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Exploring Optimism and Purpose in Life as Mediators of the Association Between Childhood Socioeconomic Status and Common Cold Susceptibility

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INTRODUCTION

- According to the U.S. National Library of Medicine (2020), Americans suffer from 1 billion colds a year. Previous research has shown that lower adult health—including decreased resistance to the common cold—is associated with lower socioeconomic status (SES) during childhood (Cohen, Doyle, Turner, Alper, & Skoner, 2004). This correlation may be mediated by an individual's optimism and purpose in life.
- Of interest, past research has found evidence that higher childhood SES is associated with a higher purpose in life and higher optimism (Luo & Waite, 2005). This association can be rationalized, as higher SES is associated with lower drug and alcohol use and increased psychological resources, physical activity, and access to quality healthcare and healthy food (Pampel, Krueger, & Denney, 2010).
- These factors may result in higher optimism and purpose in life by contributing to increased self-esteem, which leads to more assurance that individuals can improve their own quality of life and less focus on external factors.
- Furthermore, previous evidence has confirmed that higher optimism and higher purpose of life are linked to higher overall health, including greater resistance to developing the common cold (Cohen, Alper, Doyle, Treanor, & Turner, 2006).
- This can be rationalized since those with higher optimism have been found to experience lower levels of stress and are, therefore, less likely to engage in unhealthy behaviors (e.g., alcohol use and poor sleep habits) that weaken the immune system and decrease resistance to the common cold.
- Similar to optimism, higher purpose in life is associated with increased physical activity and better physical health, thereby strengthening the immune system and increasing resistance to the common cold (Musich, Wang, Kraemer, Hawkins, & Wicker, 2018).
- **This study analyzes the relationship of childhood SES and susceptibility to the common cold, mediated by optimism and purpose of life.**

METHOD

Participants

- Data from the Pittsburgh Cold Study 3 of the Common Cold Study were used. The Pittsburgh Cold Study 3 was conducted from 2007-2011 among 213 adults between the ages of 18-55 who were exposed to rhinovirus through nasal drops.

Procedures

- Subjective and objective measures of both childhood SES and common cold assessment were obtained. Optimism and purpose in life measures were also utilized.
- Mediation analysis was performed using PROCESS macro on SPSS.
- Several covariates (age, sex, season of year, BMI, adulthood SES, current smoker status, and neutralizing specific antibody titer) were used to take into account confounding effects.

MEASURES

Childhood Socioeconomic Status (SES)

Subjective: MacArthur USA Ladder (Adler & Epel, 2000)

- Participants were shown images of two 9-rung ladders (one for each parent) that represent where Americans stand in terms of income, education, and occupational standing.
- Participants rated where they thought each parent stood on the ladder (relative to others in the USA) during their childhood.

Objective: Parent Home Ownership (Murdock, LeRoy, & Fagundes, 2017)

- The number of years participants' parents owned the home they lived in from ages 5 to 18 were summed.

Optimism

- **Revised Life Orientation Test (LOT-R)** evaluates respondents' tendency to hold positive expectations about their future (Scheier, Carver, & Bridges, 1994).
- Participants rated the extent to which they agree or disagree with 10 statements (e.g. "in uncertain times, I usually expect the best" and "I hardly ever expect things to go my way") on a 5-point Likert scale from 0 (strongly disagree) to 4 (strongly agree).

Purpose in Life

- **Ryff Scales of Psychological Well-Being** measures 4 different elements of psychological well-being: self-acceptance, positive relationships with others, environmental mastery, and purpose in life. Only "purpose in life" scale was utilized in this study (Ryff, 1989).
- Respondents indicated the extent to which they agree or disagree with 9 statements (e.g. "I live life one day at a time and don't really think about the future") on a 6-point Likert scale from 1 (strongly disagree) to 6 (strongly agree).

Susceptibility to Cold

- Participants were determined to have developed a clinical cold only if both of the following conditions were met: (1) infected with the challenge virus, and (2) expressed certain signs and/or symptoms characteristic of the common cold. The latter condition was assessed utilizing both objective and subjective measures.

RESULTS

- Significant correlations were found between subjective childhood SES and optimism ($b = 0.31, p = 0.040$) and optimism and subjective measures of cold ($b = -0.09, p = 0.023$). However, there was no significant indirect effect of subjective childhood SES on subjective measures of cold through optimism, $b = -0.029, BCa CI [-0.081, 0.002]$.
- There were no significant correlation between childhood SES and cold susceptibility for neither objective nor subjective measures, $ps > 0.05$.
- There was no significant direct or indirect effect of childhood SES on cold susceptibility through purpose in life for any objective or subjective assessments.

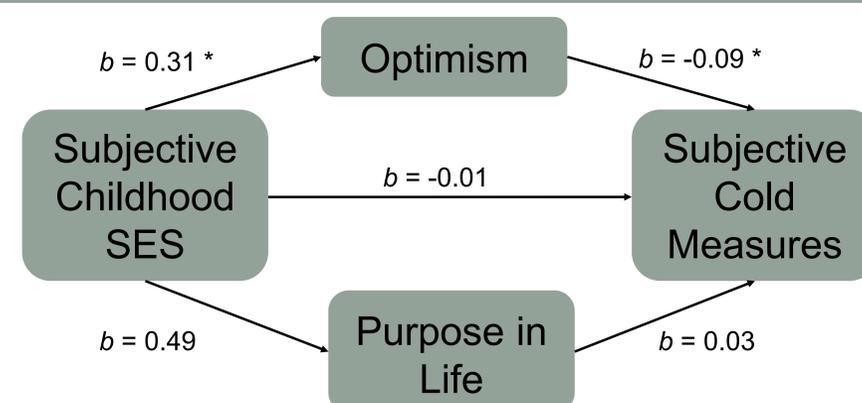
DISCUSSION

- Neither optimism nor purpose of life mediated the association between childhood SES and susceptibility to the common cold for all objective and subjective assessments.
- Higher subjective childhood SES was associated with higher optimism. Consistent with past research, this correlation may be because those with high educational levels across generations tend to possess higher occupational prestige and the resources to strive for meaningful goals (Boehm, Chen, Williams, Ryff, & Kubzansky, 2015). Interestingly, while this rationale supports a correlation between childhood SES and optimism, this same rationale does not seem to follow a significant correlation between childhood SES and purpose in life.
- Higher optimism correlated with a lower susceptibility to the cold as measured with subjective assessments. This may be because, on a physiological level, optimism has been repeatedly correlated with higher immune function (Rasmussen, Scheier, & Greenhouse, 2009). On a psychological level, those with higher optimism may also have self-reported less severe symptoms (e.g. malaise and runny nose) because their optimism bias may have influenced them to underestimate any symptoms they experienced.
- Interestingly, contrary to prior studies, childhood SES had no significant correlation with susceptibility to cold.
- Overall, more research is needed to understand the mechanisms by which childhood SES is associated with health outcomes, such as the common cold.

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RESULTS



*indicates significance $p < 0.05$