptance of SIM and the reported frequency of sexual activities with minors.

TABLE 4 | Results of Wilcoxon signed-rank test and paired-samples *t*-test and descriptive statistics for IASI rev total score and Item 5 IASI rev score (*n* = 35).

Outcome	Pre-test					Post-test					95% CI for mean difference		<i>Z</i>	<i>t</i>	<i>p</i>	FDR adjusted p_{BH}^a	Effect size <i>r</i>	Effect size <i>d</i>	
	<i>M</i>	<i>SD</i>	<i>Mdn</i>	<i>Range</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>Mdn</i>	<i>Range</i>	<i>n</i>									
IASI rev	52.50	10.44	54	28–73	34	52.43	10.32	55	25–69	35									
Item 5 IASI rev	3.51	1.07	4	1–5	35	3.57	1.12	4	1–5	35	–0.51, 0.39	–0.26	–0.26	0.799	0.799	0.799	–0.03	–0.05	

* $p_{BH} < 0.05$.

^aAdjusted *p*-value using the Benjamini–Hochberg procedure (Benjamini and Hochberg, 1995; Hemmerich, 2016). IASI, Inventory of the Acceptance of Sexual Inclination.

The results may suggest that more acceptance of SIM might be associated with more awareness of a SIM, the desire might be more present and associated with more use of legal imagery and even more proneness to sexual abuse. Less acceptance of SIM, however, might be associated with more motivation to work on diminishing pedophilia associated urges and behaviors and thus make individuals reduce the focus on desire for sexual activities with children, use less legal and illegal material and prevent themselves from committing child sexual abuse. Of course, as we solely conducted correlation analyses, we are not able to make any statement about causality.

It is surprising that the correlations that were found for legal and illegal imagery of children were not found for legal and illegal imagery of adolescents. Research suggests that pedophilic, hebephilic and teleiophilic individuals are different from each other, but there is still a lack of research in this field (Sea and Beauregard, 2018). In the present study, the majority of participants (44%) were pedophilic, hebephilic and teleiophilic, or hebephilic and teleiophilic (34%) at the same time. Obviously, these sexual interests cannot be seen as totally distinct from each other. According to the findings of this exploratory pilot study, acceptance of SIM might be different in the context of a pedophilic interest than in the context of a hebephilic interest. Maybe acceptance of a pedophilic interest has a deeper impact on awareness and the frequency of corresponding sexual desire and sexual behavior than acceptance of a hebephilic interest (cf. Prentky and Barbaree, 2011; Calkins Mercado and Beatty, 2012).

Additionally, results of the current exploratory pilot study indicate a medium, positive correlation between the assumption of SIM as an integral part of one's personality and the frequency of the use of legal imagery of children, and a small, positive correlation between this assumption and the frequency of sexual activities with minors, but no correlation between this assumption and any of the other frequency measures used. This means, the more men regard their pedophilic interests as an integral part of their personality, the more they sexualize non-sexual representations of children and commit hands-on child sexual abuse, or vice versa, the more men sexualize non-sexual representations of children and commit hands-on child sexual abuse, the more they regard their pedophilic interests as an integral part of their personality.

It has to be noted that after correction for multiple testing, only the correlation between acceptance of SIM and the frequency of the use of legal imagery of children, the correlation between the

assumption of SIM as an integral part of one's personality and the frequency of the use of legal child sexual abuse imagery, and the correlation between acceptance of SIM and the frequency of sexual activities with minors remained statistically significant.

Post hoc power analyses that were conducted using the program G*Power (Faul et al., 2007) indicated that the statistical power for the correlation analyses of this study (assuming *n* = 70; see Table 2) was 13% for detecting a small effect of *r* = 0.1, 80% for detecting a medium effect of *r* = 0.32 and more than 99% for detecting a large effect of *r* = 0.5 (according to Cohen, 1988, 1992), with $\alpha = 0.05$. Thus, there was more than sufficient power (i.e., 80%) at the large effect size level, quite enough power at the medium effect size level and less than sufficient statistical power at the effect size level of less than *r* = 0.32.

The present study also investigated whether acceptance of SIM changed in the course of treatment. Results indicate no difference between before beginning treatment and (partial) completion of treatment. Maybe for a change of acceptance of SIM it would have to be directly targeted in treatment. However, treatment has a particular focus on risk factors (cf. Institute for Sexology and Sexual Medicine of the Charité, 2013; Briken et al., 2018; Netzwerk "Kein Täter werden", 2018) and acceptance of SIM might not have appeared to be a relevant risk factor. Another reason why acceptance of SIM did not change might be that the period under study was not sufficiently long enough to observe a change in acceptance of SIM. Furthermore, insufficient statistical power because of the small sample size in the present study (*n* = 35) may have played a role in limiting the significance of the pre-post comparison conducted. Effect sizes from a study by Engel et al. (2018) with a sample of the Prevention network "Kein Täter werden" were between *d* = –0.14 and *d* = –0.58 for comparisons of treatment group (*n* = 35) before and after therapy regarding several measures. This supports the expectation for medium effects (according to Cohen, 1988, 1992). For the present study, a power analysis using the program G*Power (Faul et al., 2007) indicated that a total sample of 35 participants would be needed to detect a medium effect (*d* = 0.5) with 80% power and $\alpha = 0.05$. This is equivalent to the sample size of the present study.

