



# Development and Validation of an Expanded Measure of Perceived Vulnerability to Disease



Marjorie L. Prokosch, Michael Hoerger, & Damian R. Murray

Tulane University, Department of Psychology

## Introduction

- Humans have evolved various physiological and psychological adaptations to counter **infection threats**.
- Ex: The Behavioral Immune System (see e.g., Schaller, 2015)
- One line of inquiry has examined how **trait vulnerability** shapes infection avoidance, often using the **Perceived Vulnerability to Disease Scale** as a trait measure. (PVD: Duncan, Schaller, & Park, 2009).
- Need for more nuanced facets of perceived vulnerability

**Goal:** Create an **expanded measure of perceived vulnerability to disease** that also captures affective (i.e., future) forecasting and sense of control over infection.

**Hypothesis:** Predicted a **4 factor** solution: Perceived Infectability, Germ Aversion, Future Threat, Perceived Control

## Scale Item Generation

- 69 items** were selected by a group of junior and senior lab members after a lab-wide act nomination process.
- EFA using principal axis factor, oblique (Promax) rotation on Mturk ( $N = 498$ ) pilot data revealed a **5 factor solution**
- Revised hypothesis of 5 factor solution tested in 3 studies

## Method

**Study 1:** Amazon MTurk ( $N = 468$ )

- 69 PVD items → EFA conducted; items reduced to 45

**Study 2:** Undergraduate ( $N = 292$ ): *Convergent Validity*

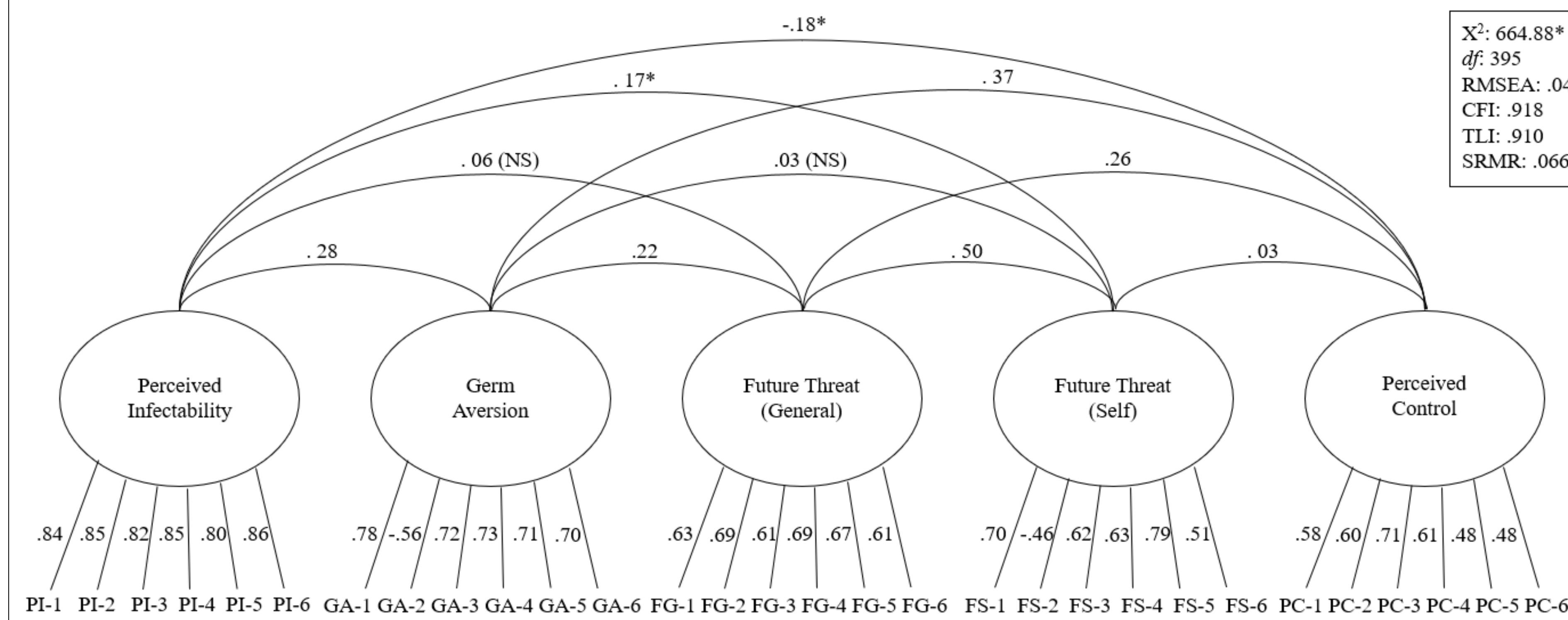
- 45 PVD items → CFA conducted; items reduced to 30

