

Concept Paper Form

Provisional Paper Title: A quantitative investigation of mechanisms underlying the disagreement between prospective and retrospective measures of childhood maltreatment
Proposing Author: Oonagh Coleman
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P.I. Sponsor: Andrea Danese (if the proposing author is a student or colleague of an original PI)
Today's Date: 3/2/2023

Please describe your proposal in 2-3 pages with sufficient detail for helpful review.

Objective of the study:

Child maltreatment has been identified as an important risk factor for poor mental and physical health outcomes, including depression (Brown et al., 1999), behavioural problems (Widom, 1989), psychotic symptoms (Arseneault et al., 2011), and obesity (Danese & Tan, 2014). Child maltreatment can be measured in different ways. In particular, measurement can be classified based on whether information is collected prospectively or retrospectively. Prospective measures are collected while the child is growing up and typically rely on parental or official reports, which capture a third-person perspective. In contrast, retrospective measures are often collected in adulthood and rely on self-reports, which capture the first-person perspective (Danese, 2020). In contrast to previous assumptions, a recent meta-analysis has shown that prospective and retrospective measures identify largely different groups of individuals and cannot therefore be used interchangeably (Baldwin et al., 2019). Whilst the disagreement between prospective and retrospective measures of maltreatment has been established, the sources of this disagreement have not been comprehensively investigated but likely relate to systematic differences in measurement as well as individual differences in memory formation or retrieval and motivational factors that influence disclosure (Danese, 2020).

In the proposed study, we aim to comprehensively test for the first time the associations of psycho-social characteristics related to memory and motivational factors with measurement disagreement. We have selected key psycho-social variables through a conceptual review and qualitative research in the E-Risk Study that are currently being finalised (Coleman et al.), as summarised below.

Personality

Personality has been found to affect agreement between prospective and retrospective measures of maltreatment (Engelhard et al., 2008; Reuben et al., 2016). For example, individuals high in neuroticism self-reported more Adverse Childhood Experiences (ACEs) than had been prospectively measured in a longitudinal study, whilst those high in agreeableness recalled fewer ACEs than prospectively reported (Reuben et al., 2016). Neuroticism has been associated with an increased likelihood to subjectively experience and interpret a negative event as threatening and traumatic (Weinberg & Gil, 2016), and has also been associated with negative recall bias after controlling for the effects of depression (Mayo, 1983; Safer et al., 2002). As such, personality might affect agreement by influencing both the way an experience is appraised (and therefore encoded into memory) and also the ease with which an individual can retrieve a negative or stressful memory.

Psychopathology

The presence of depression might affect the retrieval and accuracy of a memory, therefore leading to report disagreement. The mood congruency model states that negatively toned memories are more easily and frequently retrieved when an individual is in a more negative mood (Raphael & Cloitre, 1994). For example, a meta-analysis found that depressed individuals can recall up to 10% more negative than positive material in comparison to non-depressed individuals (Matt et al., 1992). Additionally, a memory may be negatively distorted by emotion and cognitive processes during retrieval (Cohen et al., 1988; Schacter, 1996), leading to report discrepancies (e.g., Colman et al., 2016).

Longitudinal studies have also found that individuals with Post-Traumatic Stress Disorder (PTSD) tend to show increases in the frequency or severity of reports of traumatic events in comparison to individuals without PTSD, who tend to remember events as less disturbing over time (Dekel & Bonanno, 2013; Engelhard et al., 2008; King et al., 2000; Mollica et al., 2007; Roemer et al., 1998; Schwarz et al., 1993). Excessive rehearsal, for example linked to re-living symptoms or nightmares in PTSD, may progressively amplify traumatic memories by adding new real or imaginary details to the original memory (Schacter, 1996), distorting memories and therefore contributing to measurement disagreement.

Generalised anxiety disorder (GAD) is characterised by a repetitive thinking style (Borkovec & Inz, 1990) which might make rehearsal of negative memories more likely, therefore maintaining and strengthening the memory over time and increasing the likelihood of retrospective reports of maltreatment.

Finally, research suggests an association between psychosis and source monitoring errors (Damiani et al., 2022; Henquet et al., 2005; Moritz et al., 2003), potentially contributing to measurement disagreement through the creation of false memories that are wrongly attributed to actual experiences (McKenzie & Eichenbaum, 2011; Schacter & Loftus, 2013).