Limitations and Future Studies

The generalizability of the present results is restricted due to the sample size of only 79 participants in the whole sample and only 35 participants in the sample for pre-post comparison. With

this sample size, especially with regard to pre-post comparison, this exploratory pilot study was underpowered for small effects. Therefore, the results of the present study need to be replicated with studies that include larger samples that would guarantee a sufficient statistical power. Generalizability is also limited because of the particular characteristics and institutional context of the “Kein Täter Werden” network site in Hamburg. Furthermore, 13 men could not be included in the study because they had not provided informed consent. Therefore, these data, and maybe specific characteristics, are not represented in the findings of this study.

Concerning validity, our results are limited because almost only self-report measurements with forced-choice categories were used. Forced-choice categories may simplify answers and/or distort information because of the particular choice sets given. The patients’ self-report was not validated by objective measures. Hence, it cannot be ruled out that an effect of social desirability distorted our data. Only the STABLE-2007 items are assessed by third party. For a part of the patients whose STABLE-2007 date were analyzed the STABLE-2007 was only filled in for a period of a few weeks (for 25 patients more than 6 weeks later) up to 6 months after completion of the initial diagnostic procedure, because the STABLE-2007 was not part of the battery of questionnaires right from the beginning of data collection. It cannot be ruled out that this retrospective completion may have been biased. However, as mentioned above, we assume that no substantial change in dynamic risk of sexual recidivism takes place during this time. Moreover, the self-report questionnaires analyzed in this exploratory pilot study are not validated, yet. Thus, as mentioned before, the findings can only be seen as preliminary results.

Until now, acceptance of SIM and its effects are not well researched, yet. There is a need for a validation study of the IASI rev. Furthermore, at this state of research, case studies and qualitative research would help to understand this construct and its impact on individuals better (see Jones et al., 2020 for qualitative research giving some insights into acceptance of pedophilia as a coping strategy of individuals who identify as pedophilic or hebephilic and do not offend). Quantitative research is needed in order to study how closely acceptance of SIM is related to measures of other constructs like the Unconditional Self-Acceptance Questionnaire (Chamberlain and Haaga, 2001), the Emotional Processing Scale (Baker et al., 2015), and/or the Thought Control Questionnaire (Wells and Davies, 1994). For a broader treatment plan, going beyond directly focusing on the main risk factors, research on the relation of acceptance of SIM to constructs associated with emotional well-being should be conducted, e.g., on how closely it is related to the context of personal suffering, including ambivalent identity experience (Blagden et al., 2018) and stigma-related stress (Jahnke et al., 2015; Wagner et al., 2016; Lievesley et al., 2020; Stelzmann et al., 2020).

Since we solely calculated correlation coefficients, we are not able to make any statement about causal relations. This means, it is not clear whether the acceptance of SIM had an impact on the other variables, or vice versa, or whether and how they interact with each other. A further study should include statistical

analyses which allow the examination of causality (e.g., crossed-lagged panel analyses; Frees, 2004).

The present study focused on the question if acceptance of SIM is related to essential treatment outcomes. The outcome measures of the present study, except of “Frequency of Desire for Sexual Activities with Minors,” mainly focus on the frequency of behavior. Further studies could also include outcome measures that focus on the strength of SIM in itself (see Carvalho et al., 2020 for different measures that are available), thus highlighting that not only behavioral changes are notable treatment goals but also change of SIM in itself, in general or via a partial shift from pedophilic to teleiophilic interests, for example. Accordingly, it would be worth studying if the level of SIM is associated with acceptance of SIM.

With larger samples, in the next stage of research, subgroups of men with SIM should be studied in more detail with regard to acceptance of SIM in order to be able to understand their characteristics and personalities better, differentiate better between them, and adapt treatment accordingly. There might be differences between the subgroups of non-offenders, mixed offenders, hands-on sexual offenders, and offenders without hands-on offenses but consumption of material depicting the sexual exploitation of minors. These subgroups were not differentiated in this study. Previous research indicates that these subgroups are, among other things, distinctive from each other regarding indicators of antisociality (Babchishin et al., 2015), criminal history (Long et al., 2013), offense supportive attitudes (Jahnke et al., 2015), stability of life factors, and substance abuse problems (Ly et al., 2018). Maybe they also differ from each other regarding acceptance of SIM. Previous findings suggest that offenders without hands-on offenses but consumption of material depicting the sexual exploitation of minors have greater levels of SIM than hands-on sexual offenders in the sense of greater sexual deviancy (even if going along with greater barriers to hands-on offending), greater likelihood to have problems with sexual preoccupation and sexual self-regulation (Babchishin et al., 2015), and a stronger diagnostic indicator of pedophilia (Seto et al., 2006). Another subgroup worth studying are webcam child sexual abuse offenders (de Tribolet-Hardy et al., 2020).

