

**ENVIRONMENTAL-RISK (E-RISK) LONGITUDINAL TWIN STUDY
CONCEPT PAPER FORM**

Proposing Author: Timothy Matthews

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Sponsoring Investigator (if the proposing author is a student, a post-doc or a colleague):

Proposed co-authors: E-Risk co-investigators

Provisional Paper Title: Childhood victimisation and feelings of loneliness in young adulthood: a longitudinal cohort study

Date: 22 October 2018

Objective of the study and its significance:

Being victimized by another person early in life is a potent risk factor for subsequent psychopathology (Arseneault, 2018; Norman et al, 2012). It could also have long-lasting implications for the formation, and perceived quality, of interpersonal relationships. Previous research has indicated that children who are bullied in their school years are at increased risk of feeling lonely in young adulthood (Matthews et al, 2018). Chronic or severe bullying can leave lasting marks on mental health, many years after the bullying has ceased (Copeland et al, 2013; Takizawa et al, 2014). It may similarly impact individuals' vulnerability to loneliness in adulthood; for example, via diminished self-esteem or heightened social anxiety (Pavri, 2015).

It is unclear whether the association between bullying and loneliness generalizes to other forms of victimisation, which could influence loneliness via other pathways. For instance, emotional forms of victimisation (abuse or neglect) by an adult could frustrate children's attachment needs, with subsequent difficulties forming intimate attachments later in life. Being physically harmed by an adult could instill beliefs that the world is unsafe, leading to guarded and distrustful encounters in adulthood. Victims of sexual assault may feel unable to disclose their experiences, or that they are not believed or understood by others. All such possibilities could be reflected in elevated feelings of loneliness. Moreover, exposure to multiple forms of victimisation could predict loneliness in a dose-response manner, as has been observed for other mental and physical health outcomes (Felitti et al, 1998).

Though loneliness is hypothesised here to be an outcome of victimisation, an alternative possibility is that lonely children are seen as easy targets, and that this is the reason they are more likely to be victimized. If this were the case, associations between childhood victimisation and adult loneliness could simply reflect the continuity of pre-existing loneliness in childhood. Longitudinal research with robust, detailed measures is needed to determine the direction and specificity of the association between victimisation and loneliness. To date, such research is lacking in the literature.

Variation in loneliness is partially explained by genetic influences (Matthews et al, 2016), which further impedes causal hypotheses about the effects of victimisation, as the association may be genetically confounded. For obvious ethical reasons, this challenge cannot be overcome through traditional experimental methods. However, analysis of monozygotic twins discordant for exposure can allow genetic effects to be held constant by design; constituting a 'natural experiment'. This method has previously been used to show an environmental effect of victimisation on mental health problems (Arseneault et al, 2008). However, it has yet to be applied in the context of loneliness.

The aim of this study will be to compare, side-by-side, the extent to which different forms of victimisation in

childhood predict loneliness in young adulthood, over and above pre-existing feelings of loneliness. Using a genetically-sensitive study design, I will also determine whether victimisation is an environmental risk factor for loneliness, over and above the effects of genetic confounding.

Statistical analyses:

Cross-sectional analyses:

As a first step, I will examine concurrent associations between different forms of victimisation and loneliness, first in childhood and second in young adulthood.

Longitudinal analyses:

I will first regress age-18 loneliness on age 5-12 polyvictimisation, to establish whether childhood victimisation in general is associated with adult loneliness. After running the bivariate model, I will control first for prior (age 12) loneliness, and second for adolescent polyvictimisation, in order to determine whether childhood victimisation predicts increases in loneliness from childhood to adulthood. I will also control for depression, anxiety and neuroticism, which are likely to confound the associations. If the association between childhood polyvictimisation and young adult loneliness survives these controls, I will repeat these analysis with specific types of childhood victimisation as the independent variable: (1) emotional abuse/neglect, (2) physical abuse, (3) physical neglect, (4) peer victimisation, (5) sexual abuse, and (6) family violence.

Co-twin control analyses:

Of the 6 types of victimisation examined, those that are significantly associated with loneliness will be examined further using by looking at twin pairs discordant for the exposure (sample size permitting). Firstly in the full sample, and secondly in monozygotic twins only, I will test whether the victimized twins in discordant pairs are lonelier than their non-victimised co-twins, indicating that the victimisation exposure is an environmental risk factor for loneliness.

Gender differences:

I will test for gender interactions in all analyses, and where such interactions are detected, examine the associations stratified by gender.