Autism Spectrum Disorder

Individuals with Autistic Spectrum Disorder (ASD) report a far broader range of life experiences as traumatic in comparison to neurotypical individuals (Rumball et al., 2020), and genetic liability for ASD in the population is associated with greater prevalence of self-reports of childhood trauma (Peel et al., 2022). Differences in social cognition related to ASD might therefore influence the subjective appraisal and encoding of events and therefore affect reporting.

Executive Function

It has been hypothesised that cognition and executive control might play a role in an

individual's ability to successfully avoid retrieval of unpleasant or distressing memories (Anderson & Hulbert, 2021) therefore possibly influencing retrospective reporting. Studies using the Think/No-Think paradigm, in which participants are asked to repeatedly recall or suppress learned word pairings (Anderson & Green, 2001), showed that certain individuals can successfully suppress unwanted memories with no rebound effect, leading to forgetting over time (Anderson & Hulbert, 2021; Küpper et al., 2014; Wimber et al., 2015). Such suppression-induced forgetting is more common in individuals with good executive function (Anderson & Hanslmayr, 2014; Levy & Anderson, 2008), suggesting that the ability to avoid recall of distressing memories is influenced by pre-existing differences in executive control, which might account for measure disagreement.

Age at abuse onset

Developmental factors, such as the age at which an event occurs, can affect memory encoding. Research indicates that adult memories of events occurring before three years of age are rare (Pillemer & White, 1989). It has been found that older age at the time when abuse occurred is associated with more detailed and complete recollections about the abuse, and lower likelihood of failure to report the experience (Greenhoot et al., 2005). Also, young children often don't have the contextual understanding to realise that they are being exposed to something wrong (Stige et al., 2020) and might also lack the capacity to verbalise what they have experienced (Halvorsen et al., 2020). Failure to conceptualise an experience as maltreatment due to young age may lead to underreporting.

Sex

Underreporting has been identified as a significant problem among boys, with research suggesting that boys are less likely and more hesitant to disclose abuse than girls (Finkelhor et al., 1990; Lynch et al., 1993; Violato & Genuis, 1993).

Identity of perpetrator

It has been found that children abused by a close family member are less likely to report abuse than those abused by a stranger (Arata, 1998; Berliner & Conte, 1990; DiPietro et al., 1997; Goodman-Brown et al., 2003).

Quality of parent-child relationship and parental monitoring

Detection of maltreatment by prospective measures at least partly relies on a child's motivation to reveal the abuse to caregivers or other significant adults (e.g., teachers, doctors, psychologists) and, thus, on the quality and openness of those relationships (e.g., Bottoms et al., 2002; Frijns et al., 2005; Jensen et al., 2005; Lawson & Chaffin, 1992). Factors related to better quality of parent-child relationships predict less secrecy and more disclosure from the child across a variety of domains (Smetana et al., 2006).

External factors influencing appraisal

External factors may contribute to appraisal and formation of a memory for childhood maltreatment. The presence of supportive social relationships within and outside the family might reduce the likelihood that a child experiences and interprets a particular event as threatening or adverse (Smith & Pollak, 2021) because of the stress-buffering influence of social support (Cohen & Wills, 1985). Also, family or neighbourhood environment characterised by violence or neglect, might lead to normalisation of such experiences and

reduced self-reports (Berger et al., 1988; Kruttschnitt & Dornfeld, 1992; Wekerle et al., 2001).

Validity of reports

Individuals may intentionally withhold or fabricate information about abuse for a number of reasons, ranging from withholding due fear of consequences (Berliner & Conte, 1990), to exaggeration in order to obtain sympathy (Engle & O’Donohue, 2012). In each phase of the E-Risk study, Research Workers were asked to rate whether they felt that the information provided by the interviewee was valid. Invalid reports might explain under or over-reporting across phases.

Data analysis methods:

Participants will be categorised according to the extent to which their prospective and retrospective reports of maltreatment differ, using a continuous measure of discrepancy to increase statistical power. Cumulative maltreatment scores for both prospective and retrospective measures of maltreatment will be used ranging from 0-4, as calculated previously by Newbury et al (2018). Discordance will be quantified by subtracting each participant’s prospective cumulative maltreatment score from their retrospective cumulative maltreatment score to create a measure of directional divergence.