Differences in acceptance of SIM between individuals who are attracted to children, individuals who are attracted to adolescents, those who are attracted to both, and those who are also attracted to adults also need to be investigated in greater detail. Last but not least, prior research shows that social factors, such as social support and relationship status, affect self-acceptance (Leavy and Adams, 1986; Vincke and Bolton, 1994; Huang et al., 2020). Thus, they might as well affect acceptance of SIM. Therefore, further research should also examine relationships between social factors, e.g., relationship status and living alone vs. not living alone, acceptance of SIM and the effects on treatment outcomes.

CONCLUSION

The main question of this study was if acceptance of SIM is related to essential treatment outcomes. The findings, on the

one hand, indicate a positive correlation between acceptance of SIM and the use of legal imagery of children. On the other hand, they suggest that acceptance of SIM might be positively correlated with illegal activities, such as the frequency of sexual activities with minors. According to this, more acceptance might reinforce or be reinforced by legal ways of dealing with pedophilic interest, but it might also pave the way for or be increased by an enhancement of illegal activities. Hence, acceptance of SIM should be further investigated before specific recommendations for treatment are made. With our current knowledge, there is a need for individualized treatment plans allowing for a modification of SIM in some patients and, in other patients, for working on acceptance of SIM.

DATA AVAILABILITY STATEMENT

The datasets for this study are not publicly available due to patient confidentiality and participant privacy. The computer code is available on request to the corresponding author.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Ethics Committee of the Chamber of

Psychotherapists Hamburg (09/2019-PTK-HH, 02/2015-PTK-HH). The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

Under the supervision of PB, UL conceptualized the study and was the primary writer of the manuscript. UL and ST prepared the data for analysis. All the authors had full access to all the data in the study and take responsibility for the integrity of the data and the accuracy of data analysis, were involved in developing, editing, reviewing, and providing feedback for this manuscript, and have given approval of the final version to be published.

