



# Examining the Impact of Race and Poverty on the Relationship Between Purpose in Life and Functional Health: Insights from the HANDLS Study

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## Abstract

**Introduction** While research has shown a positive association between a higher sense of purpose in life and functional health, there is a gap in understanding its benefits for racially minoritized and low SES individuals. This study aimed to investigate the correlation between purpose in life and physical functional health in a diverse sample, hypothesizing that purpose in life would be negatively associated with functional difficulties, with potentially stronger associations in White and high SES groups.

**Methods** Data from the Healthy Aging in Neighborhoods of Diversity across the Life Span (HANDLS) study were utilized (166 participants, mean age 59.44 [SD = 8.28], 59.6% females, 65.06% Black participants, 40.36% below poverty). Purpose in life was measured by Ryff's Psychological Well-being Purpose in Life subscale. Functional health was measured by functional difficulties in mobility and daily living. Race (Black and White) and poverty status (above and below) were used as moderators to probe the purpose-functional health association using zero-inflated Poisson regression while adjusting for age, education, depressive symptomology, and previous functional difficulties in four hierarchical models.

**Results** Results showed that purpose in life was negatively associated with functional difficulty, indicating fewer difficulties in mobility and daily activities among those with a high sense of purpose. While the association did not remain significant after including previous functional difficulty as a covariate in Model 4, suggesting that race may not be a consistent moderator, poverty status remained a consistent moderator. The association was stronger for individuals above the poverty level.

**Discussion** These findings underscore the complex interplay between purpose in life, race, poverty status, and functional health, emphasizing the importance of considering socioeconomic factors in interventions aimed at eliminating functional health disparities among diverse adult populations.

**Keywords** Purpose in life · Functional health · Racial disparities · Socioeconomic influence

## Introduction

Purpose in life is an essential determinant of an individual's resilience in the face of adversity [6, 14, 27, 42]. It can be viewed as a guiding theme that directs one's efforts/actions towards a more coherent and fulfilling approach to achieving better functionality [1, 18, 34]. This construct is a promising element of positive psychological well-being, with studies substantiating its potential as a valuable mechanism for improving adult functional health. Although research on interventions to enhance and sustain a sense of purpose in adults is still in its early stages, evidence indicates that it is a modifiable aspect of human experience [49, 52]. By promoting and nurturing a sense of purpose, we can pave a meaningful path towards enhancing adult functional health, with such efforts showing promise in health promotion endeavors.

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## Purpose in Life and Functional Health

Research shows that older adults with a greater sense of purpose in life tend to report better overall health [25, 26]. A study involving AARP retirees revealed that those with higher purpose reported better functional health, higher social support, and reduced healthcare utilization and medication expenditures [29]. Purpose in life has also been linked to greater perceived health, as well as engagement in activities like walking, housework, and gardening [13]. Importantly, a higher sense of purpose is associated with reduced perception of functional limitations, such as difficulty walking distances or navigating stairs [12], and problems performing daily activities (ADL), and instrumental activities (IADL) [24]. Moreover, a higher sense of purpose correlates with a lower likelihood of mobility disability, as indicated by self-reported reliance on mobility aids like wheelchair, crutches, or walker and difficulties with activities like climbing stairs or walking longer distances [4, 55]. It is also linked to reduced self-rated disability [45], lower risks of weakened grip strength and slower walking speed [20], and a lower hazard ratio for daily functional disability measured by ADL and IADL assessments [4].

## Purpose in Life and Functional Health Among Black or Low SES Individuals

Studies consistently show that marginalized adult populations are at a disproportionately higher risk for poorer functional health and limitations [9, 10, 15, 19, 21, 22, 46]. Sociohistorical events and everyday experiences such as everyday discrimination have systematically created unique negative health outcomes for lower socioeconomic communities, particularly those of color [16]. Moreover, these health disparities tend to widen with age [31, 33, 36, 48]. Therefore, it is important to consider the broader contexts in health promotion efforts, such as the socio-ecological model, which emphasizes the intersection of multi-level influences, including community, interpersonal, and intrapersonal factors, on an individual's health behaviors and outcomes [41].

