

A self-determination theory approach to the social determinants of health and psychological wellbeing

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ABSTRACT

The social determinants of health (SDOH) are the non-medical conditions in which people are born, grow, live, and work. People's access to favorable SDOH affects a range of important health and quality of life outcomes. However, the link between having access to favorable SDOH (e.g. reliable utilities, stable housing, health care and transportation) and people's psychological wellbeing has been understudied, which limits the potential of interventions targeting these variables. Self-determination theory (SDT), which focuses on basic psychological needs and how people's social conditions can conduce to their satisfaction or frustration, may improve our understanding of how the resources provided within pervasive environments relate to people's wellbeing. We used partial least squares structural equation modelling to estimate paths from policy-addressable SDOH access conditions and socioeconomic position (income, education) to wellbeing and ill-being via need satisfaction and need frustration, in a nationally representative sample of Americans ($N = 10,000$). Consistent with SDT's dual process model, access to favorable SDOH related negatively to ill-being ($\beta = -.26$, 95% CI $[-.28, -.25]$) and positively to wellbeing ($\beta = .08$, 95% CI $[.06, .10]$) accounted for partially by basic psychological need frustration (indirect $\beta = -.22$ $[-.23, -.21]$) and need satisfaction (indirect $\beta = .12$ $[.12, .14]$), respectively. These results suggest that improving access to favorable SDOH may reduce people's ill-being by lowering their psychological need frustration. The data were cross-sectional, limiting the ability to draw directional conclusions. Nonetheless, this evidence highlights the potential importance of considering the pervasive influences of economic conditions and societal resources on people's ability to thrive psychologically as well as physically.

ARTICLE HISTORY

Received 18 October 2024
Accepted 18 February 2026

KEYWORDS

Basic psychological needs; health disparities; socioeconomic status; quality of life; self-determination theory

The *social determinants of health* (SDOH) are the non-medical conditions that shape people's health and development (Alderwick & Gottlieb, 2019). Such conditions include

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the settings and systems into which people are born, grow, live and work (Alderwick & Gottlieb, 2019; Beyene, 2023; Venkataramani et al., 2020). Favorable SDOH refer to resources like having access to reliable utilities, food security, stable housing, affordable health care, and safe transportation. Unfavorable access to these conditions undermines physical health (Alderwick & Gottlieb, 2019). For example, limited transportation options can restrict access to healthy food and healthcare services, increasing the risk of conditions like heart disease, diabetes and obesity (see Cockerham et al., 2017). Beyond these physical consequences, unfavorable SDOH may also carry significant psychological costs.

Self-determination theory (SDT; Ryan & Deci, 2017) is a widely researched psychological theory that specifies how societal affordances support or undermine psychological functioning. A large body of evidence demonstrates that humans have three basic psychological needs: autonomy (i.e. volition and agency), competence (i.e. ability and efficacy) and relatedness (i.e. reciprocal care). When social contexts support for these needs, people experience need satisfaction, which in turn promotes wellbeing. This sequence from need support to need satisfaction to wellbeing, has been described as ‘the bright path’ (Lépine et al., 2025, p. 295; Ryan & Deci, 2000). Conversely, when social contexts thwart basic psychological needs, people experience need frustration which leads to ill-being, reflecting ‘the dark path’ (Lépine et al., 2025, p. 295; Ryan & Deci, 2000). SDT refers to these bright and dark paths within its dual process model (Bradshaw et al., 2024; Donald et al., 2021; Haerens et al., 2015; Jang et al., 2016), whereby negative experiences link more strongly to need frustration and ill-being than they do to need satisfaction and wellbeing, and vice versa for positive experiences which link more strongly to need satisfaction and wellbeing.

To clarify how societal affordances bear on the dual process pathways to psychological functioning (Bradshaw et al., 2023, 2025; DeHaan et al., 2016), prior work has integrated SDT with the capabilities (Nussbaum, 2011) and primary goods (Rawls, 2001) frameworks. Consistent with the bright path, this body of evidence shows that when societies support capabilities, like having freedom to express political and religious views, people experience gains in basic psychological need satisfaction and thereby wellbeing (Bradshaw et al., 2025). Conversely, when societies fail to protect people from harms such as discrimination – which Nussbaum (2011) suggests is a well-functioning society is fundamentally required to do – people experience more need frustration and ill-being, consistent with the dark path.