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REFERENCES

- Ahlers, C. J., Neutze, J., Mundt, I. A., Hupp, E., Konrad, A., Beier, K. M., et al. (2008). Erhebungsinstrumente in der klinischen Sexualforschung und der sexualmedizinischen Praxis – Teil II [Assessment instruments in clinical sexology sexological research – part II]. *Sexuologie* 15, 82–103.
- Andrews, D. A., Bonta, J., and Hoge, R. D. (1990). Classification for effective rehabilitation. *Crim. Justice Behav.* 17, 19–52. doi: 10.1177/0093854890017001004
- Babchishin, K. M., Hanson, R. K., and VanZuylen, H. (2015). Online child pornography offenders are different: A meta-analysis of the characteristics of online and offline sex offenders against children. *Arch. Sex. Behav.* 44, 45–66. doi: 10.1007/s10508-014-0270-x
- Baker, R., Thomas, P., Thomas, S., Santonastaso, M., and Corrigan, E. (2015). *Emotional Processing Scale*. Oxford, UK: Hogrefe.
- Benjamini, Y., and Hochberg, Y. (1995). Controlling the false discovery rate: A practical and powerful approach to multiple testing. *J. R. Stat. Soc. B Stat. Methodol.* 57, 289–300. doi: 10.2307/2346101
- Blagden, N. J., Mann, R., Webster, S., Lee, R., and Williams, F. (2018). “It’s not something I chose you know”: Making sense of pedophiles’ sexual interest in children and the impact on their psychosexual identity. *Sex. Abuse* 30, 728–754. doi: 10.1177/1079063217697132
- Briken, P., Berner, W., Flöter, A., Jückstock, V., and von Franqué, F. (2018). Prävention sexueller Kindesmissbrauchs im Dunkelfeld – das Hamburger Modell [Prevention of child sexual abuse out of the criminal law context – The Hamburg Model]. *Psychother. Psychosom. Med. Psychol.* 68, 142–161. doi: 10.1055/s-0043-121680
- Briken, P., Fedoroff, J. P., and Bradford, J. W. (2014). Why can’t pedophilic disorder remit? *Arch. Sex. Behav.* 43, 1237–1239. doi: 10.1007/s10508-014-0323-1
- Calkins Mercado, C., and Beattley, R. A. (2012). *Is that ‘normal’ Behavior? Judicial Notebook* 43. Available online at: <https://www.apa.org/monitor/2012/12/jn>
- Cantor, J. M. (2018). Can pedophiles change? *Curr. Sex. Health Rep.* 10, 203–206. doi: 10.1007/s11930-018-0165-2
- Cantor, J. M., and Fedoroff, J. P. (2018). Can pedophiles change? Response to opening arguments and conclusions. *Curr. Sex. Health Rep.* 10, 213–220. doi: 10.1007/s11930-018-0167-0
- Carvalho, J., Bradford, J., Murphy, L., Briken, P., and Fedoroff, P. (2020). Measuring pedophilic interests. *J. Sex. Med.* 17, 378–392. doi: 10.1016/j.jsxm.2019.12.008
- Chamberlain, J. M., and Haaga, D. A. F. (2001). Unconditional self-acceptance and responses to negative feedback. *J. Ration. Emot. Cogn. Behav. Ther.* 19, 177–189. doi: 10.1023/A:1011141500670
- Cohen, J. (1988). *Statistical Power Analysis for the Behavioral Sciences*, 2nd Edn. New York: Academic Press.
- Cohen, J. (1992). A power primer. *Psychol. Bull.* 112, 155–159. doi: 10.1037/0033-2909.112.1.155
- de Tribolet-Hardy, F., Hill, A., and Habermeyer, E. (2020). „Webcam child sexual abuse“. Eine neue Facette der Begutachtung von Internetsexualdelinquenz [“Webcam child sexual abuse“. A new facet of the assessment of online sexual delinquency]. *Forens. Psychiat. Psychol. Kriminol.* 14, 259–269. doi: 10.1007/s11757-020-00619-8
- Dombert, B., Schmidt, A. F., Banse, R., Briken, P., Hoyer, J., Neutze, J., et al. (2016). How common is men’s self-reported sexual interest in prepubescent children? *J. Sex. Res.* 53, 214–223. doi: 10.1080/00224499.2015.1020108
- Eher, R., Matthes, A., Schilling, F., Haubner-McLean, T., and Rettenberger, M. (2012). Dynamic risk assessment in sexual offenders using STABLE-2000 and the STABLE-2007: An investigation of predictive and incremental validity. *Sex. Abuse* 24, 5–28. doi: 10.1177/1079063211403164
- Engel, J., Körner, M., Schuhmann, P., Krüger, T. H. C., and Hartmann, U. (2018). Reduction of risk factors for pedophilic sexual offending. *J. Sex. Med.* 15, 1629–1637. doi: 10.1016/j.jsxm.2018.09.001
- Faul, F., Erdfelder, E., Lang, A.-G., and Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behav. Res. Methods* 39, 175–191.