We will use univariate analysis to examine the association between the continuous maltreatment discrepancy score and all variables included. Multivariate analysis will be run for any variables found to be significantly associated with measure disagreement in order to ascertain the independent effects of these variables on discordance. Multiple testing corrections will be applied across models. Additionally, sensitivity analysis grouping by type of maltreatment may be conducted depending on sample sizes and effect sizes.

Variables needed at which ages:

FAMILYID	Unique family identifier
ATWINID	Twin A ID
BTWINID	Twin B ID
RORDERP5	Random twin order
SAMPSEX	Sex of twins
ZYGOSITY	Zygoty
SESWQ35	Social class composite
Personality:	
BFI0C01E18	Openness to experience subscale (CoInf1) – P18
BFI0C01E18	Conscientiousness subscale (CoInf1) – P18 – interviewer
BFI0C01E18	Extroversion subscale (CoInf1) – P18 – interviewer
BFI0C01E18	Agreeableness subscale (CoInf1) – P18 – interviewer
BFI0C01E18	Neuroticism subscale (CoInf1) – P18 – interviewer
BFI0C02E18	Openness to experience subscale (CoInf2) – P18
BFI0C02E18	Conscientiousness subscale (CoInf2) – P18
BFI0C02E18	Extroversion subscale (CoInf2) – P18

BFIACO2E18	Agreeableness subscale (CoInf2) - P18
BFINCO2E18	Neuroticism subscale (CoInf2) - P18
Depression:	
DXMDEE18	Major depressive episode, dsm4 - P18 - elder
MDESXE18	MDE - symptom scale - P18 - elder
Anxiety:	
DXGADE18	Generalised anxiety disorder, dsm4 - P18 - elder
GADSXE18	GAD - symptom scale - P18 - elder
PTSD:	
DXPTSDCUE18	PTSD current dx, DSM-IV - P18 - elder
DXPTSDLFE18	PTSD lifetime dx, DSM-IV - P18 - elder
PTSD_C_E18	PTSD - avoidance or numbing - P18 - elder
PTSD_B_E18	PTSD - reexperience the event - P18 - elder
PTSD_D_E18	PTSD - increased arousal - P18 - elder
PTSDSCALE_E18	From Caspi 2020 concept paper on p-factor
Psychosis:	
PSYSYMP01e18	Age-18 adolescent psychotic symptoms - elder
PSYEXPE18	Age-18 adolescent psychotic experiences scale - elder
PSYEXPCE18	Psychotic experiences (cat) - P18 - elder
ASD:	
CAST score	CAST - subset of 1510 participants w. CAST data at phase 8, 9 or 12
Cognition:	
RVPAPRE18	RVP A-prime - P18 - elder
RVPTFACE18	RVP total false alarms (reverse)- P18 - elder
SWMSTAE18	SWM Strategy (reverse) - P18 - elder
SWMTEAE18	SWM Total errors (reverse) - P18 - elder
SSPSPLE18	SSP Span length - P18 - elder
SSPRSLE18	SSP Span length (reverse) - P18 - elder
Social support:	
SSUPPORTE18	Social support scale - P18 - elder
SOCISOE18	Social isolation scale - P18 - elder
LONELYE18	Loneliness scale - P18 - elder
Parental monitoring:	
KNOWEM12	Parental monitoring knowledge subscale - parent - P12 - Elder
KNOWEC12	Parental monitoring knowledge subscale - self - P12 - elder
ADULTEC12	Adult involvement - elder

