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Values and Stress: Examining the Relations Between Values and General and Domain-Specific Stress in Two Longitudinal Studies

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Stress experiences have been found to vary at both the interindividual and intraindividual levels. The present study investigated the concurrent and longitudinal associations between values and stress at both the between-person and the within-person levels. We considered multiple aspects of stress, including self-reported stressor exposure and perceived stress, as well as general and domain-specific stress. In Study 1, data were drawn from the Midlife in the United States ($N = 3,905$) to test the between-person concurrent and prospective relations between values, changes in values, and general and domain-specific perceived stress. In Study 2, data from the Longitudinal Internet Studies for the Social Sciences ($N = 13,940$) were used to examine the associations between values and general and domain-specific self-reported stressor exposure and perceived stress at the between- and within-person levels. The results supported meaningful associations between values and individual differences in self-reported stressor exposure and perceived stress. In general, growth-oriented values consistently displayed negative relations to perceived stress, especially in the job domain. Social-focused values also showed negative associations with stress experiences. After controlling for between-person variance, temporal relations were also found between values and stress at the within-person level, with the pattern varying across types and domains of stress. Findings from the present study provide us with insights into the interindividual and intraindividual processes of values and stress.

Keywords: values, stressor exposure, perceived stress, longitudinal, between versus within person

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Stress has received tremendous attention in psychological research. Studies have demonstrated that stress has significant influences on important life outcomes, including mental and physical health (Epel et al., 2018; Liu, 2013), cognitive functioning (Greenberg et al., 2014), various vocational outcomes (Sonnentag & Frese, 2013), and relationship quality (Randall & Bodenmann, 2017). However, there are considerable variations in people's experiences of stress at both the interindividual and the intraindividual levels. Some people are more likely than others to encounter stressful situations and/or perceive situations as stressful. Furthermore, individuals also have different stress experiences over time and across situations. Because of the substantial impact of stress on various life outcomes, it is essential to understand factors that contribute to individual differences in stress, as well as factors that may explain variations in stress within individuals.

Values are an important personality factor that has been found to be associated with attitudes, decisions, and behaviors across different life domains (Maio, 2017; Sagiv et al., 2017). Yet little is known about how values are connected to stress. Do individuals with different value priorities have different stress experiences? Does the value-stress link differ across conceptualizations of stress (e.g., stressor exposure vs. perceived stress) and across different stress domains (e.g., job stress, financial stress)? In addition to variations among individuals, values and stress are also dynamic within individuals across time; it remains unknown how they are interconnected to each other over time at the within-person level. Is there a reciprocal relationship, or do changes in one act as antecedents of changes in the other?

Investigating these questions is crucial for improving our understanding of individual differences in stress experiences. Examining the relations between different values and stress in different conceptualizations and life domains informs us of the nuances of value-stress associations, contributing to refining theories of individual differences in stress. Extending the analyses to the

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The preregistration and scripts for the analyses can be found at https://osf.io/yxhtc/?view_only=84de2c0bc0cc4757954ae27f9a993186. The authors are not authorized to share the data used in the present study in an open-access repository. Data used from the Midlife in the United States are available at https://midus.wisc.edu/. Data used from the Longitudinal Internet Studies for the Social Sciences are available upon request from the original data sources.

Jing Luo played a lead role in conceptualization, data curation, formal analysis, investigation, methodology, and writing–original draft and an equal role in writing–review and editing. Emily C. Willroth played a supporting role in conceptualization, formal analysis, investigation, and methodology and an equal role in writing–review and editing.

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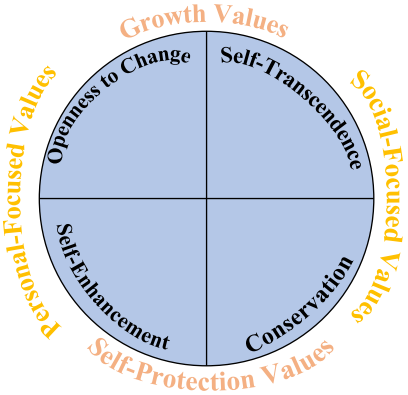
within-person level further provides insights into the dynamics of changes in values and stress and will inform the development of intervention strategies to mitigate stress experiences. Thus, we used data from two longitudinal studies to examine the abovementioned research questions.

Theoretical Basis for the Association Between Values and Stress

In this section, we begin by defining values and stress, and then we consider the theoretical basis for an association between the two. Values are defined as trans-situational motivational goals with varying importance that serve as guiding principles in the life of a person or group (Schwartz, 1992; Schwartz et al., 2012). The Schwartz's value theory (Schwartz, 1992; Schwartz et al., 2012) is the most widely used model of personal values. The model proposes a hierarchical structure of values that differentiates four higher order value dimensions, forming a circular motivational continuum (see Figure 1). The four higher order values summarize two orthogonal dimensions: self-transcendence versus self-enhancement and openness to change versus conservation. Self-transcendence values emphasize concern for the welfare and interests of others, contrasting with self-enhancement values that are focused on the pursuit of self-interests, success, and dominance. Openness to change captures values that are focused on promoting independence of thoughts, feelings, and actions and readiness for change, whereas conservation features values that emphasize self-restriction, order, and resistance to change. The four value types can also be organized based on the interests they serve (Schwartz, 1992, 2006). Specifically, self-enhancement and openness to change are considered personal-focused because they primarily serve to regulate how individuals express their personal characteristics and interests. In contrast, self-transcendence and conservation are social-focused values, as they regulate how individuals interact socially with others and preserve cooperative and positive social relations. Meanwhile, the four higher order value dimensions also differ in their relations to anxiety (Schwartz, 2006, 2010). Self-enhancement and conservation are classified as self-protection values, which express a motivation to avoid or control anxiety, threat, uncertainty, and conflict. On the other hand, self-transcendence and openness to change are identified as growth values, which emphasize expanding the self by focusing on autonomous and self-expressive exploration and promoting the welfare of others and nature.