- Fedoroff, J. P. (2018). Can people with pedophilia change? Yes they can! *Curr. Sex. Health Rep.* 10, 207–212. doi: 10.1007/s11930-018-0166-1
- Fedoroff, J. P. (2020). "Pedophilic disorder," in *The Paraphilias. Changing Suits in the Evolution of Sexual Interest Paradigms*, 1 Edn, ed. J. P. Fedoroff (New York: Oxford University Press), 109–160.
- Frees, E. W. (2004). *Longitudinal and panel data: Analysis and applications in the social sciences*. Cambridge, UK: Cambridge University Press.
- Freund, K., and Kuban, M. (1993). Toward a testable developmental model of pedophilia: The development of erotic age preference. *Child Abuse Negl.* 17, 315–324. doi: 10.1016/0145-2134(93)90051-6
- Hanson, G. T., Steffy, R. A., and Gauthier, R. (1993). Long-term recidivism of child molesters. *J. Consult. Clin. Psychol.* 61, 646–652. doi: 10.1037/0022-006X.61.4.646
- Hanson, R. K., Harris, A. J. R., Scott, T. L., and Helmus, L. (2007). *Assessing The Risk of Sexual Offenders on Community Supervision: The Dynamic Supervision Project*. Ottawa: Public Safety Canada.
- Hemmerich, W. (2016). *StatistikGuru: Rechner zur Adjustierung des α -Niveaus [StatistikGuru: Calculator for alpha level adjustment]*. Available online at: <https://statistikguru.de/rechner/adjustierungdes-alphaniveaus.html>
- Huang, Y., Ruibin, W., Wu, J., Yang, Q., Zheng, S., and Wu, K. (2020). Psychological resilience, self-acceptance, perceived social support and their associations with mental health of incarcerated offenders in China. *Asian J. Psychiat.* 52:102166. doi: 10.1016/j.ajp.2020.102166
- Institute for Sexology and Sexual Medicine of the Charité (2013). *BEDIT – The Berlin Dissexuality Therapy Program*. Berlin: Institute for Sexology and Sexual Medicine of the Charité.
- Jahnke, S., Schmidt, A. F., Geradt, M., and Hoyer, J. (2015). Stigma-related stress and its correlates among men with pedophilic sexual interests. *Arch. Sex. Behav.* 44, 2173–2187. doi: 10.1007/s10508-015-0503-7
- Jones, S. J., Ó Ciardha, C., and Elliott, I. A. (2020). Identifying the coping strategies of nonoffending pedophilic and hebephilic individuals from their online forum posts. *Sex. Abuse* 33, 793–815. doi: 10.1177/1079063220965953
- Kim, T. K. (2015). T test as a parametric statistic. *Korean J. Anesthesiol.* 68, 540–546.
- Lampalzer, U., Tozdan, S., von Franqué, F., and Briken, P. (2020). Referral for group or individual treatment? Factors for consideration in the case of self-referred individuals with a sexual interest in minors. *Int. J. Impot. Res.* 33, 348–363. doi: 10.1038/s41443-020-0296-7
- Leavy, R. L., and Adams, E. M. (1986). Feminism as a correlate of self-esteem, self-acceptance, and social support among lesbians. *Psychol. Women Q.* 10, 321–326. doi: 10.1111/j.1471-6402.1986.tb00757.x
- Lehmiller, J. (2019). *Pedophiles Can't be 'Cured,' and It's Dangerous to Suggest They Can*. *Vice*, 25/01/2019. Available online at: https://www.vice.com/en_us/article/mbzj5q/pedophiles-cant-be-cured-and-its-dangerous-to-suggest-they-can
- Li, C. K. (1991). "The main thing is being wanted": Some case studies on adult sexual experience with children. *J. Homosex.* 20, 129–143. doi: 10.1300/J082v20n01_09
- Lievesley, R., Harper, C. A., and Elliott, H. (2020). The internalization of social stigma among minor-attracted persons: Implications for treatment. *Arch. Sex. Behav.* 49, 1291–1304. doi: 10.1007/s10508-019-01569-x
- Long, M. L., Alison, L. A., and McManus, M. A. (2013). Child pornography and likelihood of contact abuse: A comparison between contact child sexual offenders and noncontact offenders. *Sex. Abuse* 25, 370–395. doi: 10.1177/1079063212464398
- Ly, T., Dwyer, R. G., and Fedoroff, J. P. (2018). Characteristics and treatment of internet child pornography offenders. *Behav. Sci. Law* 36, 216–234. doi: 10.1002/bsl.2340
- Marshall, W. L. (2008). Are pedophiles treatable? Evidence from North American studies. *Seksuol. Polska* 6, 39–43.
- Marshall, W. L., Barbaree, H. E., and Eccles, A. (1991). Early onset and deviant sexuality in child molesters. *J. Interpers. Violence* 6, 323–336. doi: 10.1177/088626091006003005
- Marshall, W. L., Marshall, L. E., Serran, G. A., and O'Brien, M. D. (2011). *Rehabilitating sexual offenders*. Washington, DC: American Psychological Association.
- Marshall, W. L., O'Brien, M. D., and Marshall, L. E. (2009). "Modifying sexual preferences," in *Assessment and Treatment of Sex Offenders: A Handbook*, eds A. R. Beech, L. A. Craig, and K. D. Browne (Chichester, UK: Wiley), 311–327.