Given the clear link between purpose in life and functional health and its potential for promoting adult health, the application of purpose in life in functional health promotion for marginalized adult populations seems promising. However, the current body of research has limitations that prevent us from definitively establishing its benefits for racial minoritized groups or individuals with low socioeconomic status (SES). Studies have predominantly involved White participants and/or individuals with higher SES backgrounds (e.g., education) [55]. For example, Harrison and Stuijbergen's [12] study on functional limitations had over 50% college-educated and 98% White participants. Similarly, Boyle and colleagues' [4]

study on functional and mobility disabilities included 88% White participants, while Kashdan and colleagues' [20] study on grip strength and walking speed had 76% White participants. This underrepresentation of racial minoritized adults and individuals with low SES in the purpose and health literature obscures our understanding and raises a critical concern—whether our current health promotion efforts, including psychological and behavioral health coaching, sufficiently account for a person's sociocultural context.

Additionally, recent studies have suggested that our health promotion efforts might have overlooked racially and socioeconomically relevant factors that could impact the positive benefits of psychological processes, such as having a sense purpose [28, 30, 51]. It is possible that individuals from different sociodemographic backgrounds differ in various accessible mechanisms, such as mastery skills, effective coping strategies, and social and physical support, which enable them to effectively leverage their strong sense of purpose and exhibit higher resilience [30]. However, many studies typically treated race and SES as covariates, neglecting to consider how the relationship between purpose in life and health is influenced by race and SES. Several recent studies have begun to examine the effects of demographic factors such as race and SES, hypothesized to moderate the impact of purpose in life on health outcomes in 32, 43–44], due to their possible influence on access to necessary and health-promoting resources. For example, while higher purpose is generally associated with lower mortality risk, individuals with lower SES (defined as income, wealth, and education) may not fully benefit from a higher purpose if they lack access to necessary resources [43]. Although inconclusive about the moderation by race, another study found that the potential benefits of purpose in life on mortality were stronger in Black adults compared to White [44]. These studies suggest that to fully harness a sense of purpose in life as a promising construct for health promotion and to address functional health disparities among socially unequal groups, it is important to investigate if the impact of purpose in life on functional health varies by race and socioeconomic subgroups.

## Research Aims and Hypotheses

This study aimed to investigate the correlation between purpose in life and physical functional health using a racially and socioeconomically diverse sample from the Healthy Aging in Neighborhoods of Diversity across the Life Span (HANDLS) Study.

Specifically, this study had two aims. First, it examined the relationship between purpose in life and functional health among a diverse group of adults, categorized by race (Black vs. White) and SES (indexed by below or above the 2004 Health and Human Services Poverty Guidelines) [8]. This study hypothesized that purpose in life would be negatively

associated with functional difficulties within our diverse sample. The second aim was to examine how the relationship between purpose in life and functional health is influenced by race (Black and White) and poverty status. This study hypothesized that purpose in life would exhibit stronger associations with functional health among White and high SES individuals compared to Black and lower SES individuals. Specifically, it was expected that a higher sense of purpose would be more strongly associated with fewer functional difficulties in the White and high SES groups. While purpose in life has consistently shown a strong correlation with good functional health and mobility in studies predominantly involving White and high SES individuals, its generalizability to racial and social subgroups may be limited. This hypothesis resonates with prior research that underscores the differential effects of socioeconomic factors on health outcomes and behaviors within different racial subgroups [2, 3, 7, 40, 43]. Recent studies have also underscored that positive psychological processes do not universally benefit all racial groups [28, 30, 51].

## Methods

### Data Source and Participants

This study utilized secondary data from the HANDLS study, a representative sample of working-age Black and White individuals in Baltimore City. The HANDLS study is a longitudinal investigation that aims to understand the impact of race, sex, age, SES, and risk factors on health outcomes [8]. HANDLS was designed to sample a diverse range of individuals stratified by race—Black and White, age—seven 5-year age groups from 30 to 64, SES—high and low, and sex. High/low SES was defined as self-reported household income above/below 125% cutoff line set by the 2004 Health and Human Services Poverty Guidelines [8]. Participants for wave 1 were recruited from 13 neighborhoods in Baltimore City, with the first wave beginning in August 2004. HANDLS began wave 5 data collection in September 2017, but the specific data on purpose in life was only collected towards the end of 2019. Hence, this study utilized the cross-sectional observations from wave 5. At the time of data extraction for this study, there were 166 participants (59.64% females; mean age  $M = 59.44$ ,  $SD = 8.28$ ; 65.06% Black participants; 40.36% below poverty) who had complete data on purpose in life.

### Measures

Participants completed screening and questionnaire surveys, including functional health, Ryff's Psychological Well-Being (with Purpose in Life subscale), demographic (e.g., race and poverty status), and psychosocial factor (e.g., supports and mental health). Except for education, which was assessed in wave 1, and health covariates (e.g., prior functional difficulty

and physical activity levels) captured during wave 4, all other variables and covariates were assessed in wave 5.