**Study 3:** Undergraduate ( $N = 371$ ): *Predictive Validity*

**Study 4:** Undergraduate ( $N = 222$ ) & **Study 5:** MTurk ( $N = 384$ ) COVID-19 Pandemic (April – early May 2020)

- Covid Threat; past & future protective behaviors (self & beliefs about others' behavior); social trust; (S5 only) support for future restrictive policies

## Results



**Figure 1:** Study 2 CFA results. All loadings are significant at  $p < .001$  unless otherwise marked. \* $p < .01$ , <sup>NS</sup>  $p > .05$

**Table 1.**

Correlations Between 5 Factors, Disgust and Health Attitude Measures (Study 2)

	Pathogen Disgust	Sexual Disgust	Moral Disgust	Disgust Propensity	Illness Prevention	Health Optimism	Childhood Sickness	Adult Sickness
Perceived Infectability	.25***	.14*	.006	.31***	-.25***	-.46***	.48***	.66***
Germ Aversion	.37***	.26***	-.03	.40***	.17**	.06	.06	.09
Future Threat (General)	.08	.13*	.04	.20***	-.06	-.09	.11	.06
Future Threat (Self)	-.001	-.08	.00	.11	-.19***	-.23***	.08	.12*
Perceived Control	.06	.06	-.05	.19***	.41***	-.38***	-.19***	-.20***

Note. Significant at \* $p \leq .05$ , \*\* $p \leq .01$ , and \*\*\* $p \leq .001$

**Table 2.**

Correlations Between 5 Factors and Predictive Measures (Study 3)

	Perceived Infectability	Germ Aversion	Future Threat (General)	Future Threat (Self)	Perceived Control
Optimism	-.19***	-.12*	-.18***	-.25***	.003
Risk Proclivity	.10*	-.08	-.07	-.09	-.07
Conformity	.07	.21***	.09	.12*	.19***
Social Conservatism	-.09	.13**	-.09	-.03	.10
Economic Conservatism	-.02	.15**	.004	-.06	.13*
Belief in a Dangerous World	.15**	.23***	.27***	.19***	.04
SOI - Attitudes	.12*	-.14**	-.03	-.04	-.09
SOI - Desire	.05	-.08	-.01	.01	.05
SOI - Behavior	.09	-.16**	-.04	-.03	-.06
HEX: Honesty Humility	-.11*	-.04	-.06	-.14**	-.11*
HEX: Emotionality	.16**	.10	.11*	.22**	.01
HEX: Extraversion	-.006	-.04	-.16**	-.20***	.008
HEX: Agreeableness	-.08	-.12*	-.11*	-.02	-.007
HEX: Conscientiousness	-.14**	.05	.09	.02	.06
HEX: Openness	-.04	-.11*	.05	-.009	.11*

**Table 3.**

PVD Correlations with Pandemic Measures (Studies 4 & 5)

	PI	GA	PC	FTS	FTG	
Student	Self Past	-.06	.13	.28***	.03	.24***
	Self Future	-.04	.14*	.29***	.06	.27***
	Covid Threat	.06	.09	.17*	.15*	.45***
	Others Past	.04	.04	.15*	-.01	-.01
	Others Future	.04	.04	.11	-.04	-.14*
MTurk	Social Trust	.03	-.23***	-.14*	-.14*	-.11
	Self Past	-.22**	.14**	.32***	-.07	.18***
	Self Future	-.21***	.17***	.31***	-.05	.22***
	Covid Threat	-.24***	.01	.12*	-.02	.33***
	Others Past	.06	.14**	.30***	-.11*	-.003
MTurk	Others Future	.16**	.17**	.29***	-.07	-.002
	Social Trust	.36***	.00	.13**	.14**	.02
	Future Policy	.20***	.32***	.31***	.19***	.54***

## Discussion

The revised versions of **Perceived Infectability** and **Germ Aversion** showed validity in S2 & S3.



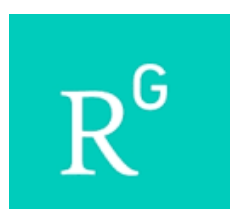
The **new 3 subscales** (*Future Threat General, Self, Perceived Control*) were related to measures across all 5 studies in **patterns unique from infectability and germ aversion**.

Results provide early support for the validity of a **revised measure** that captures **diverse facets** of perceived vulnerability to disease.

## Sample Scale Items

- PI:** I am that person who is always getting over being sick.
- GA:** I dislike touching the rails and handles in public spaces (e.g., doors, while using public transit).
- FTG:** In the coming years, it will become harder and harder to control the spread of germs and infectious diseases.
- FTS:** I'm afraid that one day, I will die from an infectious disease.
- PC:** My actions can help me fend off potential infections.

## Contact Information

 @MLProkosch      [mprokosch@ufl.edu](mailto:mprokosch@ufl.edu)  
 <https://osf.io/4smp6/>       Marjorie\_Prokosch