Figure 1

Schematic Representation of the Major Dimensions of Values (Schwartz, 1992; Schwartz et al., 2012)



Note. See the online article for the color version of this figure.

Stress refers to a process with multiple stages and dimensions, including stressor exposure and stress response (S. Cohen et al., 1995; Epel et al., 2018; Harkness & Monroe, 2016). Stressor exposure is conceptualized as exposure to external environmental events or conditions that are potentially demanding, threatening, or challenging (Breznitz & Goldberger, 1993; Dohrenwend & Dohrenwend, 1974; Wheaton & Montazer, 2010). Perceived stress is individuals' psychological responses to those external environmental exposures. As the most commonly accepted view, the transactional model of stress (Lazarus & Folkman, 1984) suggests that psychological stress perception results from the appraisal of external situations (primary appraisal) and coping resources (secondary appraisal). Perceived stress occurs when individuals evaluate the demands of their confronted circumstances as taxing or exceeding their perceived resources and endangering their well-being.

The Effects of Values on Stress

Several theoretical frameworks imply the presence of associations between personal values and stress experiences. Both personal values and stress have motivational goals at their cores. Across different conceptualizations of stress, individuals' values and goals are delineated as playing essential roles in stress experiences. For example, the basic tenet of the conservation of resources (COR) theory for stress is that people are motivated to protect their current resources and acquire new resources (Halbesleben et al., 2014; Hobfoll, 1989). According to the COR theory, the occurrence of stress is defined as loss/potential loss of resources or no resource gain after resource investment, with resources specified as anything that individuals value or perceive as useful to help attain their goals. Similarly, though not explicitly emphasized by the transactional model of stress, it has been implied that the stress process involves a continuous evaluation of the situation and individuals' desired goals, and individuals perceive stress when the conditions are appraised as preventing or impeding maintenance or attainment of the desired goals (Carver & Scheier, 2021).

Also, the stress generation hypothesis reveals an association between individual characteristics, such as values, and stressor exposure. As the stress generation hypothesis posits (Hammen, 1991, 2006), rather than being passive victims of stressors, individuals actively contribute to and create their own environments based on their characteristics, which in turn impact the occurrence of certain stressors. Thus, individuals' values may influence their behaviors and important life decisions, which make them more or less likely to encounter certain stressors in life. As people appraise and react to these stressor encounters, values also play roles in their stress perception.

Although no theory has been exclusively proposed to describe the association between specific values and stress, theories have been developed for the links between values and other psychosocial constructs, such as subjective well-being. We first review those theories and then discuss their potential implications for the

value-stress association.[1] Studies on the relation between values and subjective well-being largely adopted two compatible perspectives: the "healthy" values perspective (Bilsky & Schwartz, 1994; Sagiv & Schwartz, 2000) and the self-determination theory (Deci & Ryan, 2012; Ryan & Deci, 2001). In general, these two theoretical perspectives focus on the growth versus self-protection dimensions. According to these theories, growth-related values are likely to be positively linked to well-being because the motivations underlying those values promote self-actualization and satisfaction of the basic needs of autonomy, competence, and relatedness (Fischer & Karl, 2023; Grosz et al., 2021; Ryan & Deci, 2001; Sortheix & Schwartz, 2017). Conversely, self-protection values are proposed to be negatively associated with well-being because their underlying goals focus on preventing or controlling threats and uncertainty, which undermine well-being (Fischer & Karl, 2023; Sortheix & Schwartz, 2017). Meanwhile, theories have also been proposed for the links between personal- versus social-focused values and subjective well-being. As prior work suggests, personal-focused values may promote subjective well-being because emphasizing these values allows the pursuit of personal goals and the expression of personal interests and capacities (Fischer & Karl, 2023; Grosz et al., 2021). On the contrary, social-focused values may decrease subjective well-being because prioritizing these values leads to preoccupation of problems, needs, and expectations of others (Fischer & Karl, 2023; Grosz et al., 2021).

Although the above-mentioned theories are proposed for explaining the connections between values and subjective well-being, they can provide informative perspectives for the association between values and stress. As these theories imply, compared to self-protection values, growth-related values focus on the pursuit of personal goals and interests and self-actualization, making individuals less likely to attend and interpret situations as threatening uncertainty (Fischer & Karl, 2023; Sagiv & Schwartz, 2000; Schwartz et al., 2000) and therefore resulting in a reduced level of perceived stress. Meanwhile, compared to personal-focused values that allow individuals to concentrate on their own goals and interests, social-focused values restrain individuals from pursuing personal goals and needs in order to coordinate with others (Fischer & Boer, 2011; Fischer & Karl, 2023). Consequently, with unfulfilled personal desires and burdened needs and expectations from others, social-focused values may be more likely than personal-focused values to lead to the feeling of overwhelming and heightened perception of stress. Thus, openness to change, because of its growth-related and personal-focused nature, may be related to lowered perceived stress; in contrast, conservation, due to the combined orientations of self-protection and social focus, is likely to be linked to elevated perceived stress. Because self-transcendence and self-enhancement values combine the motivational orientations that have been proposed to involve conflicting implications for perceived stress (growth-related and social-focused orientations for self-transcendence and self-protective and personal-focused orientations for self-enhancement), they are expected to have complex and context-dependent relations to stress (Fischer & Karl, 2023; Grosz et al., 2021). For self-transcendence, its growth-related focus contributes to reduced stress perception. Meanwhile, though its social focus may result in increases in perceived stress about the larger society and the welfare of others, previous research has suggested that when stress about the self and close extensions is the focus (as in the present study), self-transcendence may lead to less attention being paid to threats to self-interested outcomes and thus a lower level of perceived stress (Schwartz et al., 2000). In terms of self-enhancement, according to prior work (Schwartz et al., 2000), though its personal-focused orientation allows individuals to prioritize their own goals and interests, self-interests are usually pursued in ways of controlling over others, seeking to meet social standards and gain social recognition, and/or focusing on self-indulgence/sensual gratification, resulting in more attention paid to threats to self-interest and higher likelihood of interpreting situations as posing such threats.