### Functional Health

Functional health in this study was operationalized as self-reported functional difficulties measured in wave 5. *Functional difficulty* was computed as a sum score of “Yes” to 15 items including (1) mobility difficulty—four items indicated as “Yes/No” use of special equipment, “Yes/No” difficulty walking quarter mile, walking up 10 steps, and carrying 10 pounds of weight due to health or physical problems [13]; (2) activities of daily living (ADL) [24]—six items indicated as “Yes/No” difficulty dressing, showering, feeding, toileting, getting in and out of bed, and walking across a room; and (3) instrumental activities of daily living (IADL) [24]—five items indicated as “Yes/No” difficulty preparing a hot meal, grocery shopping, making phone calls, taking medications, and managing finances and bills.

### Purpose in Life

HANDLS assessed purpose in life in wave 5 using the Ryff's Purpose in Life subscale [37, 38]. Prior studies suggest that it measures a distinct positive psychological construct and has predictive validity for health outcomes [5, 37, 39, 50]. The seven items that measured purpose in life included questions such as “I have a sense of direction and purpose in life,” and “I enjoy making plans for the future and working to make them a reality.” Participants responded on a 6-point Likert scale ranging from 1 = “Strongly disagree” to 6 = “Strongly agree” for each item. Negative items were reversed coded, and a composite score was computed such that high score represents a higher sense of purpose.

### Demographics and Psychosocial Factors

Race was assessed by self-identification as Black or White individuals: 1 = “White” and 2 = “Black.” Poverty status was assessed by a self-reported household income of above/below 125% cutoff line set by the 2004 Health and Human Services Poverty Guidelines [8]: 1 = “Above” and 2 = “Below.” Age, education, income, marital status, depressive symptomology, and wave 4 functional difficulty were used as covariates. Research has shown that different racial groups may not experience the health benefits of higher education or higher income equally over the life course [2, 3, 7, 40, 43]; hence, *income category* and *education* (assessed as the highest grade school completed) were included as covariates to control for their effects. *Depressive symptomology* was adjusted for as covariate given the observed racial and SES disparities in relation to physical functional health and mobility limitation [10, 11, 47]. Depressive symptomology was measured by the 20-item Centre for

Epidemiological Studies Depression Scale [35] which assessed participants' depressive symptoms in the past week. On a scale ranging from 0 = "Rarely or not at all (less than one day)," 2 = "Some or little of the time (1–2 days)," 2 = "Occasionally (3–4 days)," and 3 = "Most or all of the time (5–7 days)," participants indicated how often they felt or behaved as the items described in the past week. A computed sum score was used in the analyses for depressive symptomology. *Wave 4 functional difficulty* was computed as a sum score of the same four items of mobility difficulty as wave 5, not including the six items of ADL and five items of IADL (not available in wave 4).

## Analysis

All analyses were run using IBM SPSS Statistics software version 28.0.0.0 (190). For Aim 1, this study conducted Spearman's rank analyses to examine the correlations between functional difficulty (a count variable) and purpose in life, race, poverty status, and the covariates. Covariates that were non-significantly correlated were excluded from the regression analyses for Aim 2. For Aim 2, this study conducted separate two-way interaction analyses with race and poverty status as moderators. Specifically, the interaction terms—purpose\*race and purpose\*poverty status—were examined. Given the excessive zeros (~ 46%) observed in our data, zero-inflated Poisson moderation regression analyses were conducted to analyze the relationship between functional difficulty and the variables. However, due to the lack of evidence in the literature, particularly concerning the impacts of race and poverty, to support the existence of two processes influencing the experience and reporting of functional limitations—one generating the excess zeros (inflation process) and another the count data (count process)—the inflation component is not explicitly modeled but is estimated as part of the overall model.

All the regression analyses followed a hierarchical approach. The base model included the two main predictors—purpose in life and race or poverty status. Higher models incorporated additional covariates in a stepwise manner if they were significantly associated with functional difficulty in bivariate correlations analysis: Model 1—interaction, Model 2—age, Model 3—education, income or race (depending on the moderator) and depressive symptomology, and Model 4—wave 4 functional difficulty.