Variables Needed at Which Ages (names and labels):

Study: E-Risk

Age 5:

FAMILYID Family ID
ATWINID Twin1 ID
BTWINID Twin2 ID
RORDERP5 Random order
SAMPSEX Sex
ZYGOSITY Zygosity
SESWQ35 Social Class Composite

Age 10:

ExpV_DV510 'exposure to DV, 5 to 10, 012

Age 12:

DP1E12 thru DP26E12 CDI component items (Elder)
DP1Y12 thru DP26Y12 CDI component items (Younger)

POLYVE512 Extent of Polyvictim, 5-12, E-Twin
POLYVY512 Extent of Polyvictim, 5-12, E-Twin

EANEVIDE12 Emotional abuse/neglect of Elder twin, reported by Mum or RW, thru age 12, 2014
EANEVIDY12 Emotional abuse/neglect of Younger twin, reported by Mum or RW, thru age 12, 2014
EANSEVE12 Severity of Emotional abuse/neglect of Elder twin, thru age 12, 2014
EANSEVY12 Severity of Emotional abuse/neglect of Younger twin, thru age 12, 2014

PABEVIDE12 Physical Abuse of Elder twin, reported by Mum, thru age 12, 2014
PABEVIDY12 Physical Abuse of Younger twin, reported by Mum, thru age 12, 2014
PABSEVTYE12 Physical abuse by 12, severity, Elder
PABSEVTTY12 Physical abuse by 12, severity, Younger

PNEVIDE12 Physical Neglect of Elder twin, reported by Mum or RW, thru age 12, 2014
PNEVIDY12 Physical Neglect of Younger twin, reported by Mum or RW, thru age 12, 2014
PNSEVERTYE12 Physical neglect by 12, severity, Elder
PNSEVERTYY12 Physical neglect by 12, severity, Younger

SAEVIDE12 Sexual Abuse of Elder twin, reported by Mum, thru age 12, 2014
SAEVIDY12 Sexual Abuse of Younger twin, reported by Mum, thru age 12, 2014
SASEVTYE12 Sexual abuse by 12, severity, Elder
SASEVTTY12 Sexual abuse by 12, severity, Younger

BULLSEVE12 Bullying victim to Age 12 – Elder
BULLSEVY12 Bullying victim to Age 12 - Younger

Age 18:

VCTZCONCE18 Conventional victimisation severity (3 cat) - P18 - Elder
VCTZCONCY18 Conventional victimisation severity (3 cat) - P18 – Younger

VCTZMALCE18 Maltreatment victimisation severity (3 cat) - P18 - Elder
VCTZMALCY18 Maltreatment victimisation severity (3 cat) - P18 - Younger

VCTZPERCE18 Peer victimisation severity (3 cat) - P18 - Elder
VCTZPERCY18 Peer victimisation severity (3 cat) - P18 - Younger

VCTZSEXCE18 Sexual victimisation severity (3 cat) - P18 - Elder
VCTZSEXC18 Sexual victimisation severity (3 cat) - P18 - Younger

VCTZFAMCE18 Family victimisation severity (3 cat) - P18 - Elder
VCTZFAMCY18 Family victimisation severity (3 cat) - P18 - Younger

VCTZINTCE18 Internet victimisation severity (3 cat) - P18 - Elder
VCTZINTCY18 Internet victimisation severity (3 cat) - P18 - Younger

VCTZNEGCE18 Neglect victimisation severity (3 cat) - P18 - Elder
VCTZNEGCY18 Neglect victimisation severity (3 cat) - P18 - Younger

VCTZVIOLCE18 Overall violence severity (3 cat) - P18 – Elder
VCTZVIOLCY18 Overall violence severity (3 cat) - P18 - Younger

POLYVCTZCE18 Poly-victimisation 4 cat (0,1,2,3+) - P18 - Elder
POLYVCTZCY18 Poly-victimisation 4 cat (0,1,2,3+) - P18 - Younger

MDESXE18 MDE - Symptom scale - P18 - Elder
MDESXY18 MDE - Symptom scale - P18 - Younger

GADSXE18 GAD - Symptom scale - P18 - Elder
GADSXY18 GAD - Symptom scale - P18 - Younger

LONELYE18 Loneliness scale - P18 - Elder
LONELY18 Loneliness scale - P18 - Younger