Regarding stressor exposure, the relations may be more complex. As openness to change and self-transcendence are related to autonomous and self-expressive experiences due to their growth-related focus, prioritizing these values can increase the fit between individuals' characteristics and their environment, reducing stressful encounters. On the other hand, the motivation of self-expansion and exploration involved in these value priorities may also bring individuals more novel experiences and challenges, potentially increasing the occurrence of stressors. The self-protective nature of conservation can lead individuals to passively accept the existing state, reducing their fit to the environment and increasing encounters of stressors; conversely, emphasizing conservation can make individuals more likely to engage in behaviors to avoid conflicts and unpredictability and consequently, decrease the likelihood of stressor exposure. Similarly, for self-enhancement, striving to dominate over others and meet social standards may lead to reduced fit and social stressors, but the tendency to actively control threats and anxiety can diminish the occurrence of stressors. Therefore, it largely remains exploratory to examine the associations between different value dimensions and stressor exposure.

In sum, according to previous theoretical notions, values are likely to be related to stress. Overall, the growth-oriented values (openness to change values and self-transcendence) are expected to be negatively related to perceived stress, whereas the self-protection values (self-enhancement and conservation) are expected to be positively associated with perceived stress. It remains to be explored how different value priorities are related to stressor exposure.

Dynamics of the Association Between Values and Stress

While values may drive individuals' stressor exposure and stress perception as discussed above, stress experiences are also expected to give feedback to and reshape personal values. This perspective is grounded in the COR theory (Hobfoll, 1989). As a motivational theory, the COR theory proposes that humans are motivated to protect and gain resources, and stress (including both stressor exposure and perceived stress) occurs when there is a loss of resources, a threat of resource loss, and/or a lack of resource gain following resource investment. Based on the COR theory, resources can be anything perceived by individuals as valuable or helpful for attaining their goals, including personal characteristics, objects, conditions, and energies (Halbesleben et al., 2014; Hobfoll, 1989; Sonnentag & Meier, 2024). The COR theory includes several

[1] We note that stress can occur at both the micro and macro levels, with micro stress focusing on the self and related extensions (e.g., family, close friends) and macro stress pertaining to external entities (e.g., society, environment). Prior research suggested that certain value dimensions may show differential relations to micro and macro stress (Schwartz et al., 2000). Because the stress measures used in the present study are about micro stress, we only focus on micro stress here in the introduction. More details on the micro versus macro stress are provided in the Discussion section.

principles and corollaries. What is most relevant to the potential effects of stress on values is that the COR theory suggests that following resource losses/threat of resource losses, individuals invest resources in order to protect from future resource losses, to recover from the losses, and to gain new resources (Halbesleben et al., 2014; Hobfoll, 2001). The COR theory further proposes that after resource losses, individuals can become defensive in the ways of investing resources, indicating that individuals take steps to protect their remaining resources (Halbesleben & Bowler, 2007; Halbesleben et al., 2014; Hobfoll, 1989, 2001). Thus, as the COR theory implies, following the occurrence of stress (stressor and/or perceived stress, conceptualized as resource losses/threat of resource losses), individuals may prioritize certain values (also a type of resource under the COR theory) that are perceived as helpful for preventing future occurrence of stress, recovering from the stress experiences, and/or gaining resources to cope with future stress. In addition, the primacy of resource loss of the COR theory posits that compared to the positive influences of resource gain following losses, the negative impacts of resource loss are more profound and psychologically detrimental, and consequently, individuals are more likely to invest resources to avoid further losses (Halbesleben et al., 2014; Hobfoll, 1989). Hence, following stress experiences, individuals may emphasize self-protection values and deemphasize growth-related values to control and avoid future occurrence of stress, retaining their remaining resources.

Furthermore, there may be a feedback loop in which changes in personal values and changes in stress are linked to each other in a bidirectional way. This is supported by the COR theory. Specifically, the corollaries of the COR suggest that individuals with more resources are less vulnerable to resource losses and better positioned for resource gains, whereas those with fewer resources are more vulnerable to resource losses and less capable of resource gains (Hobfoll, 1989, 2001). The COR theory further delineates that initial resource losses lead to future resource losses, resulting in loss spirals, while initial resource gains lead to future resource gains, resulting in gain spirals (Halbesleben et al., 2014; Hobfoll, 1989, 2001; Sonnentag & Meier, 2024). Therefore, based on the COR theory, following the occurrence of stress, individuals may tend to prioritize values that are perceived as helpful for protecting themselves from future stress and be less inclined to emphasize values that require further resource investment, despite their potential for new resource gains. However, the behaviors and other activities resulting from individuals' value priorities may deprive them from obtaining new coping resources, further undermining their vulnerability and thus resulting in more stress. Conversely, low levels of stress can afford individuals with psychological resources to pursue values that refresh their resources and enable them to accumulate more resources, further reducing future stress.