## Results

### Sample Descriptives

Approximately 42% of the participants were married or had a partner, while 36% were single or never married. About 25% had none or a household income of < \$10,000, while

30% had a household income of > \$60,000 (see Table 1 for a detailed breakdown of demographic characteristics). White participants were more likely to have some graduate/professional school education (without achieving a degree) than Black participants ( $U [N = 22] = 2291, p = 0.006$ ). Participants with household incomes below poverty level were more likely to be married ( $\chi^2 [6, N = 166] = 14.54, p = 0.024$ ) and more likely to have some graduate/professional school education ( $U [N = 22] = 2693, p = 0.046$ ).

Descriptive statistics for key variables (purpose in life, functional difficulty, depressive symptomology) can be found in Table 2. Participants above the poverty level reported lower prior (wave 4) functional difficulty ( $M = 0.60, SD = 1.13, t[107] = -3.05, p = 0.003$ ) and lower depressive symptomology ( $M = 39.00, SD = 7.22, t[113] = -3.15, p = 0.002$ ) than participants below the poverty level ( $M = 2.73, SD = 2.98; M = 1.29, SD = 1.53; and M = 43.42, SD = 9.81$ ).

### Purpose in Life and Physical Functioning (Aim 1)

A significant negative correlation was observed between purpose in life and functional difficulty ( $r_s[166] = -0.36, p < 0.001$ ). Participants with a high sense of purpose reported fewer difficulties in mobility and daily activities. Functional difficulty was also significantly associated with low income ( $r_s[166] = -0.39, p < 0.001$ ), low education ( $r_s[165] = -0.22, p = 0.004$ ), below poverty status ( $r_s[166] = 0.23, p = 0.003$ ), higher depressive symptomology ( $r_s[166] = 0.41, p < 0.001$ ), and prior (wave 4) functional difficulty ( $r_s[158] = 0.67, p < 0.001$ ).

Marital status, not significantly associated with any functional health variables, was excluded from the moderation analyses for Aim 2. Age, though not significantly associated with wave 5 functional health variables in the bivariate analyses, was included in subsequent models due to its significant association with wave 4 functional difficulty ( $r_s[158] = 0.21, p = 0.009$ ).

### Association of Purpose in Life and Physical Functioning Varying by Race (Aim 2)

Findings from the moderation analyses for functional difficulty are summarized in Table 3. The beta coefficient<sup>1</sup> estimations for purpose in life and race remained significant from the base model to Model 3. Specifically, purpose in life was negatively associated with functional difficulty, indicating that a one-unit increase in purpose

<sup>1</sup> The beta coefficient refers to the coefficient associated with the variable in the regression model. Therefore, the beta coefficient values represent the change in the logarithm of the expected count of functional difficulties for a one-unit change in the corresponding variable, while holding other variables constant.

**Table 1** Participants' demographic characteristics by race/poverty group

Variables	Total <i>n</i> = 166 <i>n</i> (%)/ <i>M</i> (SD)	Group difference ( <i>p</i> -value) <sup>a</sup>	
		Race	Poverty status
Black participants	108 (65.1)		
Below poverty	67 (40.4)		
Age	59.44 (8.3)		
41–45	6 (3.6)		
46–50	15 (9.0)		
51–55	33 (19.9)		
56–60	36 (21.7)		
61–65	28 (16.9)		
66–70	31 (18.7)		
71–75	14 (8.4)		
76–80	3 (1.8)		
Female	99 (59.6)		
Marital status			<b>0.024</b>
Married/partnered	70 (42.2)		
Divorced/separated/widowed	36 (21.7)		
Never married/single	60 (36.2)		
Income categories			<b>&lt; 0.001</b>
None	9 (5.4)		
Less than \$10,000	32 (19.3)		
\$10,000–\$19,999	17 (10.2)		
\$20,000–\$29,999	15 (9.0)		
\$30,000–\$39,999	12 (7.2)		
\$40,000–\$49,999	15 (9.0)		
\$50,000–\$59,999	16 (9.6)		
\$60,000 or more	50 (30.1)		
Education		<b>0.006</b>	<b>0.046</b>
No formal education or 1st to 11th grade	38 (22.9)		
High school graduate/GED	53 (31.9)		
1-year college	12 (7.2)		
2-year college, no degree	13 (7.8)		
3-year college, no degree	4 (2.4)		
4-year college, no degree	5 (3.0)		
Associate degree	5 (3.0)		
Bachelor's degree	17 (10.2)		
Graduate/professional school, no degree	6 (3.6)		
Master's degree	9 (5.4)		
Professional/technical graduate degree (PhD, MD, JD)	3 (1.8)		