- Matthes, A., and Rettenberger, M. (2008). *Die Deutsche Version des Stable-2007 [The German version of the STABLE-2007]*. Wien: Institut für Gewaltforschung und Prävention.
- McPhail, I. V. (2018). More on age of onset of attractions and sexual development in pedohebephilic individuals: Response to Tozdan and Briken (2018). *Arch. Sex. Behav.* 47, 2156–2168. doi: 10.1007/s10508-018-1302-8
- Mundt, I. A., Schaefer, G. A., and Ahlers, C. J. (2011). *Inventory zur Akzeptanz der sexuellen Neigung (IASN) [Inventory of the Acceptance of Sexual Inclination (IASI)]*. Berlin: Institute for Sexology and Sexual Medicine of the Charité.
- Netzwerk "Kein Täter werden" (2018). *lieben sie kinder mehr, als ihnen lieb ist? [Do you love children more than you would like?]*. Available online at: <https://www.kein-taeter-werden.de/betroffene/>
- Prentky, R., and Barbaree, H. (2011). Commentary: Hebephilia – a would-be paraphilia caught in the twilight zone between prepubescence and adulthood. *J. Am. Acad. Psychiat. Law* 39, 506–510.
- Rettenberger, M., Matthes, A., Schilling, F., and Eher, R. (2011). Die Validität dynamisch-veränderbarer Risikofaktoren bei der Vorhersage einschlägiger Rückfälle pädosexueller Täter: Eine Studie über Stable-2000 und Stable-2007 [The validity of dynamic and changeable risk factors for the prediction of sexual recidivism in a sample of pedosexual offenders: A study of Stable-2000 and Stable-2007]. *Forens Psychiat. Psychol. Kriminol.* 5, 45–53. doi: 10.1007/s11757-010-0086-z
- Rice, M. E., Quinsey, V. L., and Harris, G. T. (1991). Sexual recidivism among child molesters released from a maximum security psychiatric institution. *J. Consult. Clin. Psychol.* 59, 381–386. doi: 10.1037/0022-006X.59.3.381
- Quayle, E. (2008). The COPINE project. *Ir. Probat. J.* 5, 65–83.
- Schaefer, G. A., and Ahlers, C. J. (2018). "Sexual addiction and paraphilias," in *The Routledge International Handbook of Sexual Addiction*, eds T. Birchard and J. Benfield (London, UK: Routledge/Taylor & Francis Group), 83–93.
- Sea, J., and Beaugard, E. (2018). The hebephiliac: pedophile or teleiophilic? *Int. J. Offender Ther. Comp. Criminol.* 62, 2507–2526. doi: 10.1177/0306624X17723627
- Seto, M. C. (2012). Is pedophilia a sexual orientation? *Arch. Sex. Behav.* 41, 231–236. doi: 10.1007/s10508-011-9882-6
- Seto, M. C. (2017). The puzzle of male chronophilias. *Arch. Sex. Behav.* 46, 3–22. doi: 10.1007/s10508-016-0799-y
- Seto, M. C., Cantor, J. M., and Blanchard, R. (2006). Child pornography offenses are a valid diagnostic indicator of pedophilia. *J. Abnorm. Psychol.* 115, 610–615. doi: 10.1037/0021-843X.115.3.610
- Stelzmann, D., Jahnke, S., and Kuhle, L. F. (2020). Media coverage of pedophilia: Benefits and risks from healthcare practitioners' point of view. *Int. J. Environ. Res. Public Health* 17:5739. doi: 10.3390/ijerph17165739
- Tozdan, S., and Briken, P. (2015a). 'I believe I could, so I did' – a theoretical approach on self-efficacy beliefs to positively influence men with a risk to sexually abuse children. *Aggress Violent Behav.* 25, 104–112. doi: 10.1016/j.avb.2015.07.015
- Tozdan, S., and Briken, P. (2015b). The earlier, the worse? Age of onset of sexual interest in children. *J. Sex. Med.* 12, 1602–1608. doi: 10.1111/jsm.12927
- Tozdan, S., and Briken, P. (2019). Age of onset and its correlates in men with sexual interest in children. *Sex. Med.* 7, 61–71. doi: 10.1016/j.esxm.2018.10.004
- Tozdan, S., Kalt, A., Keller, L. B., and Briken, P. (2018b). Keep faith in yourself! A pilot study on the relevance of specific self-efficacy for modifying sexual interest in children among men with a risk to sexually abuse children. *J. Sex. Marital Ther.* 44, 591–604. doi: 10.1080/0092623X.2018.1437488
- Tozdan, S., Kalt, A., Dekker, A., Keller, L. B., Thiel, S., Müller, J. L., et al. (2018a). Why information matters: Examining the consequences of suggesting that pedophilia is immutable. *Int. J. Offender Ther. Comp. Criminol.* 62, 1241–1261. doi: 10.1177/0306624X16676547
- Upton, G., and Cook, I. (2014). *A Dictionary of Statistics*. Oxford, UK: Oxford University Press.
- Vincke, J., and Bolton, R. (1994). Social support, depression, and self-acceptance among gay men. *Hum. Relat.* 47, 1049–1062. doi: 10.1177/001872679404700902
- Wagner, T., Jahnke, S., Beier, K. M., Hoyer, J., and Scherner, G. (2016). Pädophile Neigungen offenbaren: Stigma-Management bei Patienten