The capabilities and primary goods frameworks overlap conceptually with the SDOH. Favorable SDOH conditions, such as access to safe housing and accessible healthcare, instantiate the capabilities and goods that Nussbaum (2011) and Rawls (2001) hold are essential for living well. The present research extends this work by examining the psychological correlates of favorable SDOH conditions, using more objective, policy-addressable indicators, rather than perceptions of general entitlements typically assessed in capabilities and primary goods measures. To focus on concrete access conditions, we indexed a targeted subset of social determinants, including food, utilities, housing stability, access to medical care and prescriptions and transportation. These indicators align primarily with International Classification of Diseases, Tenth Revision, Clinical Modification codes Z59 (housing/economic circumstances), Z75 (barriers to care and transportation) and Z91.12× (financial underdosing), rather than the full Z55–Z65

taxonomy. Rather than modelling these indicators as reflective manifestations of a latent SDOH construct, we treat them as a formative index of concrete access conditions, thereby aligning measurement with features of the social environment that policies and services can directly influence. This approach situates SDT's dual motivational processes within everyday access realities that are actionable at the level of social policy and service delivery.

To clarify how these elements fit together, the present study distinguishes two additional forms of psychological support beyond basic psychological needs. Within SDT, 'deficit needs' (Ryan & Deci, 2017, p. 84) refer to contextual preconditions whose absence is expected to heighten need frustration and, therefore, ill-being, consistent with the dark path of the dual process model. Restricted access to favorable SDOH, such as housing insecurity or inability to obtain healthcare, clearly meets this definition. Accordingly, their absence should relate most strongly to need frustration and ill-being (e.g. Chen et al., 2015; Martela & Ryan, 2020). In contrast, 'enhancement needs' refer to resources that foster growth (e.g. education) and are expected to relate most strongly to need satisfaction and wellbeing via the bright path.

In the domain of societal provisions and affordances, socioeconomic status (SES) indicators, such as income and education, often function as enhancement supports. By expanding people's capacities and choices, they are expected to relate more strongly and positively to need satisfaction and wellbeing than negatively to need frustration and ill-being. This does not imply that income and education lack deficit functions. When severely constrained, low income and barriers to educational access can operate like deficit needs, elevating need frustration and ill-being (Kaufman et al., 2020; Zhu et al., 2024). However, large national datasets show stronger associations between income and wellbeing than with experiences of ill-being, such as negative affect and stress, for which the associations tend to be smaller (Kahneman & Deaton, 2010). Similarly, meta-analytic evidence (Dong et al., 2025) and analyses of World Bank data for 26 OECD countries between 1995 and 2015 indicate modest, positive associations between education and wellbeing (Raghupathi & Raghupathi, 2020). Yet, causal estimates using an instrumental variable approach show education to be unrelated to mental health (Dahmann & Schnitzlein, 2019), suggesting smaller or potentially null links to ill-being.

It is uncontroversial that income and education can enable or constrain access to favorable SDOH. People with lower incomes are more likely to experience housing instability and limited access to healthcare (Haushofer & Fehr, 2014), and those with lower educational attainment are less likely to engage in health-promoting behaviours such as vaccination and smoking cessation (Raghupathi & Raghupathi, 2020; Ruokolainen et al., 2021). Yet, non-SES-dependent barriers, such as transportation, can constrain favorable SDOH access regardless of income or education. Although several SDOH indicators reference affordability, affordability extends beyond income alone, reflecting local prices, time and caregiving demands, transportation and provider availability. Thus, SES is a social position and SDOH represent specific access conditions, which are related but not interchangeable.

Accordingly, the present study separates SES positions (income and education) from access conditions (specific SDOH) to examine whether SDOH access relates to basic psychological needs and to wellbeing and ill-being beyond income and education, while also estimating the independent associations of SES indicators. Consistent with SDT, we

test the hypothesis that restricted SDOH access will relate primarily to need frustration and ill-being via the dark path, whereas income and education will relate primarily to need satisfaction and well-being via the bright path. This distinction is analytically important because it separates social position from modifiable access conditions, allowing clearer inference about which levers – income, education or specific service and resource barriers – are most relevant for intervention.