<sup>a</sup>Independent samples *t*-test, Pearson's chi-square test, or Mann-Whitney *U* test conducted and only indicated if significantly different

in life corresponded to a decrease in the expected count of functional difficulty. Race was positively associated, indicating that Black participants reported a higher count of functional difficulty. The purpose × race interaction was significantly and positively associated with the expected count of functional difficulty in Models 1 to 3. However, in Model 4, when previous wave functional difficulty

was included as a covariate, race remained significantly associated while the effects of purpose in life and the purpose × race interaction were nullified. In Models 2, 3, and 4, all covariates, except education, were significantly associated with the expected count of functional difficulty. Previous wave functional difficulty was particularly strong in estimating current functional difficulty,  $b = 0.39$ ,  $p < 0.001$ .



**Table 2** Independent and dependent variables and covariates by race/poverty group

Variables	Total <i>n</i> = 166 <i>n</i> (%)/ <i>M</i> (SD)	Group difference ( <i>p</i> -value) <sup>a</sup>	
		Race	Poverty status
Black participants	108 (65.1)		
Poverty status	67 (40.6)		
Purpose in life	36.01 (7.2)		
Functional difficulty	2.01 (2.8)		
None	77 (46.4)		
1–5	68 (41.0)		
6–10	18 (10.89)		
11–15	3 (1.8)		
Depressive symptomology	40.78 (8.61)	<b>0.002</b>	
Wave 4 functional difficulty	0.87 (1.3)	<b>0.005</b>	

<sup>a</sup>Independent samples *t*-test conducted or Mann-Whitney *U* test conducted (except on the dependent variable functional difficulty) and only indicated if significantly different

### Association of Purpose in Life and Physical Functioning Varying by Poverty Status (Aim 2)

Findings from the moderation analyses for functional difficulty are summarized in Table 4. In the poverty as moderator analyses, race replaced income as the covariate. Across all models, purpose in life was significantly and negatively associated with functional difficulty. Specifically, a one-unit increase in purpose in life corresponded to a decrease in the expected count of functional difficulty. Poverty status remained significantly positive from the base model to Model 3, indicating that individuals living the below poverty line reported a higher count of functional difficulty. However, poverty status alone became non-significant in Model 4. The purpose × poverty interaction also remained significant and positive throughout Models 1 to 4, even after accounting for previous levels of functional difficulty in Model 4. Further examination through simple slope analysis based on Model 4 specifications revealed a significant and negative association between purpose in life and functional difficulty for participants above the poverty line ( $b = -0.04, p = 0.025$ ) but not for those below. Hence, a unit increase in purpose in life was linked to a reduction in the expected count of functional difficulty for individuals above the poverty status. Model 4 estimated betas were used to generate the predicted count of functional difficulty. Visualization of these predicted frequencies is presented in Fig. 1, which helps understand how the interaction influences the count of functional difficulty for individuals living above and below poverty.

**Table 3** Conditional association of purpose in life and functional difficulty—by race

Base model ( <i>n</i> = 166)	Beta (SE)	<i>p</i> -value
Purpose in life	−0.04 (0.01)	0.001
Race	0.45 (0.14)	0.001
Model AIC	644	
Model 1 ( <i>n</i> = 166)	Beta (SE)	<i>p</i> -value
Purpose in life	−0.13 (0.04)	0.001
Race	0.76 (0.19)	<0.001
Purpose*race	0.06 (0.02)	0.015
Model AIC	640	
Model 2 ( <i>n</i> = 166)	Beta (SE)	<i>p</i> -value
Purpose in life	−0.14 (0.04)	<0.001
Race	0.81 (0.19)	<0.001
Purpose*race	0.06 (0.02)	0.008
Age	0.02 (0.01)	0.021
Model AIC	637	
Model 3 ( <i>n</i> = 165)	Beta (SE)	<i>p</i> -value
Purpose in life	−0.12 (0.04)	0.005
Race	0.84 (0.19)	<0.001
Purpose*race	0.06 (0.02)	0.012
Age	0.03 (0.01)	<0.001
Education	0.04 (0.02)	0.062
Depressive symptomology	0.03 (0.01)	<0.001
Income	−0.08 (0.03)	0.004
Model AIC	608	
Model 4 ( <i>n</i> = 157)	Beta (SE)	<i>p</i> -value
Purpose in life	−0.02 (0.04)	0.715
Race	0.53 (0.18)	0.003
Purpose*race	−0.01 (0.02)	0.792
Age	0.02 (0.01)	0.017
Education	0.02 (0.02)	0.305
Depressive symptomology	0.01 (0.01)	0.049
Income	−0.08 (0.03)	0.010
Wave 4 functional difficulty	0.39 (0.05)	<0.001
Model AIC	520	