Additional Theoretical and Methodological Considerations

The Between- Versus Within-Person Processes

Distinguishing between-person differences from within-person processes is key in individual-difference research. Examining the value-stress connection at the between- and within-person levels shares equal importance both theoretically and practically. First, between- and within-person analyses answer fundamentally different questions. The between-person perspective focuses on differences among individuals and provides information on who is more or less likely to experience stress by examining whether individuals with certain value priorities report higher or lower levels of stress in comparison to others. For example, individuals who prioritize openness to change are less likely to appraise their circumstances as stressful compared to individuals who do not prioritize openness to change values. By contrast, within-person associations examine how changes in certain values (relative to one's general level) correspond to changes in stress (relative to one's usual stress levels). The within-person perspective uncovers when individuals are more or less likely to experience stress than usual by examining whether individuals experience elevation/reduction in stress when their perceived importance of certain values increases/decreases, and vice versa. For example, when an individual values openness to change more than they typically do, they experience fewer stress encounters than they typically do. Between-person analyses allow us to refine theories on factors involved in individual differences in stress, whereas within-person investigations improve our understanding of factors impacting dynamics in values and stress. Also, in the present study, we employed the random intercept cross-lagged panel models (RI-CLPMs; Hamaker et al., 2015), which disentangle associations between values and stress at the between- and within-person levels without confounding variance from these two sources. This approach allows us to examine the within-person relations between values and stress, as well as the directionality of their relations, independent from confounding effects of time-invariant variables (e.g., sex, genotype) controlled, regardless of if they are modeled (Berry & Willoughby, 2017; Bollen & Brand, 2010; Grosz et al., 2021). This research design cannot establish causality because of the potential presence of time-variant confounders. However, the information provided from this research design can still contribute to refining theories of values and stress and to setting a foundation for future research to further examine their causal relations. Also, it remains unknown whether value-stress associations share the same pattern at the between- and within-person levels. For example, though theories have implied lowered stress among individuals pursuing openness to change values, it is still possible that when an individual engages in behaviors to explore novel experiences due to increased openness to change, he or she may experience higher stress than usual. Previous research has suggested that without proper research design, generalizing the results obtained at one level to the other level can lead to misleading conclusions (Beck & Jackson, 2021; Fisher et al., 2018; Hamaker, 2012).

From a practical perspective, information about the link between values and stress at both the between- and within-person levels is valuable for the development and the implementation of stress management interventions. Research at the between-person level can inform who should be targeted for the interventions, whereas research at the within-person level can be informative for deciding when to intervene and useful for developing individualized interventions. Moreover, if certain values are found to be reciprocally related to stress at the within-person level, interventions can be developed to reinforce positive changes in both values and stress experiences to generate resource gain spirals as suggested by the COR theory. Taken together, analyses at the between- and within-person levels provide

complementary information to help us gain insights into the value-stress association.

Stress in Different Life Domains

In addition to differentiating between stressor exposure and perceived stress due to their different conceptualizations, the present study also examined stressor exposure and perceived stress in general and in specific life domains. Values, due to the differences in the underlying motivational goals, are expected to vary in their relevance to stress experienced in different life domains. For example, values related to self-enhancement may be more relevant to individuals' experiences in work and financial statuses than other life domains. In addition, for certain values, their motivational goals can correspond to the desired state of certain life domains but conflict with the desired state of other domains (e.g., the goal of prioritizing achievement-related values is consistent with the desired state of work domain but incompatible with the desired state of child-raising domain). Therefore, we expect to observe differential patterns (strength and/or direction of the associations) in the value-stress link across different life domains.

Empirical Findings on the Association Between Values and Stress-Related Constructs

Evidence was found in previous studies for the associations between values and stress. In a study examining the association between values and stress among employees in companies, individuals who endorsed openness to change scored lower on a questionnaire assessing physiological and psychological stress reactions; individuals who had higher scores on conservation, self-enhancement, and self-transcendence reported higher scores on the stress measures (Bouckenooghe et al., 2005). In a study examining the relations between values and stress and mental health outcomes, achievement was found to be positively linked to stress and depression, and hedonism and stimulation were negatively related to anxiety (Hanel & Wolfradt, 2016). Other studies also found evidence for the connections between values and individual differences in constructs related to stress. For example, values were found to be meaningful predictors of mental health and resilience in different countries (Maercker et al., 2015). When the relations of values to micro and macro worries were tested, individuals who prioritized self-transcendence displayed low micro but high macro worries, whereas those who emphasized self-enhancement reported high micro but low macro worries (Schwartz et al., 2000). Evidence was reported for negative relations between openness to change and self-transcendence and depression (Hanel & Wolfradt, 2016; Maercker et al., 2015). Recently, studies found the association between the endorsement of self-transcendence values and higher romantic relationship quality (van der Wal et al., 2024), as well as evidence for values as antecedents of emotions (Conte et al., 2023). Additionally, there are well-established links between personal values and individual differences in subjective well-being (Fetvadjiev & He, 2019; Fischer & Karl, 2023; Grosz et al., 2021; Sortheix & Schwartz, 2017; Watanabe et al., 2020). Very few studies have examined associations between values and other psychosocial outcomes at the within-person level. One study reported evidence for the bidirectional within-person association between openness to change values, but not other value dimensions, and subjective well-being (Grosz et al., 2021). Using daily surveys to assess value states, only self-transcendence values were found to predict subsequent subjective well-being at the within-person level (Fischer & Karl, 2023).

Therefore, previous research provided support for the role of values in individual differences in psychological experiences that, similar to stress (Epel et al., 2018; Smith & Kirby, 2011; Watson & Pennebaker, 1989), have cognitive and/or emotional evaluations as cores. However, though these studies provide preliminary evidence for associations between values and psychological constructs related to stress, there is a lack of empirical studies that directly investigate how values and stress are related to each other. Regarding the within-person process, some preliminary finding was reported for the within-person connection between values and well-being, but generally, evidence for the associations between values and other psychological outcomes, such as stress, is parse and mixed.