Present study

In this pre-registered study, we sought to address three questions: 1) Does the favorability of people's access to SDOH relate to their experiences of basic psychological need satisfaction and frustration, as well as to their wellbeing and ill-being, after controlling for income and education? 2) To what extent do basic psychological need satisfaction and frustration account for the associations between favorable SDOH access and indices of wellbeing and ill-being? 3) What are the independent associations of income and education on wellbeing and ill-being, and to what extent are these associations accounted for by need-based experiences? Based on SDT and the evidence outlined above, we made the following predictions. People's reports of favorable SDOH access will:

- (1) Positively correlate with basic psychological need satisfaction.
- (2) Negatively correlate with basic psychological need frustration.
- (3) Positively correlate with wellbeing.
- (4) Negatively correlate with ill-being.
- (5) Consistent with the dual process model, show an association with ill-being that is accounted for, at least in part, by basic psychological need frustration, even after controlling for income and education.
- (6) Consistent with the dual process model, show an association with well-being that is accounted for, at least in part, by basic psychological need satisfaction, after controlling for income and education; and
- (7) Show that the effects of income and education are primarily in relation to well-being and are accounted for primarily by basic psychological need satisfaction.

Method

Participants

We analyzed responses from a nationally representative online survey of 10 000 American adults, conducted by Morning Consult. The survey was commissioned by the Evernorth Research Institute (The Cigna Group) to inform member wellbeing and vitality. The present research is a separate, pre-registered secondary analysis. Morning Consult implemented national quotas and quality controls and delivered a de-identified dataset for analysis. The sponsor had no role in the hypotheses, analyses or interpretation reported here. We received ethical approval to perform secondary data analysis on these non-identifiable data from the Australian Catholic University's Human Research Committee (2022-2967N).

The sample comprised 10,000 people (5637 females, 4245 males and 118 people who preferred not to say). With respect to age, 31.7% were 18–34 years old, 16.3% were 35–44, 35.5% were 45–64 and 16.5% were 65 years and older. Sixty-eight percent of participants identified as Caucasian, 16.7% as African American, 11.2% as Hispanic, 3% as Asian American, .83% as American Indian and .3% as Hawaiian or Polynesian. Of those who reported sexual orientation, 89% identified as heterosexual, 11% as lesbian, gay, bisexual, transgender, queer, asexual, gender non-conforming or another identity (LGBTQIA+), and 260 (2.6%) participants preferred not to answer. In terms of SES, participants spanned a wide range of annual household income, from less than USD \$25,000 (25.23%) to more than USD \$200,000 (2.08%). Most participants reported household incomes below USD \$100,000 (83.31%), and 351 (3.5%) participants did not report income.

Preregistration and transparency

The analysis for this study was preregistered on the Open Science Framework (de-identified data and R code are available at <https://osf.io/zjfbu/overview>). Planned analyses were specified in code rather than detailed text. We did not make any analytic deviations from this plan; however, several validated scales were administered in shortened form to reduce participant burden, as noted below. The research team were involved in the development of the survey but had not analyzed these variables prior to the present study.

Materials

Social determinants of health

We treated SDOH as a formative composite of items designed to assess concrete, practically addressable access conditions. Seven face-valid items were used to index the favorability of people's SDOH access. The items assessed whether participants had experienced barriers related to food security, utilities, housing stability, financial strain, access to medical care, access to prescription medications and transportation to healthcare.

Specifically, participants were asked: 1) 'In the last 3 months, did you ever eat less than you felt you should because there wasn't enough money for food?', 2) 'In the past 3 months, has the electric, gas, oil or water company threatened to shut off services in your home?', 3) 'Are you worried or concerned that, in the next 3 months, you may not have stable housing that you own, rent or stay in, as a part of a household?', 4) 'Sometimes people find that their income does not quite cover their living costs. In the last 12 months, has this happened to you?', 5) 'During the past 12 months, was there a time you needed to see a doctor or get medical care but DID NOT get it because of cost?', 6) 'During the past 12 months, was there a time when you needed to get a prescription medication but DID NOT get it because of cost?' and 7) 'In the last 12 months, have you ever had to go without health care because you didn't have a way to get there?'.

Each item was answered using a binary response format (1 = 'Yes', indicating a barrier was present; 2 = 'No', indicating the absence of a barrier), such that higher scores reflected more favorable SDOH access. Because this construct is formative (indicators define the construct and are non-interchangeable), internal consistency coefficients are

not appropriate indicators of construct validity. Scores were therefore computed as the mean of the seven items.

Income and education

Participants were asked, 'In 2022, what was your household income from all sources?'. Responses were provided on a nine-point scale ranging from 1 = Less than \$25,000 to 9 = More than \$200,000. We analyzed this variable as a continuous indicator of income, with higher scores indicating higher levels of socioeconomic status. Educational attainment was assessed by asking, 'What is the highest degree or level of school you have completed?' Responses were provided on a 10-point scale ranging from 1 = No schooling to 10 = Doctorate degree. Again, we treated this as a continuous variable, with higher scores indicating higher levels of education. We included income and education to reduce confounding by social position and to provide conservative estimates of SDOH associations that are not attributable to these SES indicators.