Note: SE standard error, AIC Akaike information criterion

## Discussion

Numerous studies have supported the positive correlation between purpose in life and functional health among adults. However, these studies have not definitively established the favorable effects of purpose in life for racial minoritized adults or individuals with low SES. Existing literature on purpose and health predominantly consists of samples composed of White participants and individuals from higher SES backgrounds (e.g., higher education) [55], neglecting the

**Table 4** Conditional association of purpose in life and functional difficulty—by poverty status

Base model ( <i>n</i> = 166)	Beta (SE)	<i>p</i> -value
Purpose in life	−0.03 (0.01)	0.008
Poverty	0.34 (0.12)	0.005
Model AIC	647	
Model 1 ( <i>n</i> = 166)	Beta (SE)	<i>p</i> -value
Purpose in life	−0.12 (0.03)	<0.001
Poverty	0.58 (0.14)	<0.001
Purpose*poverty	0.06 (0.02)	0.002
Model AIC	640	
Model 2 ( <i>n</i> = 166)	Beta (SE)	<i>p</i> -value
Purpose in life	−0.11 (0.03)	<0.001
Poverty	0.58 (0.14)	<0.001
Purpose*poverty	0.06 (0.02)	0.004
Age	0.01 (0.01)	0.160
Model AIC	640	
Model 3 ( <i>n</i> = 165)	Beta (SE)	<i>p</i> -value
Purpose in life	−0.09 (0.03)	0.008
Poverty	0.38 (0.15)	0.011
Purpose*poverty	0.05 (0.02)	0.027
Age	0.03 (0.01)	<0.001
Education	0.02 (0.02)	0.377
Depressive symptomology	0.03 (0.01)	<0.001
Race	0.49 (0.14)	<0.001
Model AIC	615	
Model 4 ( <i>n</i> = 157)	Beta (SE)	<i>p</i> -value
Purpose in life	−0.08 (0.03)	0.006
Poverty	0.08 (0.15)	0.605
Purpose*poverty	0.04 (0.02)	0.031
Age	0.02 (0.01)	0.038
Education	0.01 (0.02)	0.519
Depressive symptomology	0.02 (0.01)	0.002
Race	0.49 (0.14)	<0.001
Wave 4 functional difficulty	0.39 (0.05)	<0.001
Model AIC	523	

Note: SE standard error, AIC Akaike information criterion

experiences of racially and socially marginalized subgroups. Moreover, previous research has not adequately explored the interactions between race, SES, and purpose in life when examining health outcomes. Therefore, it is crucial to elucidate the role of purpose in life within the cultural and socio-contextual dimensions of racial minoritized adults' lives, as this is essential for advancing health equity through intervention endeavors. This study aimed to examine the effects of purpose in life on functional health and how these effects might be influenced by race and poverty. First, the study

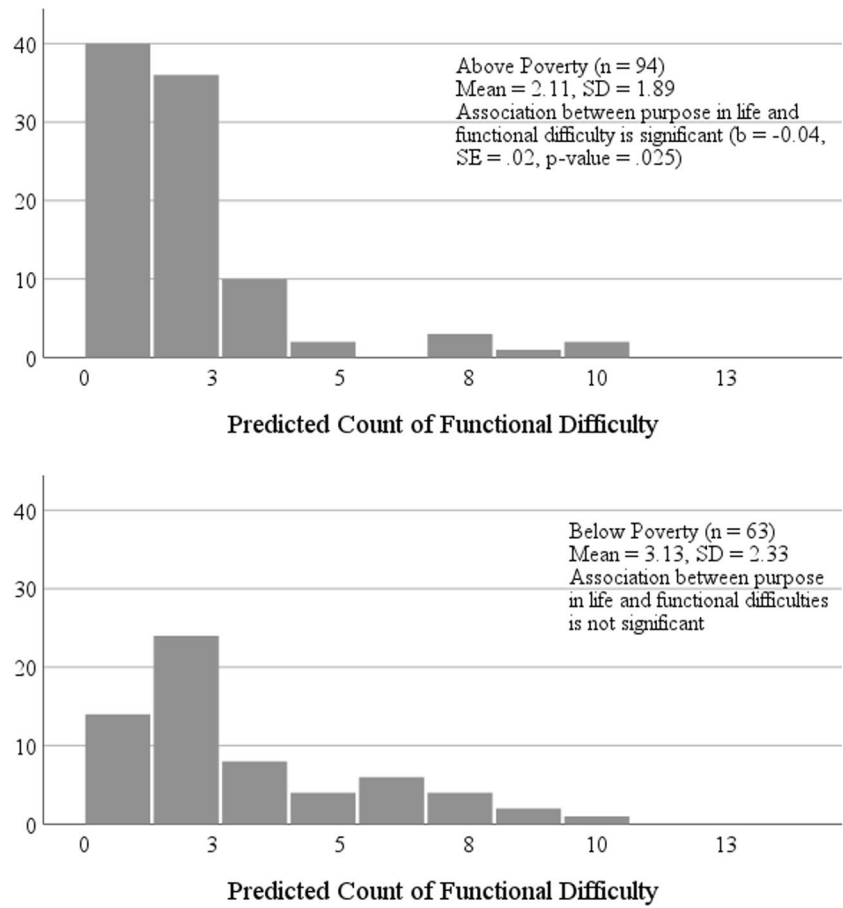
hypothesized and tested the associations between purpose in life and functional difficulty. The hypothesis regarding the favorable association between purpose in life and functional difficulty was supported.