The Present Study

The current research investigated the associations between values and stress experiences, including stressor exposure and perceived stress, using secondary data from two large panel studies. We initially preregistered the research questions, hypotheses, and analysis plan on the Open Science Framework (https://osf.io/yxhtc/?view_only=84de2c0bc0cc4757954ae27f9a993186). Before developing the preregistration, the authors had experiences with the Midlife in the United States (MIDUS) and Longitudinal Internet Studies for the Social Sciences (LISS) data, including the values measure in MIDUS, but never conducted analyses related to the research questions examined in the present study. As we learned more during a careful literature review and based on suggestions raised by peer reviewers, we deviated from our preregistration in several ways. See Table A1 for a complete list of preregistration deviations using the Preregistration Deviations Table Template (Willroth & Atherton, 2024). For example, we preregistered our hypotheses for values at a lower level of Schwartz's value hierarchy. However, after a careful literature review, as discussed earlier, we proposed hypotheses for some research questions at the level of broad value dimensions when allowed by previous theoretical and/or empirical evidence but left other questions exploratory. Given the number and magnitude of preregistration deviations, this project may be better characterized as exploratory rather than confirmatory.

We tested the research questions in two studies. Study 1 focused on examining between-person associations between individual differences in values and individual differences in perceived stress. We used two waves of data from the MIDUS, a large longitudinal study that aims to examine the role of behavioral, psychological, and social factors in accounting for age-related variations in health and well-being. In Study 1, we examined (a) the concurrent and prospective associations between values, focusing on the dimensions of self-transcendence and self-enhancement, and general and domain-specific perceived stress and (b) the relations between changes in value priorities and general and domain-specific perceived stress. In Study 1, we also explored the associations between specific value items, as well as their changes, and perceived stress. In Study 2, we examined the longitudinal associations between values and general and domain-specific stress, including both stressor exposure and perceived stress, at the between-person and within-person levels. We applied the RI-CLPMs to nine waves of values and stress data from the LISS. LISS is a longitudinal panel study administered by CentERdata

(Tilburg University, The Netherlands) that includes multiple assessments to follow changes in the life course and living conditions of the participants. In Study 2, after differentiating the between-person variance from the within-person variance, we examined (a) the associations between the time-invariant components of values and the time-invariant components of stressor exposure and perceived stress at the between-person level and (b) after controlling for their between-person variance, the dynamic associations between changes in values and changes in stressor exposure and perceived stress at the within-person level.

Study 1

Method

Ethics Statement

Data used in Study 1 (MIDUS) and Study 2 (LISS) are available via request/publicly available, the use of which is declared by Northwestern University as exempt from institutional review board review. Data request/data of MIDUS and LISS and prior publications used the data can be found on the websites of the studies (MIDUS: https://midus.wisc.edu/; LISS: https://www.lissdata.nl/).

Participants

Data used in Study 1 were drawn from the assessments conducted in 2004–2006 (Time 1 in the present study) and 2013–2014 (Time 2 in the present study) of the MIDUS. A sample of 3,905 participants (54.8% female, 91.9% White) who provided information on values and stress measures at Time 1 were included in analyses. The mean age of the sample at Time 1 was 56.13 ($SD = 12.33$, range = 30–84). Among these participants, 2,799 of them also provided information on values and/or stress at Time 2.

Measures

Values. To assess personal value priorities, at both Time 1 and Time 2, participants were presented with a list of 17 distinct values and instructed to select five from the list that they felt were the most important for living a good life.[2] Each value item was coded as either 0 (not important) or 1 (endorsed as important). The measure has been demonstrated to show meaningful relations to well-being and health-related outcomes in prior work (Pfund et al., 2024; Willroth et al., 2024). To facilitate the presentation and interpretation of the results, we assigned the 17 value items to the higher order dimensions specified in Schwartz's value theory (Schwartz, 1992; Schwartz et al., 2012) based on previous literature and the definitions of the dimensions. The authors rated each item independently, and then disagreement was resolved via discussion. Specifically, the location of the value items in the circular continuum (see Figure 1) was determined by assigning them to each of the two orthogonal dimensions: the growth versus self-protection dimension and the personal-focused versus social-focused dimension. Supplemental Table S1 lists the assignment of each of the value items. As shown in Supplemental Table S1, eight items (good job, enough money, extra money, love/care for self, physical fitness, relax, absence of illness, and sense of accomplishment) were classified as measuring self-enhancement value, and three items (giving to community, family relations, and friend relations) as self-transcendence value. In addition, autonomy was classified as openness to change, life pleasures as personal-focused value, and four items (growth/learning, faith, positive attitude, sense of purpose) as growth-related values.