aus dem Berliner Präventionsprojekt Dunkelfeld [Disclosing pedophilic preferences: Stigma management amongst patients from the Berlin prevention project dunkelfeld]. *Z. Sex. Forsch.* 29, 106–130. doi: 10.1055/s-0042-108000

Webb, R. (2018). *A Review of the Risk Posed by Internet Offenders*. Paisley, UK: Risk Management Authority.

Wells, A., and Davies, M. I. (1994). The thought control questionnaire: A measure of individual differences in the control of unwanted thoughts. *Behav. Res. Ther.* 32, 871–878. doi: 10.1016/0005-7967(94)90168-6

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APPENDIXES

APPENDIX 1 | IASI rev (Mundt et al., 2011).

Instruction: In the following you are asked to give some information on how you handle your sexual inclination.

This statement is true. . .	Not at all	Little	Moderately	Fairly	Very much
(1) I forbid myself my sexual fantasies.	1	2	3	4	5
(2) I can enjoy my sexual fantasies without a bad conscience.	1	2	3	4	5
(3) I hate my sexual inclination.	1	2	3	4	5
(4) I cannot accept my sexual inclination.	1	2	3	4	5
(5) My inclination is an integral part of my personality.	1	2	3	4	5
(6) I reject my sexual inclination.	1	2	3	4	5
(7) One must resist disagreeable sexual fantasies.	1	2	3	4	5
(8) I allow myself my sexual fantasies.	1	2	3	4	5
(9) I reject myself because I have this sexual inclination.	1	2	3	4	5
(10) My sexual fantasies have nothing to do with me.	1	2	3	4	5
(11) My sexual fantasies scare me.	1	2	3	4	5
(12) I have no sexual fantasies.	1	2	3	4	5
(13) I am aware of my sexual inclination.	1	2	3	4	5
(14) I like to embellish my sexual fantasies.	1	2	3	4	5
(15) I resist my sexual fantasies.	1	2	3	4	5

APPENDIX 2 | The specific descriptions/questions that the six items represent which assess the frequency of the use of child abuse/exploitation material and frequency of sexual desire/behavior towards children.

(1) Frequency of Use of Legal Imagery of Children	<ul style="list-style-type: none"> How often in the last 6 months did you consume (1) films with, (2) images/photos of lightly dressed children (e.g., in underwear, gym shorts, swimming trunks, leotards, transparent clothing. . .) for (a) masturbation, (b) stimulating pastime? How often in the last 6 months did you consume films with normally dressed children (e.g., children's films, feature films, documentary films. . .) for (a) masturbation, (b) stimulating pastime? How often in the last 6 months did you consume images/photos/portraits of dressed children (e.g., in magazines, on postcards, in illustrated books. . .) for (a) masturbation, (b) stimulating pastime? How often in the last 6 months did you consume imagery of (a) prepubescent, (b) early pubescent children – dressed in non-sexual representations – for masturbation or stimulating pastime? How often in the last 6 months did you consume imagery of (a) prepubescent, (b) early pubescent children – lightly dressed (e.g., in underwear) or naked in non-sexual representations – for masturbation and/or stimulating pastime? In the last 12 months I used media for sexual arousal which depict a child under 14 years of age with a (a) prepubescent, (b) early pubescent, (c) late pubescent body scheme, dressed, lightly dressed (e.g., in underwear) or naked in real non-sexual representations (or natural poses, respectively).
(2) Frequency of Use of Legal Imagery of Adolescents	<ul style="list-style-type: none"> How often in the last 6 months did you consume (1) films with, (2) images/photos of lightly dressed adolescents (e.g., in underwear, gym shorts, swimming trunks, leotards, transparent clothing. . .) for (a) masturbation, (b) stimulating pastime? How often in the last 6 months did you consume films with normally dressed adolescents (e.g., children's films, feature films, documentary films. . .) for (a) masturbation, (b) stimulating pastime? How often in the last 6 months did you consume images/photos/portraits of dressed adolescents (e.g., in magazines, on postcards, in illustrated books. . .) for (a) masturbation, (b) stimulating pastime? How often in the last 6 months did you consume imagery of late pubescent adolescents – dressed in non-sexual representations – for masturbation and/or stimulating pastime? How often in the last 6 months did you consume imagery of late pubescent adolescents – lightly dressed (e.g., in underwear) or naked in non-sexual representations – for masturbation and/or stimulating pastime? In the last 12 months I used media for sexual arousal which depict an adolescent between 14 and 17 years of age, dressed, lightly dressed (e.g., in underwear) or naked in real non-sexual representations (or natural poses, respectively).
(3) Frequency of Use of Illegal Child Sexual Abuse Imagery	<ul style="list-style-type: none"> How often in the last 6 months did you consume (1) films with, (2) images/photos of naked children (e.g., on the beach, bathing, medically examined, or posing in front of a camera) for (a) masturbation, (b) stimulating pastime? How often in the last 6 months did you consume images/photos of children who were dressed up or posed styled up (e.g., made up, in special clothing, school uniforms, sailor suits etc.) for (a) masturbation, (b) stimulating pastime?

(Continued)

APPENDIX 2 | (Continued)