The hypothesis that race moderates the association between purpose in life and functional difficulty was not supported. Although the purpose × race interaction emerged as significant and positive initially, its effects were nullified by previous levels of functional difficulty in Model 4. The positive interaction effects observed in Models 1–3 suggest that the protective effect of purpose in life on functional difficulty may be diminished among Black individuals or that other factors related to race exacerbate the impact of functional difficulties. However, results from Model 4 support the alternate explanation that previous cumulative health burdens facing socially marginalized communities might play a more significant role in shaping functional abilities. Indeed, evidence from the bulk of literature examining race or socioeconomic factors as determinants of health suggests that these factors explain only a limited portion of the variance in health outcomes, while socioeconomic factors exert differential effects on different racial groups [2, 3, 7, 40, 43]. This study specifically intended to investigate the effects of race/SES by leveraging data from the HANDLS project. HANDLS was designed to disentangle the effects of race/SES with its unique equal representation of racially and socially diverse populations [8] rather than a lopsided representation of low SES Black versus high SES White adults. Thus, the finding of an insignificant moderation effect of race in Model 4 is important as it challenges the notion that race alone is the fundamental reason for poorer health outcomes and disparities. Socioeconomic disadvantages experienced by racial/ethnic minority groups are a more plausible explanation for their heightened risk of adverse health outcomes [53, 54].

Moreover, the nullification of moderation effect by race when we accounted for previous functional difficulty highlights the complex interplay between purpose in life, race, and other socioeconomic factors in shaping protective and risk factors in influencing future functional health and mobility. These findings underscore the importance of considering longitudinal data and historical and contextual information when examining racial health disparities. They also have important implications for understanding the enduring effects of functional health, especially given the substantial impact of prior functional difficulty ( $b = 0.39$ ,  $p < 0.001$ ) compared to other covariates. They highlight the need for implementing proactive measures to address racial health disparities in a timely manner, with an emphasis on early interventions targeting to enhance purpose in life and coping strategies, which could be particularly significant for Black adults.

As such, it holds particular significance that this study found a moderation effect of poverty on the association

**Fig. 1** Predicting the impact of poverty status on the relationship between purpose in life and functional difficulty—Model 4. *Note:* this figure illustrates the predicted impact of poverty status on the effects of purpose in life on functional difficulty for individuals living above and below the poverty line. Predicted counts were generated from estimated betas in Model 4 of the poverty status as moderator analyses, where the purpose\*poverty status interaction was significant



between purpose in life and functional difficulty, and this effect remained after controlling for all covariates, including race and previous functional difficulty in Model 4. Initially, poverty status showed a significant positive association, indicating that the protective effect of purpose in life diminished among individuals below the poverty line, but interestingly, this association was nullified by previous functional difficulty in Model 4. These findings revealed that the relationship between purpose in life and functional difficulty differed based on poverty status. Specifically, while purpose in life was associated with reduced functional difficulty for individuals above the poverty line, no such association was found for those below. This suggests that the protective effect of purpose in life against functional difficulty may be more pronounced among individuals living above the poverty line, supporting our initial hypothesis.