Perceived Stress. At both Time 1 and Time 2, participants' general stress perception, perceived stress in job, financial situation, close relationships, relationships with children, other family members, and friends were assessed. *General stress perception* (Cronbach αs were .70 and .71 at Time 1 and Time 2) was measured by five items that were validated in previous work (Luo et al., 2017) with a measure that is commonly used for the assessment of perceived stress. The items assessed participants' overall evaluation of their life circumstances and their general perception of control over life (e.g., "what happens in my life is often beyond my control"). For domain-specific perceived stress, we selected items that were either in the same format as those used for general stress perception (but contextualized to specific life domains) or widely used in prior research using data from large panel studies (e.g., Crosswell et al., 2020; Luo et al., 2022; Mann et al., 2021). Specifically, *perceived job stress* (Cronbach αs were .81 and .78) was assessed by two items asking participants to rate their current work situation and their perceived control over their work situation. *Perceived financial stress* (Cronbach αs were .72 and .75) was measured by three items assessing participants' overall evaluation of their financial situation, perceived control over financial situation, and perceived difficulty in paying bills. *Perceived close relationship stress* (Cronbach αs were .86 at both time points) was measured by two items assessing participants' overall relationship evaluation of and perceived control over their relationship/marriage, a five-item scale measuring perceived relationship/marriage risk, and a six-item scale about perceived relationship strain. *Perceived stress in relationships to children* (two items, Cronbach αs were .62 and .61), *other family members* (four items, Cronbach αs were .78 and .80), and *friends* (four items, Cronbach αs were .79 and .81) was also assessed. The items measured participants' overall evaluation of and perceived control over the relationship with their children, as well as the perceived strain in their relationships with family members and friends. All perceived stress items and their rating scales are displayed in Supplemental Table S2.

Statistical Analysis

All the analyses were conducted using Mplus 8.10 (Muthén & Muthén, 1998–2017). The preregistration and scripts for the analyses can be found at https://osf.io/yxhtc/?view_only=84de2c0bc0cc4757954ae27f9a993186.

Due to missingness in data across waves, full information maximum likelihood was used for estimation (see Supplemental Table S3 for sample sizes for each set of concurrent and prospective analyses). Due to their potential effects on both values and perceived stress, age, sex, and educational attainment assessed at Time 1 were included as covariates in all the analyses specified below. We first tested the concurrent associations between values and perceived stress. Separate analyses were conducted for the combination of each value dimension/item and general and domain-specific perceived stress. For higher order dimensions of values, we focused on self-enhancement and self-transcendence values. The averages

[2] At both time points, participants who selected fewer than four or more than six values were excluded from the analyses.

of the corresponding items (see Supplemental Table S1) were computed as the composite scores of self-enhancement and self-transcendence values. Analyses were also conducted for each of the 17 value items. For domains of perceived stress (perceived job stress, perceived stress in the relationship with children) that were measured by two items, composite variables were used for analyses. Latent variables were constructed for general perceived stress, perceived financial stress, and perceived stress in the relationship with family members and friends by using each of the items as manifest indicators. To specify the latent variable of perceived close relationship stress, the two items for overall relationship evaluation and evaluation of perceived control, the composite of relationship/marriage risk, and the composite of perceived relationship strain were used as four indicators. In this set of concurrent analyses, using data at Time 1, the perceived stress variables were regressed on the value dimensions/items.

Then, we followed the same procedure to test the prospective effects of values on perceived stress by regressing the perceived stress variables at Time 2 on the value dimensions/items at Time 1. In addition to the demographic covariates (baseline age, sex, and education), we further conducted analyses to examine the prospective effects of values at Time 1 on perceived stress at Time 2 by including perceived stress assessed at Time 1 as a covariate (perceived stress at Time 1 was also regressed on the value dimensions/items and the demographic covariates to take their relations into account).

In the next set of analyses, we examined the effects of changes in values across the two time points on general and domain-specific perceived stress measured at Time 2. For the two higher order dimensions of values (self-enhancement and self-transcendence), latent change models were fitted in which the composite scores of the value dimensions at both time points were used to form latent intercepts and the scores at Time 2 were used to form latent slopes, which represented changes in the value dimensions over time. Variables (manifest or latent) of perceived stress at Time 2 were regressed on the intercept and slope of the value dimensions, as well as the demographic covariates. In item-based analyses, for each of the value items, participants were assigned into one of the four groups based on their endorsement of the item at the two time points: consistent nonendorsers (NN; participants who did not endorse the item at both time points), former endorsers (EN; participants who endorsed the item at Time 1 but not Time 2), new endorsers (NE; participants who endorsed the item at Time 2 but not Time 1), and consistent endorsers (EE; participants who endorsed the item at both time points). Then, for each value item, six dummy variables were constructed to compare all four groups to one another (e.g., coded NN as 0 and EE as 1 to compare nonendorsers and consistent endorsers). We predicted general and domain-specific perceived stress at Time 2 from the six dummy-coded variables for each of the value items.

Results

Supplemental Table S4 displays the frequency and percentage of endorsements of the values at Time 1 and Time 2. As Supplemental Table S4 shows, across the two time points, values that were most commonly endorsed were "positive family relationships," "faith," and "positive attitude" (endorsed by more than 50% of the participants at both time points), followed by "enough money" and "absence of illness" (endorsed by more than 30% of the participants at both time points). Supplemental Table S5 displays the number and percentage of participants in each of the four groups (consistent nonendorsers, former endorsers, new endorsers, and consistent endorsers) based on their endorsement of the values at both time points. As shown in Supplemental Table S5, across the 17 values, most of the participants were consistent in their endorsement/nonendorsement of a specific value across time. However, there was still a substantial proportion of participants (between 14.73% and 34.79%) who demonstrated changes in their endorsement of a particular value, with changes most observed in "enough money," "positive attitude," and "positive family relationships" (more than 30% of the participants showed changes in their endorsement).

