

**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: What does loneliness look like? A quantitative and qualitative study of how lonely people are perceived by others

Date: 22 October 2018

Objective of the study and its significance:

According to a hypothesis based on evolutionary theory (Cacioppo et al, 2006), loneliness is a vestigial 'survival' response to perceived social isolation. The premise of this model is that being without close allies would have placed human ancestors at greater risk of predation, starvation, and failure to raise healthy offspring. The postulated adaptive purpose of loneliness, therefore, is to prime individuals to cope with a potentially hostile environment while spurring them to re-integrate with the social group.

Consistent with this, loneliness is accompanied by changes in cognition that include an elevated vigilance for threat and reduced trust of others (Cacioppo & Hawkley, 2009; Rotenberg, 1994). Although this may help lonely individuals to avoid those with hostile intent, it can also manifest in maladaptive behaviours in non-hostile situations. Specifically, it can lead to guarded and difficult interactions with others, which could unintentionally bias those people's impressions of lonely individuals in a negative manner. Consequently, for some individuals the experience of loneliness can become a feedback loop that persists over time (Qualter et al, 2015).

Preliminary analyses in the E-Risk dataset indicate that independent informants rated lonely individuals' personality and behavior more negatively on average, compared to non-lonely individuals. Specifically, they rated lonelier individuals lower on a 'likeable-prosocial' dimension, and higher on a 'suspicious-hostile' dimension. This was true both of informants who had met the participant for the first time (interviewers), and people who knew them well (parents and siblings). This implies that lonely individuals behave in a manner that negatively skews other people's appraisals of them.

However, this association may leave (at best) an incomplete, or (at worst) misleading picture of how people's perceptions of lonely individuals are shaped. In particular, it should not be taken to imply that lonely individuals are to blame for their difficulties with social relationships. There may be many contextual factors that shape how loneliness is externalised, low self-esteem, difficulties with education or employment, low self-esteem, social skills, lack of support, difficulties within the family, and stigma (DiTommaso et al, 2003; Matthews et al, 2018; Rotenberg & MacKie, 1999). One way to explore this is by using qualitative methods to explore informants' observations in richer detail.

At the age 18 assessment, fieldworkers were instructed to take comprehensive notes throughout the interview. The specific data of interest in this project is the "coder impressions" sections, in which interviewers are instructed to write freely about their impressions of participants. This was completed immediately after the end of the interview as possible, to maximise recall accuracy, and interviewers were trained to make careful observations and record as much detail as possible.

In the initial months of data collection, the interview notes were reviewed by clinician Dr. Ryu Takizawa to

evaluate their thoroughness. The quality of notes was rated “Very Good” or “Excellent” for all field workers. This rich source of data will provide insight into the characteristics and circumstances of lonely individuals that cannot be captured by statistical methods alone.

Statistical analyses:

(1) Quantitative analyses

This step consists of analyses conducted for a previous paper (Matthews et al, 2018), which were ultimately excluded from the manuscript for brevity.

Interviewer and co-informant (parent and sibling) ratings of loneliness at age 18 were derived using items from the coder impressions and co-informant questionnaires, respectively. The correlations between these ratings and self-reported loneliness will be presented to show that individuals’ feelings of loneliness are visible to others.

Using factor analysis of other items in the coder impressions/informant questionnaire, informant ratings of two dimensions of personality and behavior were derived: “likeable-prosocial” (negatively correlated with loneliness) and “suspicious-hostile” (positively associated with loneliness). These associations will be presented to show that lonely individuals are more likely to be perceived negatively by others.

(2) Qualitative analyses

In the E-Risk age-18 data, 24 individuals scored 8 on the loneliness scale (the highest possible score), 40 scored 7, 44 scored 6. These 108 individuals represent the loneliest 5% of the cohort, a proportion that corresponds to the number of individuals endorsing feelings of loneliness “often” at the item level. These cases will be selected as the sub-sample for this analysis.

