

Concept Paper Form

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| Provisional Paper Title: Vaccine messaging and longstanding personal characteristics dating from early life |
| Proposing Author: Terrie Moffitt |
| Author's Email: Terrie.Moffitt @ duke dot edu |
| P.I. Sponsor: Click or tap here to enter text. (if the proposing author is a student or colleague of an original PI) |
| Today's Date: 8/25/2021 |

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

Objective of the study:

Background: We aim to deliver a comprehensive psychological description of groups who differed in their vaccine intentions in the months just before vaccines became available. Public health professionals aspire to tailor pro-vaccination messaging to the values, motives, lifestyles, and background of people who are hesitant or resistant toward vaccination. This tailoring has called for a “marketing approach” to messaging. However, there is a wide social gap between highly-educated public health professionals and most unvaccinated citizens, who tend to be secondary-school educated, or less. This gap impedes effective messaging. Prior surveys report that unvaccinated individuals tend to be Republicans, or southerners, or not college graduates, but these are poor proxies for people’s actual beliefs, attitudes, preferences, cognitive abilities, and motivations. We will harness psychologically rich prospective data from a 5-decade longitudinal cohort study to provide insights about the personal psychologies associated with vaccine-hesitance and vaccine-resistance, and whether those personal psychologies emerged early in life and are longstanding.

Research design: We track a cohort all 1037 births in one city in a one-year period in 1972-1973, the Dunedin Study. This study offers five advantages over contemporary vaccine-intention surveys. (1) The cohort is located in a nation where vaccines only became available in August 2021, New Zealand, and we were able to ask cohort members about their vaccine intentions during April-July 2021 before they had vaccination access. (2) The mental, physical, and social health of the cohort has been assessed in day-long clinic visits at ages 3, 5, 7, 9, 11,13, 15, 18, 21, 26, 32, 38, and in 2019 at age 45, before the pandemic. (3) 88% of the still living-cohort members (N=994) took part in our rapid-response survey of vaccine intentions during 2021, when they were 48 years old. Those

who participated did not differ from the original cohort on their childhood socio-economic status or IQ. (4) The cohort represents its national population with no healthy-volunteer bias.

Measures: Our questions are from the COVID Collaborative (<https://www.covidcollaborative.us/>; <https://covid-19.parc.us.com>), Duke's RADx-UP (<https://radx-up.org/learning-resources/cdes/>), and the UK COVID-19 Study [https://www.thelancet.com/journals/lanepc/article/PIIS2666-7762\(20\)30012-0/fulltext](https://www.thelancet.com/journals/lanepc/article/PIIS2666-7762(20)30012-0/fulltext). They tap intentions, COVID experiences, trusted info sources, reasons for getting a vaccine, and reasons against getting a vaccine.

Vaccine intentions in the Dunedin cohort: Cohort members reported whether they definitely or probably intended to be vaccinated (75%, hereafter termed "willing"), definitely or probably did not intend to be vaccinated (13%, termed "resistant"), or did not know enough to decide (12%, termed "hesitant-undecided"). As in the USA, only 10% of the vaccine-resistant group attended college and 30% left high school without graduating, lending confidence that this New Zealand cohort can inform health messaging elsewhere.

We will compare these groups on prospective antecedents of vaccine intentions, including:

(1) Adverse childhood experiences. This will reveal whether resistant and hesitant groups who are targets of public health messaging had adverse experiences, including abuse, that may have given them a propensity to mistrust that has been present in their lives since childhood or adolescence.

(2) Adolescent personality and locus of control over health. This will reveal whether resistant and hesitant groups had attitudes, values, motivations and preferences, stable since adolescence, that give them a propensity to misinterpret information when under stress, or approach messaging with a hostile attribution bias, and whether they are strongly motivated by wanting to care for others or to keep themselves from harm.

(3) Cognitive abilities and health knowledge and comprehension of health concepts. This will reveal whether the groups differed on verbal IQ, reading grade level, and their health knowledge. Health knowledge before the pandemic is of particular interest, because our measure of health knowledge, which does not depend on reading ability, will reveal the extent to which early health education tailored to learning styles might be helpful to enhance vaccine uptake in future pandemics.

(4) Detailed mental disorder histories. This will reveal whether the groups have longstanding problems such as depression, anxiety, inattention, thought disorder, or substance abuse that might interfere with receipt of vaccine health messaging, and which symptoms are most related to vaccine intentions.

Variables needed at which ages:

Covid Survey – all items

Childhood

sex

Childhood SES

ChildIQ

ACEs exposure

Adolescence

Locus of control

Reading ability at age 18

MPQ18 – all factors & super factors

Phase 45

SES

Residential location

Education attainment

Verbal IQ at 45

Lifetime mental health (Little P & CF vars)

Health literacy

Health care utilization

References cited: | |

Data Security Agreement

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|-------------------------------------|---|
| <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: *Terrie E Moffitt*

CONCEPT PAPER RESPONSE FORM

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| Provisional Paper Title | Vaccine messaging and longstanding personal characteristics dating from early life |
| Proposing Author | Terrie Moffitt |
| Other Contributors | Avshalom Caspi, Renate Houts, HonaLee Harrington, Kyle Bourassa, Richie Poulton, Sean Hogan, Sandhya Ramrakha, Antony Ambler |
| Potential Journals | Click or tap here to enter text. |
| Today's Date: 8/25/2021 | |
| Intended Submission Date: 9/30/2021 | |

Please keep one copy for your records and return one to the proposing author

B. To be completed by potential co-authors:

| | |
|--------------------------|--------------------------------|
| <input type="checkbox"/> | Approved |
| <input type="checkbox"/> | Not Approved |
| <input type="checkbox"/> | Let's discuss, I have concerns |

Comments: Click here to enter text

Please check your contribution(s) for authorship:

| | |
|--------------------------|--|
| <input type="checkbox"/> | Conceptualizing and designing the longitudinal cohort study |
| <input type="checkbox"/> | Conceptualizing data collection protocols and creating variables |
| <input type="checkbox"/> | Data collection |
| <input type="checkbox"/> | Conceptualizing and designing this specific paper project |
| <input type="checkbox"/> | Statistical analyses and interpretation (or reproducibility check) |
| <input type="checkbox"/> | Writing |
| <input type="checkbox"/> | Reviewing manuscript drafts |
| <input type="checkbox"/> | Final approval before submission for publication |
| <input type="checkbox"/> | Agreement to be accountable for the work |
| <input type="checkbox"/> | Acknowledgment only, I will not be a co-author |

Signature: Click here to enter text