BFINE18 Neuroticism - P18 – Elder
BFINY18 Neuroticism - P18 - Elder

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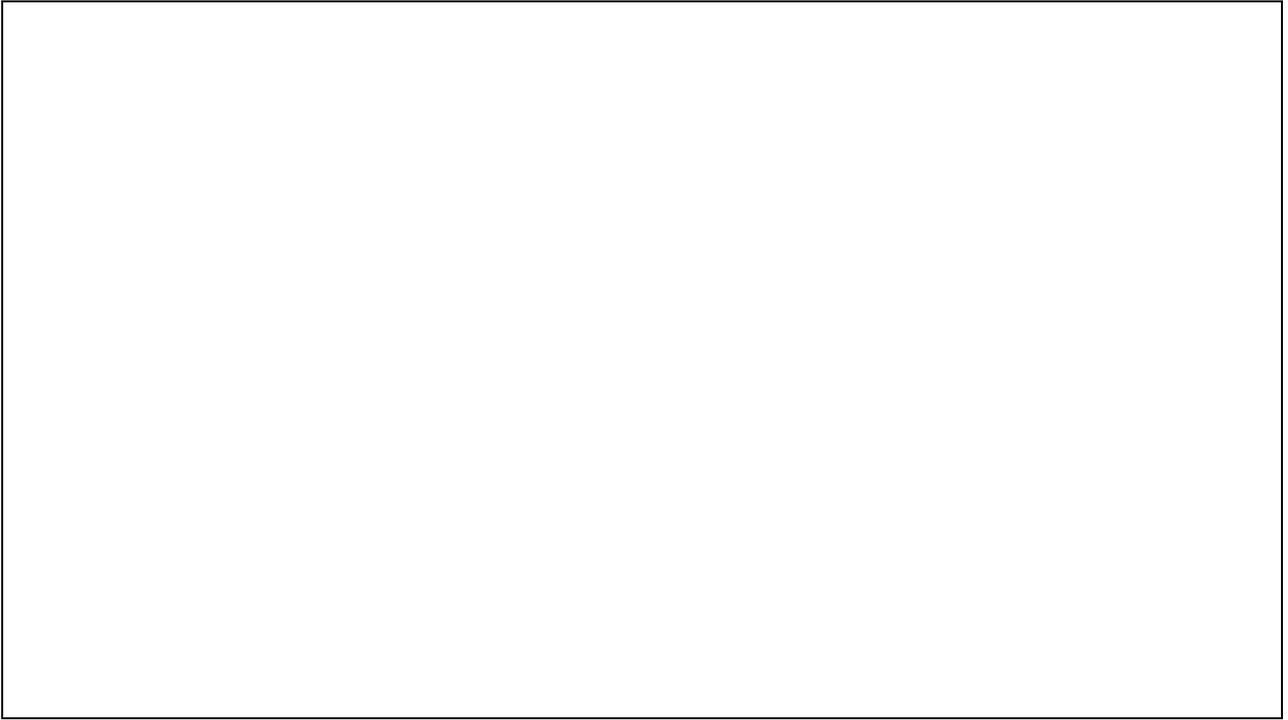
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Data Security Agreement

Provisional Paper Title	Childhood victimisation and feelings of loneliness in young adulthood: a longitudinal cohort study
Proposing Author	Timothy Matthews
Today's Date	22 October 2018

Please keep one copy for your records

(Please initial your agreement)

- TM I am familiar with the King's College London research ethics guidelines (<https://www.kcl.ac.uk/innovation/research/support/ethics/about/index.aspx>) and the MRC good research practice guidelines (<https://www.mrc.ac.uk/research/policies-and-guidance-for-researchers/good-research-practice/>).
- TM My project has ethical approval from my institution.
- TM I am familiar with the EU General Data Protection Regulation (<https://mrc.ukri.org/documents/pdf/gdpr-guidance-note-3-consent-in-research-and-confidentiality/>), and will use the data in a manner compliant with its requirements.
- TM My computer is (a) encrypted at the hard drive level, (b) password-protected, (c) configured to lock after 15 minutes of inactivity, AND (d) has an antivirus client which is updated regularly.
- TM I will treat all data as "restricted" and store in a secure fashion.
- TM I will not share the data with anyone, including students or other collaborators not specifically listed on this concept paper.
- TM I will not merge data from different files or sources, except where approval has been given by the PI.
- TM I will not post data online or submit the data file to a journal for them to post. Some journals are now requesting the data file as part of the manuscript submission process. The E-Risk Study cannot be shared because the Study Members have not given informed consent for unrestricted open access. Speak to the study PI for strategies for dealing with data sharing requests from Journals.
- TM Before submitting my paper to a journal, I will submit my draft manuscript and scripts for data checking, and my draft manuscript for co-author mock review, allowing three weeks.
- TM I will submit analysis scripts and new variable documentation to project data manager after the manuscript gets accepted for publication.
- TM I will delete the data after the project is complete.
- n/a **For projects using location data:** I will ensure geographical location information, including postcodes or geographical coordinates for the E-Risk study member's homes or schools, is never combined or stored with any other E-Risk data (family or twin-level data)
- n/a **For projects using genomic data:** I will only use the SNP and/or 450K data in conjunction with the phenotypes that have been approved for use in this project at the concept paper stage.

Signature:



CONCEPT PAPER RESPONSE FORM

A. To be completed by the proposing author

Proposing Author: Timothy Matthews

TM I have read the E-Risk data-sharing policy guidelines and agree to follow them

Provisional Paper Title: Childhood victimisation and feelings of loneliness in young adulthood: a longitudinal cohort study

Potential co-authors: E-Risk co-investigators

Potential Journals: JCPP, Dev Psychopathol

Intended Submission Date (month/year): Mid-2019

Please keep one copy for your records and return one to Louise (louise.arseneault@kcl.ac.uk)

B. To be completed by potential co-authors:

xxx Approved Not Approved Let's discuss, I have concerns

Comments: the article by Jon Schaefer et al on victimisation and age 18 mental health outcomes in E-risk isn't mentioned in this CP, but it is an important aspect of the premise of this new project, and also it can serve as a good template for the new project's analyses.

Please check your contribution(s) for authorship:

- Conceptualizing and designing the longitudinal study
- Conceptualizing and collecting one or more variables
- Data collection
- Conceptualizing and designing this specific paper project
- Statistical analyses
- Writing
- Reviewing manuscript drafts
- Final approval before submission for publication
- Acknowledgment only, I will not be a co-author

Signature:Temi.....