Basic psychological need satisfaction and frustration

We indexed basic psychological need satisfaction and frustration using a 12-item¹ version of the Basic Psychological Need Satisfaction and Frustration Scale (Chen et al., 2015). Two items assessed each of autonomy satisfaction (e.g. 'I feel a sense of choice and freedom in the things I undertake'), autonomy frustration (e.g. 'I feel forced to do many things I wouldn't choose to do'), relatedness satisfaction (e.g. 'I feel connected with people who care for me, and for whom I care'), relatedness frustration (e.g. 'I feel that people who are important to me are cold and distant towards me'), competence satisfaction (e.g. 'I feel capable at what I do') and competence frustration (e.g. 'I feel insecure about my abilities'). Participants responded using a seven-point scale ranging from 1 = 'Not at all true' to 7 = 'Very true'. All satisfaction items were combined to form a basic psychological need satisfaction score (Cronbach's $\alpha = 0.82$), and all frustration items were combined to form a basic psychological need frustration score (Cronbach's $\alpha = 0.84$).

Wellbeing

Psychological wellbeing was assessed using a four-item composite index combining three items¹ from the Subjective Vitality Scale (Ryan & Frederick, 1997) including 'I feel alive and vital' and 'I look forward to each new day', answered on a scale from 1 = 'Not at all true' to 7 = 'Very true', and one item assessing life satisfaction ('In general, how satisfied are you with your life?', Diener et al., 1985), answered on a scale from 1 = 'Very satisfied' to 5 = 'Very dissatisfied', and reverse scored. The variable that combined these widely used and valid measures showed good internal consistency (Cronbach's $\alpha = 0.84$).

Ill-being

Psychological ill-being was assessed using a 10-item composite index. Nine items were drawn from the short version of the Depression, Anxiety and Stress Scale (Lovibond & Lovibond, 1995; Yusoff, 2013), assessing depression (e.g. 'I felt that I had nothing to look forward to'), anxiety (e.g. 'I felt I was close to panic') and stress (e.g. 'I found myself getting agitated'). These items were answered on a four-point scale ranging from 1 = 'Did not apply to me at all' to 4 = 'Applied to me very much, or most of the time'. These nine items were supplemented with a single item assessing² depletion ('I feel drained'),

answered on a seven-point scale ranging from 1 = 'Not at all true' to 7 = 'Very true'. We modelled a single ill-being index to reduce multicollinearity among highly correlated subscales and because the analytic focus was on general ill-being rather than domain-specific symptoms. The resulting 10-item composite demonstrated very good internal consistency (Cronbach's $\alpha = 0.91$).

Results

Intercorrelations

As shown in Table 1, the study's variables correlated with each other consistent with our hypotheses and expectations. People's reports of access to the SDOH correlated positively with basic psychological need satisfaction ($r = .24$) and wellbeing ($r = .28$) and negatively with basic psychological need frustration ($r = -.41$) and ill-being ($r = -.52$). SDOH correlated only modestly with income ($r = .17$) and education ($r = 0.11$), supporting the treatment of these SES variables and SDOH as related but distinct.

Group differences in access to the social determinants of health

SDOH access scores for sex, age, ethnic, and sexual orientation groups are presented in Table 2. On average, participants reported a relatively high degree of

Table 1. Intercorrelations between the study variables.

	1	2	3	4	5	6
1. Income	–					
2. Education	.44*	–				
3. SDOH	.17*	.11*	–			
4. BPNS	.20*	.17*	.24*	–		
5. BPNF	–0.02	–.04*	–.41*	–.32*	–	
6. Wellbeing	.21*	.13*	.28*	.69*	–.31*	–
7. Ill-being	–.08*	–.10*	–.52*	–.35*	.68*	–.42*

Notes. * = $p < .001$. SDOH = social determinants of health, BPNS = basic psychological need satisfaction, BPNF = basic psychological need frustration.

Table 2. Means and standard deviations for reported access to the social determinants of health by sex, age group, ethnicity and sexuality.