The potential mechanisms underlying this moderation effect is an important future research topic. Individuals from lower socioeconomic backgrounds may face heightened stressors and challenges, as well as lack of effective coping strategies and support systems, thus diminishing the protective effects of psychological resources like purpose in life. Nonetheless, the finding that poverty status moderated the association between purpose in life and functional

difficulty carries important implications for the development of interventions and support systems aimed at promoting functional health, especially within vulnerable populations below the poverty line. For these individuals, it may mean that efforts to alleviate hardship should be prioritized as foundational step before the effective implementation of interventions aimed at enhancing purpose in life. Consequently, purpose in life interventions may require supplementary support mechanisms addressing the structural and systemic barriers (e.g., limited employment opportunity, housing instability, and inadequate healthcare services) faced by individuals living in poverty. Furthermore, considering the substantial influence of previous functional difficulty, early intervention encompassing multiple aspects of life is crucial for preventing or mitigating future functional challenges. This underscores the importance of adopting a holistic approach, which addresses not only individual psychological factors but also broader socioeconomic determinants of health.

Taken together, this study's findings help advance our knowledge in health disparities by reinforcing the need for a systemic perspective that considers a person's social-cultural context promoting adult health and addressing health disparities. It is likely that multiple positive psychological



well-being constructs, not just purpose in life, can protect adult health throughout life. This study encourages further investigation of other psychological protective factors that could benefit adults, especially those from marginalized and disadvantaged groups facing heightened vulnerability to adverse health consequences. Socially marginalized and disadvantaged individuals often face barriers in accessing essential support and resources necessary to thrive or cope with life adversities [17]. This compels them to exert extra or higher efforts to cope, potentially shaping their resilience. Krause and Miech [23] emphasized the multifaceted nature of resilience in relation to health, highlighting the need for a multidisciplinary approach to improving adult population's health. Krause and Miech [23] also underscored the overlooked role of personal coping strength in addressing disparities associated with unequal social statuses such as race and ethnicity. Hence, future research could build upon the model used in this study to explore the interplay between purpose in life, resilience, and functional health while considering variations based on race and SES. By doing so, we can better understand how these factors interact and devise more targeted interventions to mitigate health disparities and promote well-being among diverse adult populations.

This study has several limitations. Firstly, it relied on self-reported measures to assess functional difficulty, potentially introducing bias to the results. The nature of self-reported mobility difficulties, ADLs, and IADLs may contribute to the significant findings within this diverse sample. Future research should consider more objective measures like accelerometers, physical performance battery, and sit-to-stand test. Additionally, future research can also explore the association between purpose in life and physical health such as inflammatory markers, physiological and cardiovascular-related variables, and how this association might be influenced by race and SES. Secondly, the relatively small sample sizes may have limited the statistical power, resulting in non-significant interaction effects when race was used as a moderator. Thirdly, the generalizability of the findings is constrained since this study utilized samples from HANDLS, which only recruited Black and White participants from Baltimore City, MD. Our findings may not be applicable to other marginalized communities (e.g., Hispanic, Asian, and Native American communities), nor to other geographical areas in the USA. Nevertheless, Baltimore shares similar demographics with many other cities in the USA, many, but not all, of which were former manufacturing hubs. Future research can test the current study's aims using sample covering a larger geographical areas and other social subgroups and communities. Fourthly, this study mainly utilized wave 5 cross-sectional data, especially as we only explored wave 5 purpose in life. The causal relationship between purpose in life and functional difficulties cannot be determined. It is possible that better functional health

caused participants to report a higher sense of purpose. Future research should utilize cross-lagged data to test the effect of purpose in life on future functional health. Lastly, the finding that wave 4 functional difficulty strongly predicted wave 5 functional difficulty may indicate the presence of other unaddressed cross-lagged or longitudinal causal effects. To further advance our understanding and facilitate early intervention, future studies should investigate the longitudinal causal impact of purpose in life and other covariates such as age on functional health, taking into account race and poverty status.

In conclusion, purpose in life has the potential to enhance the functional health of adults. Nonetheless, more research is necessary to validate these findings using larger and nationally representative samples and to investigate the synergistic effects of purpose in life in conjunction with other influencing factors. Gaining insight into the role of purpose in promoting health equity offers a promising avenue for researchers, healthcare professionals, and policymakers invested in enhancing adult health. By untangling the impacts of race and SES, we can deepen our comprehension of health disparities and develop targeted interventions to minimize the observed differences in health outcomes.

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**Data Availability** The data that supported the findings of this study were derived from the HANDL study.

## Declarations

**Conflict of Interest** The authors declare no competing interests.

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