Concurrent and Prospective Associations Between Values and Perceived Stress

To present the results, we display results for the two broad value dimensions, self-transcendence and self-enhancement, in the main text and show the results for the specific value items in the Appendix. Throughout all the analyses, we identified effects as significant when p values were equal to or smaller than .01. Table 1 displays the results for self-transcendence and self-enhancement (see Supplemental Table S6 for p values if more conservative interpretations are preferred). As Table 1 indicates, after controlling for the demographic covariates, self-transcendence displayed negative concurrent associations with general perceived stress and perceived stress across all the domains, whereas self-enhancement showed positive concurrent relations to general and domain-specific perceived stress across domains. When examined prospectively, self-transcendence demonstrated significant negative connections to all perceived stress measures above and beyond the effects of the demographic covariates. Self-enhancement displayed positive prospective links to general perceived stress and perceived stress in the job and financial domains; however, for perceived interpersonal stress, self-enhancement showed positive prospective relations to perceived stress in close relationships but not others. For prospective connections, we also conducted analyses to control perceived stress measured at Time 1 in addition to the demographic covariates. As Table 1 depicts, though diminished in magnitude, self-transcendence still demonstrated significant connections to perceived job stress and perceived financial stress. Self-enhancement showed positive relations to perceived job stress and perceived stress in close relationships.

Tables A2 and A3 display the concurrent and prospective effects of value items on general and domain-specific perceived stress (see Supplemental Tables S7 and S8 for p values). As shown in the tables, among the four growth-related values (but were not categorized into self-transcendence or self-enhancement), "growth/learning," "faith," and "positive attitude" exhibited negative concurrent links to general perceived stress after controlling for the demographic covariates, with "positive attitude" also showing a negative prospective relation to general perceived stress. Endorsement of "faith" consistently showed concurrent and prospective connections to lower perceived stress in close relationships. Regarding the items of self-transcendence, "positive family relationships" was negatively connected to general perceived stress and perceived stress in all specific domains both concurrently and prospectively. Endorsement of "positive friend relationship" was negatively related to perceived stress in close relationships and with family members on both concurrent and prospective bases. For self-enhancement items, "enough money," "extra money," and "absence of illness" were positively linked to

Table 1
Standardized Estimates and 99% Confidence Intervals for the Effects of Self-Transcendence and Self-Enhancement General and Domain-Specific Perceived Stress in Concurrent and Prospective Analyses and the Analyses for Changes in the Two Value Dimensions in MIDUS

Value dimension	GPS	PJS	PFS	PIS-CR	PIS-C	PIS-FM	PIS-F
Concurrent effects							
Self-transcendence	−.08** [−.13, −.04]	−.05** [−.09, −.01]	−.06** [−.10, −.01]	−.12** [−.17, −.07]	−.12** [−.17, −.08]	−.13** [−.17, −.09]	−.09 [−.14, −.05]
Self-enhancement	.18** [.13, .22]	.09** [.05, .13]	.06** [.02, .11]	.12** [.07, .17]	.07** [.02, .11]	.10** [.05, .14]	.06 [.01, .11]
Prospective effects							
Self-transcendence	−.10** [−.16, −.04]	−.07** [−.12, −.01]	−.09** [−.14, −.04]	−.09** [−.16, −.03]	−.08** [−.14, −.03]	−.09** [−.15, −.04]	−.10 [−.16, −.04]
Self-enhancement	.15** [.10, .21]	.09** [.04, .14]	.06** [.004, .112]	.07** [.004, .134]	.10 [.04, .15]	.06 [.00, .11]	.04 [−.02, .10]
Prospective effects with baseline perceived stress controlled							
Self-transcendence	−.03 [−.08, .01]	−.05** [−.104, −.002]	−.06** [−.10, −.01]	−.03 [−.08, .02]	−.04 [−.09, .01]	−.02 [−.07, .03]	−.05* [−.10, .01]
Self-enhancement	.02 [−.03, .07]	.05** [.002, .104]	.03 [−.02, .07]	.00 [−.04, .07]	.07** [.02, .12]	.01 [−.04, .06]	.01 [−.04, .07]
Changes in values							
Self-transcendence	−.07** [−.143, −.004]	−.09** [−.15, −.03]	−.03 [−.10, .03]	−.04 [−.12, .03]	−.10** [−.17, −.04]	−.14** [−.20, −.07]	−.10** [−.17, −.03]
Self-enhancement	.15** [.09, .22]	.08** [.02, .15]	.03 [−.04, .09]	.08* [.00, .15]	.10** [.03, .17]	.11** [.04, .18]	.10** [.03, .16]

Note. Baseline age, sex, and education were controlled in all analyses. MIDUS = Midlife in the United States; GPS = general perceived stress; PJS = perceived job stress; PFS = perceived financial stress; PIS-CR = perceived interpersonal relationship stress–close relationship; PIS-C = perceived interpersonal relationship stress–children; PIS-FM = perceived interpersonal relationship stress–other family members; PIS-F = perceived interpersonal relationship stress–friends.
* $p \leq .05$. ** $p \leq .01$.

general perceived stress on both concurrent and prospective bases. Additionally, endorsement of "enough money" was also associated with higher perceived job stress and higher perceived financial stress concurrently and prospectively; endorsement of "love/care for self" displayed positive concurrent and prospective links to perceived interpersonal stress in the relationships with family members and friends. As shown in Table A4 (see Supplemental Table S9 for *p* values), after including baseline perceived stress, though the number of significant effects reduced, significant prospective connections were still observed for value items. The endorsement of "positive family relationship" in self-transcendence was still negatively associated with perceived job stress, perceived financial stress, and perceived interpersonal stress in relationships with friends. For self-enhancement items, the endorsements of "enough money," "love/care for self," and "absence of illness" also displayed significant prospective connections with domain-specific perceived stress when baseline perceived stress was controlled.

Associations Between Changes in Values and Perceived Stress

Table 1 presents the effects of changes in self-transcendence and self-enhancement from Time 1 to Time 2 on general and domain-specific perceived stress at Time 2 after controlling for the demographic covariates. According to Table 1, increases in self-transcendence were related to lower general perceived stress, lower perceived job stress, and lower perceived stress in the relationships with children, family members, and friends assessed at Time 2. In contrast, increases in self-enhancement were linked to higher general perceived stress, higher perceived job stress, and higher perceived stress in the relationships with children, family members, and friends measured at Time 2.