Group	Category	Mean	SD
Sex	Female	1.71	0.29
	Male	1.74	0.30
Age	18–34	1.67	0.30
	35–44	1.64	0.32
	45–64	1.71	0.30
	65+	1.90	0.18
Ethnicity	African American	1.71	0.28
	American Indian	1.62	0.29
	Asian American	1.79	0.27
	Hawaiian	1.62	0.31
	Hispanic	1.65	0.32
Sexuality	White	1.74	0.30
	Heterosexual	1.74	0.29
	LGBTQIA+	1.61	0.30

access to the SDOH ($M = 1.86$, $SD = 0.30$, on a scale ranging from 1 to 2). We compared groups (sex, age, ethnicity, sexuality) using ANOVA with Tukey HSD. Females reported less favorable access to the SDOH compared to males ($F(1, 9076) = 29.34$, $p < .001$), with a mean difference (MD) of -0.11 (95% CI $[-0.16, -0.07]$, $p < 0.001$). Age groups differed ($F(3, 9169) = 281.40$, $p < .001$), with the 35–44 age group reporting the least favorable access compared to all other groups, with an MD of -0.09 (95% CI $[-0.17, -0.01]$, $p = 0.017$) compared to the 18–34 group, MD = -0.24 (95% CI $[0.16, 0.32]$, $p < 0.001$) compared to the 45–64 group and MD = -0.87 (95% CI $[-0.78, -0.96]$, $p < 0.001$) compared to the 65+ group. There was a statistically significant effect of sexuality ($F(1, 8992) = 163.00$, $p < 0.001$), where the LGBTQIA+ group reported worse access to the SDOH compared to the heterosexual group (MD = -0.43 , 95% CI $[-0.50, -0.37]$, $p < 0.001$). All these group differences persisted, after controlling for income and education.

The favorability of SDOH access also differed by ethnicity ($F(5, 9167) = 22.15$, $p < .001$). White participants reported better access than African American (MD = 0.10 , 95% CI $[0.02, 0.18]$, $p < 0.01$) and Hispanic (MD = 0.31 , 95% CI $[0.21, 0.41]$, $p < 0.001$) participants, Asian Americans reported better access than African American (MD = 0.27 , 95% CI $[0.08, 0.46]$, $p < 0.001$) and Hispanic participants (MD = 0.48 , 95% CI $[0.28, 0.67]$, $p < 0.001$), and African Americans reported better access than Hispanic participants (MD = 0.21 , 95% CI $[0.09, 0.33]$, $p < 0.001$). Adjusting for income and education, Hispanic participants consistently reported poorer SDOH access compared to their Asian, White and African American counterparts.

Structural equation model

Given the formative quality of the SDOH variable, we used partial least squares structural equation modelling (PLS-SEM) to estimate the direct effects of income, education and SDOH access on well-being and ill-being, as well as the indirect effects of basic psychological need satisfaction and frustration on the associations between SDOH access and well-being and ill-being. PLS-SEM was selected because it is well-suited to models that include formative constructs and complex mediation structures, without requiring multivariate normality. Analyses were conducted in R version 4.1.1 (R Core Team, 2025) using the SEMinR package (Ray et al., 2022). We first specified the measurement model, followed by the structural model, and then estimated parameters using 10 000 bootstrap samples. Model fit was evaluated using the standardized root mean square residual (SRMR), a widely accepted fit index in PLS-SEM (Huang, 2021), where values less than 0.08 are typically indicative of good model fit (Henseler et al., 2014). The model demonstrated excellent fit (SRMR = 0.01), indicating close correspondence between the model and the observed data.

Table 3 reports the model's structural paths with 95% bootstrap confidence intervals, and Table 4 summarizes direct, indirect and total effects (all with 95% CIs). Unadjusted associations between SDOH access and study variables are presented as correlations in Table 1, whereas SES-adjusted estimates are shown in Tables 3 and 4. The unadjusted bivariate associations in Table 1 closely matched the SES-adjusted total effects in Table 4: SDOH access with wellbeing, $r = .28$ versus $\beta = .24$ (approximately 14% attenuation); SDOH access with ill-being, $r = -.52$ versus $\beta = -.51$ (stable); SDOH access with basic

Table 3. Structural path coefficients with 95% confidence intervals bootstrapped 10 000 times linking income, education and social determinants of health to basic psychological need satisfaction and basic psychological need frustration and those needs to wellbeing and illbeing.