- How often in the last 6 months did you consume (1) films, (2) images/photos with children in which sexual organs (e.g., buttocks, penis, vagina, breasts . . .) can be seen in detail and/or in which a child masturbates for (a) masturbation, (b) stimulating pastime?
 - How often in the last 6 months did you consume (1) films, (2) images photos with children in/on which sexual acts are performed between an adult and a child for (a) masturbation, (b) stimulating pastime?
 - How often in the last 6 months did you consume imagery of (a) prepubescent, (b) early pubescent children – dressed, lightly dressed (e.g., in underwear), or naked in erotic/slinky/provocative poses – for masturbation and/or stimulating pastime?
 - How often in the last 6 months did you consume imagery of (a) prepubescent, (b) early pubescent children which show genital and anal area in detail for masturbation and/or stimulating pastime?
 - How often in the last 6 months did you consume imagery of (a) prepubescent, (b) early pubescent children which show sexual acts between pre-/early pubescent children (touching, masturbation, mutual stimulation, oral/vaginal/anal intercourse) for masturbation and/or stimulating pastime?
 - How often in the last 6 months did you consume imagery of (a) prepubescent, (b) early pubescent children which show sexual acts with an adult (touching, masturbation, mutual stimulation, oral/vaginal/anal intercourse) for masturbation and/or stimulating pastime?
 - In the last 12 months I used media for sexual arousal which depict real children under 14 years of age with a (a) prepubescent, (b) early pubescent, (c) late pubescent body scheme, dressed, lightly dressed (e.g., in underwear) or naked in erotic/slinky/provocative poses.
 - In the last 12 months I used media for sexual arousal which depict real children under 14 years of age with a (a) prepubescent, (b) early pubescent, (c) late pubescent body scheme and show genital and/or anal area in detail or which show sexual acts without adults being involved.
 - In the last 12 months I used media for sexual arousal which depict real children under 14 years of age with a (a) prepubescent, (b) early pubescent, (c) late pubescent body scheme and show sexual acts with adults being involved.
- (4) Frequency of Use of Illegal Adolescent Sexual Abuse Imagery
- How often in the last 6 months did you consume (1) films with, (2) images/photos of naked adolescents (e.g., on the beach, bathing, medically examined, or posing in front of a camera) for (a) masturbation, (b) stimulating pastime?
 - How often in the last 6 months did you consume images/photos of adolescents who were dressed up or posed styled up (e.g., made up, in special clothing, school uniforms, sailor suits etc.) for (a) masturbation, (b) stimulating pastime?
 - How often in the last 6 months did you consume (1) films, (2) images/photos with adolescents in/on which sexual organs (e.g., buttocks, penis, vagina, breasts . . .) can be seen in detail and/or in which an adolescent masturbates for (a) masturbation, (b) stimulating pastime?
 - How often in the last 6 months did you consume (1) films, (2) images/photos with children in/on which sexual acts are performed between an adult and an adolescent for (a) masturbation, (b) stimulating pastime?
 - How often in the last 6 months did you consume imagery of late pubescent adolescents – dressed, lightly dressed (e.g., in underwear), or naked in erotic/slinky/provocative poses for masturbation and/or stimulating pastime?
 - How often in the last 6 months did you consume imagery of late pubescent adolescents which show genital and anal area in detail for masturbation and/or stimulating pastime?
 - How often in the last 6 months did you consume imagery of late pubescent adolescents which show sexual acts between late pubescent adolescents (touching, masturbation, mutual stimulation, oral/vaginal/anal intercourse) for masturbation and/or stimulating pastime?
 - How often in the last 6 months did you consume imagery of late pubescent adolescents which show sexual acts with an adult (touching, masturbation, mutual stimulation, oral/vaginal/anal intercourse) for masturbation and/or stimulating pastime?
 - In the last 12 months I used media for sexual arousal which depict a real adolescent between 14 and 17 years of age, dressed, lightly dressed (e.g., in underwear) or naked in erotic/slinky/provocative poses.
 - In the last 12 months I used media for sexual arousal which depict real adolescents between 14 and 17 years of age and show genital and/or anal area in detail or which show sexual acts without adults being involved.
 - In the last 12 months I used media for sexual arousal which depict real adolescents between 14 and 17 years of age and show sexual acts with adults being involved.
- (5) Frequency of Desire for Sexual Activities with Minors
- How often do you have a desire for sex with intercourse with a child/adolescent?
 - How often do you have a desire for sex without intercourse with a child/adolescent?
 - How often do you have a desire for intimate body contact with a child/adolescent?
 - I had sexual desire (= a state of a strong longing or strong desire which arises in thought, triggered by, for example, certain encounters, pictures, moods or feelings; not to be equated with masturbation or other sexual acts) with regard to persons with a (a) prepubescent, (b) early pubescent, (c) late pubescent, (d) postpubescent body scheme, whether or not an act followed or not.
- (6) Frequency of Sexual Activities with Minors
- How often do you normally have intercourse with a child/adolescent?
 - How often do you normally have sex without intercourse with a child/adolescent?
 - How often do you normally have intimate body contact with a child/adolescent?
 - In the last 12 months I performed sexual acts without penetration with (a) prepubescent, (b) early pubescent children, (c) late pubescent children under 14 years of age, (d) adolescents between 14 and 17 years of age (e.g., observing/photographing/filming in intimate situations or of charges, peeping, sexualized talk, watching porn together, invitation to (mutual) masturbation, (deep) kiss, masturbation in front of a child/adolescent, rubbing, exposing oneself etc.)
 - In the last 12 months I performed sexual acts with penetration with (a) prepubescent, (b) early pubescent children, (c) late pubescent children under 14 years of age, (d) adolescents between 14 and 17 years of age (e.g., intercourse, i.e., oral intercourse, anal intercourse, vaginal intercourse, penetration with finger and/or objects etc.).

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