Violence within family	
ExpV_DV510	Exposure to domestic violence, 5-10
Neighbourhood:	
NCRIMM5	Neighbourhood personal victimization
STR06EC12	Twin's perception of neighborhood safety
Abuse characteristics:	
PHYSICALE512	Physical abuse 5-12
SEXUALE512	Sexual abuse 5-12
EABUSEE512	Emotional abuse/neglect 5-12
PNEGLECTE512	Physical neglect 5-12
PABSEVTYE12	Severity of physical abuse by 12
SASEVTYE12	Severity of sexual abuse by 12
EANSEVE12	Severity of emotional abuse/neglect by 12
PNSEVERITYE12	Severity of physical neglect by 12
MALPROSPE12	Prospectively reported maltreatment count 5-12 (Newbury et al., 2018)
CTQPACCE18	Physical abuse CTQ - P18 - elder
CTQPNCCE18	Physical neglect CTQ - P18 - elder
CTQENCCE18	Emotional neglect CTQ - P18 - elder
CTQEACCE18	Emotional abuse CTQ - P18 - elder
CTQSACCE18	Sexual abuse CTQ - P18 - elder
Lseantqe18	Combined emotional abuse and neglect CTQ - P18 - elder
MALRETROE18	Retrospectively reported maltreatment count (Newbury et al., 2018)
SAAGEE12	Sexual abuse age of onset 5-12
PABAGEE12	Physical abuse age of onset 5-12
SAPERPE12	Sexual abuse perpetrator 5-12
PABPERPE12	Physical abuse perpetrator 5 - 12
Validity:	
BP10M	Do you feel that the information provided by the interviewee was valid - P5
BP10M7	Do you feel that the information provided by the interviewee was valid - P7
BP10M10	Do you feel that the information provided by the interviewee was valid - P10
BP10M12	Do you feel that the information provided by the interviewee was valid - P12
BP11 (item level)	Do you feel that the information provided by the twin was valid - P18
VAL2 (item level)	Was another person present during any part of the assessment - e.g., listening or taking part in the interview - P18

Significance of the Study (for theory, research methods or clinical practice):

These analyses will have implications for research methods and clinical practice.

With regard to research methods, exploring predictors of measurement disagreement will help explain why prospective and retrospective measures identify different groups of individuals and therefore clarify the underlying constructs that each of these measurement types assesses. It might also point to ways in which the measurement of maltreatment can be improved in research so that the different types of measurements used are better suited to the constructs they are measuring.

With regard to clinical practice, research has found that risk of psychopathology is minimal in individuals with prospective measures of maltreatment but no corresponding retrospective reports, while the risk linked to retrospective reports is high, whether or not this report is consistent with prospective measures (Danese et al., 2020; Newbury et al., 2018; Reuben et al., 2016; Shaffer et al., 2008). This suggests that it is specifically the retrospective recall of child maltreatment that drives the link with psychopathology, rather than the exposure event alone (Danese et al., 2020). Because of the different risk for psychopathology in the groups identified by each measure, better understanding of the sources of measure disagreement may also identify mechanisms that protect against or increase vulnerability towards psychopathology. This, in turn, could point to modifiable targets for the development of new psychological interventions.

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Data Security Agreement

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Proposing Author: Oonagh Coleman
Today's Date: 3/2/2023

<input checked="" type="checkbox"/>	I am current on Human Subjects Training (CITI (www.citiprogram.org) or equivalent)
<input checked="" type="checkbox"/>	My project is covered by the Duke ethics committee OR I have /will obtain ethical approval from my home institution.
<input checked="" type="checkbox"/>	I will treat all data as "restricted" and store in a secure fashion. My computer or laptop is: a) encrypted (recommended programs are FileVault2 for Macs, and Bitlocker for Windows machines) b) password-protected c) configured to lock-out after 15 minutes of inactivity AND d) has an antivirus client installed as well as being patched regularly.
<input checked="" type="checkbox"/>	I will not "sync" the data to a mobile device.
<input checked="" type="checkbox"/>	In the event that my laptop with data on it is lost, stolen or hacked, I will immediately contact Moffitt or Caspi.
<input checked="" type="checkbox"/>	I will not share the data with anyone, including my students or other collaborators not specifically listed on this concept paper.
<input checked="" type="checkbox"/>	I will not post data online or submit the data file to a journal for them to post. <i>Some journals are now requesting the data file as part of the manuscript submission process. Study participants have not given informed consent for unrestricted open access, so we have a managed-access process. Speak to Temi or Avshalom for strategies for achieving compliance with data-sharing policies of journals.</i>
<input checked="" type="checkbox"/>	I will delete all data files from my computer after the project is complete. Collaborators and trainees may not take a data file away from the office. This data remains the property of the Study and cannot be used for further analyses without an approved concept paper for new analyses.
<input checked="" type="checkbox"/>	I have read the Data Use Guidelines and agree to follow the instructions.

Signature: Oonagh Coleman