Using the text notes from the coder impressions section of the interview, I will use thematic analysis to examine interviewers’ perceptions of lonely individuals in more detail. This will be done as per the procedure recommended by Braun and Clarke (2006), specifically: (1) reading the data and noting initial ideas, (2) generating a coding scheme, (3) identifying themes, (4) reviewing themes and producing a thematic map, (5) defining and naming themes, (6) writing up results with quoted extracts to support the discussion.

Variables Needed at Which Ages (names and labels):

Study: E-Risk

Age 18:

LONELYE18 Loneliness

Coder Impressions

BP75 Has lots of common sense

BP76 Is a leader

BP78 Shows initiative

BP79 Good sense of humour

BP80 A good citizen

BP81 Hot temper, gets angry

BP82 Thinks others out to get them

BP83 Gets jealous

BP84 Blames others for own problems

BP85 Suspicious of other people

BP86 Trouble making friends

BP87 Feels no one cares for them

BP88 Seems lonely

BP89 Unreasonable fears or worries

Co-informant questionnaire (both parent and sibling):

INF32 Has lots of common sense

INF33 Is a leader

INF35 Shows initiative

INF36 Good sense of humour

INF37 A good citizen

INF42 Hot temper, gets angry

INF44 Thinks others out to get them

INF45 Gets jealous

INF46 Blames others for own problems

INF48 Suspicious of other people

INF49 Trouble making friends

INF50 Feels no one cares for them

INF51 Seems lonely

INF53 Unreasonable fears or worries

Booklet text notes

References cited:

Braun, V. & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77-101.

Cacioppo, J. T. & Hawkley, L. C. (2009). Perceived social isolation and cognition. *Trends in Cognitive Sciences*, 13(10), 447-54.

Cacioppo, J. T., Hawkley, L. C., Ernst, J. M., Burleson, M., Berntson, G. G., Nouriani, B., & Spiegel, D. (2006a). Loneliness within a nomological net: An evolutionary perspective. *Journal of Research in Personality*, 40(6), 1054-1085.

DiTommaso, E., Brannen-McNulty, C., Ross, L., & Burgess, M. (2003). Attachment styles, social skills and loneliness in young adulthood. *Personality and Individual Differences*, 35(2), 303-312.

Matthews, T., Danese, A., Caspi, A., Fisher, H. L., Goldman-Mellor, S., Kopa, A., Moffitt, T. E., Odgers, C. L., & Arseneault, L. (2018). Lonely young adults in modern Britain: findings from an epidemiological cohort study. *Psychological Medicine*. doi: 10.1017/S0033291718000788.

Qualter, P., Vanhalst, J., Harris, R., Van Roekel, E., Lodder, G., Bangee, M., Maes, M., & Verhagen, M. (2015). Loneliness across the life span. *Perspectives on Psychological Science*, 10(2), 250-264.

Rotenberg, K. J. (1994). Loneliness and interpersonal trust. *Journal of Social and Clinical Psychology*, 13(2), 152-173.

Rotenberg, K. J., & MacKie, J. (1999). Stigmatization of social and intimacy loneliness. *Psychological Reports*, 84(1), 147-148.

Data Security Agreement

Provisional Paper Title	What does loneliness look like? A quantitative and qualitative study of how lonely people are perceived by others
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: What does loneliness look like? A quantitative and qualitative study of how lonely people are perceived by others

Potential co-authors: E-Risk co-investigators

Potential Journals:

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: This is a great example of creating new data out of E-Risk to enhance the reach of potential projects. You might also want to do a separate project that compliments this one, by doing some qualitative coding of the age 5 videotapes for this subgroup of very lonely adults. Are they characterized by any unusual behaviours in childhood?

Please check your contribution(s) for authorship:

- Conceptualizing and designing the longitudinal study
- Conceptualizing and collecting one or more variables
- Data collection (I designed the informant questionnaire, and at phase 10 I developed the system of RW notes, working with Julia Morgan)
- 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.....