From – To	Coefficients	95% CI
Income to BPNS	0.12	[0.10, 0.14]
Income to BPNF	0.06	[0.04, 0.08]
Education to BPNS	0.10	[0.08, 0.12]
Education to BPNF	−0.02	[−0.04, −0.00]
SDOH to BPNS	0.20	[0.18, 0.22]
SDOH to BPNF	−0.42	[−0.44, −0.40]
BPNS to WB	0.64	[0.62, 0.65]
BPNS to IB	−0.11	[−0.13, −0.10]
BPNF to WB	−0.09	[−0.10, −0.07]
BPNF to IB	0.53	[0.51, 0.54]

psychological need satisfaction, $r = .24$ vs $\beta = .20$ (approximately 17% attenuation); and SDOH access with basic psychological need frustration, $r = -.41$ vs $\beta = -.42$ (stable). This pattern indicates that adjustment for income and education did not meaningfully alter conclusions while protecting against SES confounding.

As shown in Table 4, access to favorable SDOH was most strongly and negatively associated with ill-being ($\beta = -0.26$ [$-0.28, -0.25$]), with only a small positive association with wellbeing ($\beta = 0.08$ [$0.06, 0.10$]). The negative association between SDOH access and ill-being was partially mediated by basic psychological need frustration ($\beta = -0.22$ [$-0.23, -0.21$]), whereas the association with wellbeing showed a small indirect effect via basic psychological need satisfaction ($\beta = 0.12$ [$0.12, 0.14$]).

Together, these results suggest that favorable SDOH access relates modestly to wellbeing via basic psychological need satisfaction, but may primarily confer a protective effect against ill-being, largely through reductions in basic psychological need frustration. Also evident was a small, positive association between income and wellbeing ($\beta = 0.08$, [$0.07, 0.10$]), which was accounted for by basic psychological need satisfaction ($\beta = 0.08$, [$0.06, 0.09$]).

Discussion

In this preregistered investigation, we examined the pathways through which the favorability of people's access to essential resources – food, shelter, utilities, healthcare and the ability to pay bills – relates to psychological need satisfaction and frustration, and in turn, to well-being and ill-being. To address this question, we drew on a large, representative sample of 10 000 U.S. participants from diverse demographic, geographic, and socio-economic backgrounds. Consistent with SDT's dual process framework, we reasoned that unfavorable access these basic goods and resources would be primarily associated with greater frustration of the psychological needs for autonomy, competence and relatedness, which have been linked to undesirable outcomes in prior research. These hypotheses were largely supported. Favorable access to the SDOH was negatively associated with ill-being, in part through higher basic psychological need frustration, whereas greater access to the SES-related resources of income and education was positively associated with

Table 4. Total and direct effects of income, education and the social determinants of health on wellbeing and ill-being, and indirect effects via basic psychological need satisfaction and basic psychological need frustration, in a partial least squares structural equation model bootstrapped 10 000 times.

Path	Direct Effect			Total Effect			Indirect Effect via BPNS			Indirect Effect via BPNF				
	Coef.	t	95% CI	Coef.	t	95% CI	Coef.	SD	t	95% CI	Coef.	SD	t	95% CI
Income -> Wellbeing	0.08	10.79	[0.07, 0.10]	0.16	14.95	[0.13, 0.18]	0.08	0.01	11.11	[0.06, 0.09]	-0.00	0.00	-5.16	[-0.01, -0.00]
Ill-being	0.01	1.13	[-0.01, 0.02]	0.03	2.97	[0.01, 0.05]	-0.01	0.00	-8.56	[-0.02, -0.01]	0.03	0.01	5.91	[0.02, 0.04]
Education -> Wellbeing	-0.02	-2.83	[-0.04, -0.01]	0.04	4.22	[0.02, 0.07]	0.06	0.01	9.34	[0.05, 0.08]	0.00	0.00	2.21	[0.00, 0.00]
Illbeing	-0.03	-3.81	[-0.05, -0.01]	-0.05	-5.57	[-0.07, -0.04]	-0.01	0.00	-7.73	[-0.01, -0.01]	-0.01	0.01	-2.26	[-0.02, -0.00]
Social Determinants of Health -> Wellbeing	0.08	8.85	[0.06, 0.10]	0.24	22.03	[0.22, 0.27]	0.12	0.01	18.87	[0.12, 0.14]	0.04	0.00	9.90	[0.03, 0.04]
Illbeing	-0.26	-31.19	[-0.28, -0.25]	-0.51	-62.53	[-0.52, -0.49]	-0.02	0.00	-11.04	[-0.03, -0.02]	-0.22	0.01	-37.83	[-0.23, -0.21]

Note. BPNS = basic psychological need satisfaction, BPNF = basic psychological need frustration, Coef. = coefficient, SD = standard deviation, CI = confidence interval. Given the large sample size, effects smaller than 0.05 can become extremely precise and therefore statistically significant; nonetheless, such small effects are unlikely to be phenomenologically meaningful (Funder & Ozer, 2019).

wellbeing, with these links partially accounted for by basic psychological need satisfaction.

These results extend prior evidence showing that resource constraints and systemic restrictions predict psychological distress and poorer functioning (Braveman & Gottlieb, 2014; Marmot, 2005). By indexing concrete access conditions rather than perceived entitlements, our approach aligns with arguments from the capabilities tradition (Nussbaum, 2011; Sen, 2005) that provisions enabling everyday functioning are essential for human flourishing. Our SDOH indicators, capturing food insufficiency, threatened utility shut-off, housing instability, forgone care due to cost, prescription cost-related non-adherence and transportation barriers, yielded results consistent with prior evidence demonstrating clear mental health consequences of these access barriers.

Food and housing insecurity have been consistently associated with higher depressive and anxiety symptom levels in population surveys and with worsening physical symptoms over time (Gundersen & Ziliak, 2015). Similarly, energy insecurity has been linked to elevated psychological distress. In a cross-sectional study of 187 million U.S. adults, even a single experience of energy insecurity within one year was associated with more than double the odds of reporting symptoms of depression and anxiety (Graff & Aung, 2025).

Reductions in cost barriers have also been shown to mitigate healthcare avoidance, which in turn predicts improvements in physical health and psychological distress (Sommers et al., 2017). Cost-related medication nonadherence has been prospectively linked to worse symptoms and poorer chronic disease outcomes (Goldman et al., 2007). Reviews further indicate that transportation barriers are associated with missed health-care, and that some transportation assistance programs improve attendance (Syed et al., 2013).

The present findings support the thrust of this literature and extend it by specifying a plausible psychological mechanism. In particular, the strongest links between concrete access barriers and ill-being appeared to operate, at least in part, through basic psychological need frustration, whereas SES indicators were more strongly linked to need satisfaction and wellbeing. This SDT-consistent differentiation – rarely examined in prior SDOH research, which seldom assesses basic psychological need satisfaction and frustration directly (Vansteenkiste et al., 2023) – may help clarify the psychological processes underlying the group differences observed in the present study.

Group differences in SDOH access favorability

Important group differences emerged in this research. Female, Hispanic, middle-aged (35–44) and LGBTQIA+ participants reported significantly less favorable access to SDOH compared to other groups. Notably, these differences persisted even after controlling for income and education, pointing to structural factors beyond socioeconomic status.

Previous evidence aligns with these group differences, particularly in the domain of health care access. Using data from the 1997–2017 National Health Interview Survey, Wolfe et al. (2020) estimated that 5.8 million U.S. adults (1.8%) delayed healthcare in 2017 due to transportation barriers, with especially high prevalence among Hispanic adults, even after adjusting for sociodemographic characteristics and health status.

There is also evidence that cisgender women, as well as transgender and gender-diverse individuals, face unique barriers to healthcare access. Analyses of more than 100 000 participants found that women and gender minorities were more likely than men to delay seeking care (Finneran et al., 2023). Among women, delays were often attributed to cost and lack of childcare. Gender minorities more frequently cited nervousness about seeking care, transportation barriers, and inability to take time off work.

Studies further show consistently higher food insecurity among Hispanic and Black households (U.S. Department of Agriculture Economic Research Service, 2019), and energy and utility insecurity disproportionately affect low-income households. Hernández (2016) reported that difficulties paying for utilities, receipt of shut-off threats and unsafe coping behaviors related to energy insecurity were more prevalent in low-income households and were linked to worse mental and physical health. Housing instability and poor housing quality likewise disproportionately affect lower-income groups and racial and ethnic minorities (Bentley et al., 2011).

Taken together, these literatures point to mechanisms consistent with SDT. Intersecting access barriers (e.g. transportation, time, food, utilities, housing) restrict people's choice sets, undermining autonomy; repeated failures and limited contingency control thwart competence; and economic pressure, role conflict, and caregiving demands strain relationships, thwarting relatedness (Perez & Karney, 2025). We extend this work by showing that group differences in the favorability of SDOH access are not merely a function of SES and appear to operate primarily through SDT's dark path (need frustration to ill-being), whereas SES indicators relate more strongly to the bright path (need satisfaction to wellbeing). This provides a theory-specified account of how structural disadvantage permeates psychological functioning in ways that disproportionately affect certain groups.

Implications

These findings help clarify which structural and policy changes are most likely to benefit psychological functioning. Policies and practices that reduce access barriers should lower need frustration and, in turn, ill-being, while education- and income-enhancing policies are more likely to promote need satisfaction and wellbeing. Existing evidence supports this distinction. For example, longitudinal housing studies show that improvements in housing quality and stability are associated with small-to-moderate gains in mental health over time (Rolfe et al., 2020).

However, some access barriers warrant more nuanced policy development. Evidence regarding transportation interventions is mixed. One randomized trial offering rideshare services to primary-care patients found no differences in missed care between treatment and control groups (Chaiyachati et al., 2018). In contrast, a review of 61 studies found consistent benefits of reducing transportation barriers (Syed et al., 2013). Syed et al. (2013) emphasized the importance of scheduling support, coordination with clinics and targeting individuals for whom transportation is a salient barrier. In the Chaiyachati et al. study (2018), baseline missed-visit rates were already low, travel distances were short, and public transit was robust – conditions under which transportation may not meaningfully constrain access. For

policymakers, these findings suggest that specific SDOH barriers should be addressed within broader networks of constraints, rather than in isolation.

Limitations

Despite several strengths, including preregistration, a large and nationally representative U.S. sample, diverse demographic coverage and use of concrete, policy-addressable SDOH indicators, several limitations should be acknowledged.

First, the cross-sectional design precludes causal inferences and temporal ordering, although substantial evidence supports causal effects of poverty and constrained access to basic goods on health and well-being (Beech et al., 2021). Second, the SDOH composite captured a targeted subset of barriers rather than the full International Classification of Diseases, Tenth Revision, Clinical Modification taxonomy, instead primarily reflecting Z59 (housing/economic circumstances), Z75 (barriers to care and transportation) and Z91.12× (financial under-dosing). Consequently, domains such as safety, childcare, work scheduling and social support, were not assessed.

Third, SDOH access was measured using binary indicators, limiting variability and likely attenuating effect sizes. The focus on more severe access barriers further constrained variability at the lower end of the distribution. More moderate constraints such as food quality, overcrowded housing, time scarcity from multiple jobs, or limited appointment availability, may also undermine need satisfaction and elevate frustration over time. Future work would benefit from graded indicators, broader domains and multi-level data.

Fourth, well-being and ill-being were measured with validated but shortened scales, potentially compressing construct breadth. Finally, data were collected through a professional survey company in the U.S. Although sampling was broad, generalizability beyond the U.S. healthcare and policy context remains uncertain.

Conclusions

This research underscores the importance of considering economic and access conditions as pervasive influences on psychological need satisfaction, frustration and well-being. Our findings show that concrete access barriers – modelled formatively as SDOH favorability – relate most strongly to basic psychological need frustration and ill-being, whereas SES indicators such as income and education relate more strongly to basic psychological need satisfaction and wellbeing. These patterns align with the dual process framework of SDT and with philosophical accounts by Sen and Nussbaum that frame basic provisions as prerequisites for flourishing.

The results also point to actionable levers. Reducing SDOH access frictions is likely to lower need frustration and psychological distress, while income- and education-based interventions may more directly support well-being. Distinguishing between access conditions and social position may help policymakers identify whether reducing barriers or enhancing resources is the more effective lever in a given context. Future research should expand SDOH domains, employ longitudinal and quasi-experimental designs and examine where barrier removal yields the greatest

psychological benefit. Understanding how macro-level economic and political forces shape well-being remains a critical interdisciplinary task, one to which the present study aims to contribute.

Notes

1. Our use of the shortened measures of basic psychological need satisfaction and frustration, vitality and depletion, are minor deviations from our pre-registration, which specified full scale versions of these measures. This was necessary to reduce participant burden.
2. This change reflects space constraints on the final survey, and we do not expect the results to have been meaningfully altered.

Authors' contributions

All authors made substantial contributions to the conception and design of the work, contributed to the draft of the work, revised it critically and approved the version to be published.

Disclosure statement

No potential conflict of interest was reported by the authors.

Funding

This work was supported by The Cigna Group (industry sponsor). The sponsor commissioned Morning Consult to collect the survey data used in this study (Cigna Vitality Benchmark Study; May 2022) and provided financial support to the first, second, and last authors for analysis of the data and preparation of the manuscript. No grant number applies.

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This study reports secondary analyses of de-identified survey data collected in May 2022 as part of the Cigna Vitality Benchmark Study. The survey was administered by Morning Consult, which conducted participant recruitment and consent procedures. The author team was not involved in data collection or informed consent.

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