For value items, results comparing nonendorsers at both time points (with nonendorsers at both time points as the reference group) to consistent endorsers (NN vs. EE), new endorsers (NN vs. NE), and former endorsers (NN vs. EN) are presented in Table A5 (see Supplemental Table S10 for *p* values), and results comparing the groups of new endorsers, former endorsers, and consistent endorsers with each other in Table A6 (see Supplemental Table S11 for *p* values). For the growth-related values ("growth/learning," "faith," and "positive attitude"), the overall pattern indicated that consistent endorsers and/or new endorsers scored lower on general and domain-specific perceived stress than nonendorsers, and consistent endorsers of these value items also had lower levels of perceived stress in various domains than former endorsers. In terms of self-transcendence value items, consistent endorsers of "positive family relationship" displayed lower general perceived stress and lower perceived stress across all the domains at Time 2 when compared to their counterparts in the other three groups. Changes/stability in the majority of self-enhancement items also demonstrated significant relations to perceived stress in various domains. Overall, the patterns revealed that compared to nonendorsers of the self-enhancement items, consistent endorsers and new endorsers displayed higher perceived stress in different domains.

Summary

Results from Study 1 provided support for values playing a role in individual differences in perceived stress across various life domains

after controlling for the demographic covariates (and baseline perceived stress), with both broad value dimensions and specific value items showing meaningful associations with general and domain-specific perceived stress concurrently and prospectively. The overall patterns suggested that individuals who scored higher on self-transcendence (and specific items) and other growth-related values (except sense of purpose) displayed lower levels of perceived stress across domains, whereas those who scored higher on self-enhancement (and specific items) showed higher levels of perceived stress. Furthermore, individuals who differed in stability/changes in values also experienced different levels of perceived stress across life domains. However, it remains unknown how dynamics in values and stress experiences are linked to each other at the within-person level over time and whether the pattern varies between stressor exposure and perceived stress. Study 2 aimed to examine the relations between values and stress experiences (both stressor exposure and perceived stress) in different life domains after separating their variances at the between- and within-person levels.

Study 2

Method

Participants

Data used in Study 2 were drawn from the LISS. A sample of 13,940 participants (54.4% female) provided information on values and/or stress (self-reported stressor exposure and/or perceived stress) in at least one of nine waves of assessment between 2008 and 2021 (both values and stress were measured in each of the nine waves). The average age of participants who were assessed at Time 1 was 45.51 (SD = 15.94, range: 15–94).

Measures

Values. Personal values were measured by the Rokeach Value Survey (RVS; Rokeach, 1973). The RVS includes 18 items that were classified as representing instrumental goals (goals about modes of behaviors, phrased as adjectives) and 18 items representing terminal goals (goals about preferences for end-states, phrased as nouns). Participants rated each of the 36 items on a 7-point scale (1 = *extremely unimportant*, 7 = *extremely important*). Following the structure adopted by previous study for RVS item assignment (Fetvadjiev & He, 2019), we assigned the 36 items into seven value dimensions (see Supplemental Table S12 for details and the corresponding higher order value dimensions for the seven dimensions): prosocial (eight items, Cronbach αs ranged from .81 to .84 across waves), restrictive conformity (four items, Cronbach αs ranged from .82 to .83 across waves), enjoyment (four items, Cronbach αs ranged from .77 to .79 across waves), self-direction (six items, Cronbach αs ranged from .74 to .77 across waves), maturity (five items, Cronbach αs ranged from .75 to .77 across waves), security (four items, Cronbach αs ranged from .68 to .74 across waves), and achievement (five items, Cronbach αs ranged from .75 to .79 across waves).

Self-Reported Stressor Exposure. Self-reported exposure to stressors in the domains of job (e.g., are you expected to work over hours), close relationship (e.g., whether you and your partner had any differences of opinion regarding raising the children), financial situation (e.g., running behind in paying rent/mortgage or general utilities), and housing (e.g., the dwelling is too small) was assessed. In each life domain, participants rated the occurrence (yes/no) or the frequency of occurrence (e.g., 1 = *never*, 2 = *occasionally*, 3 = *often*) of the stressors. Scores on each item were converted to percent of maximum possible scores (P. Cohen et al., 1999) and divided by 10, resulting in a scale that ranged from 0 to 10. The composite scores of stressor exposure in each life domain were computed by averaging the corresponding items. Total stressor exposure was computed by averaging the scores in each domain for participants who had data on stressor exposure in at least two life domains. Supplemental Table S13 lists all stressor items.

Perceived Stress. Participants' stress perception in the life domains of job, family relationships, and financial situation was assessed across waves. *Perceived job stress* was measured by seven items assessing participants' perceptions regarding their career prospect, burden, support, competence, autonomy, salary, and appreciation from others in the workplace (Cronbach αs ranged from .63 to .68 across waves). *Perceived family relationship stress*[3] was assessed by three items asking participants about their perceived relationship quality with their parents and family members (Cronbach αs ranged from .75 to .77 across waves). *Perceived financial stress* was measured by four items assessing perceptions of financial difficulties (Cronbach αs ranged from .63 to .69 across waves). Composite scores for perceived stress in each life domain were computed by converting scores on each item to percent of maximum possible scores (P. Cohen et al., 1999) on a 0–10 scale. General perceived stress was calculated by averaging the composites of each life domain among participants who provided data on perceived stress in at least two life domains (Cronbach αs ranged from .65 to .70 across waves). Supplemental Table S13 displays all perceived stress items.

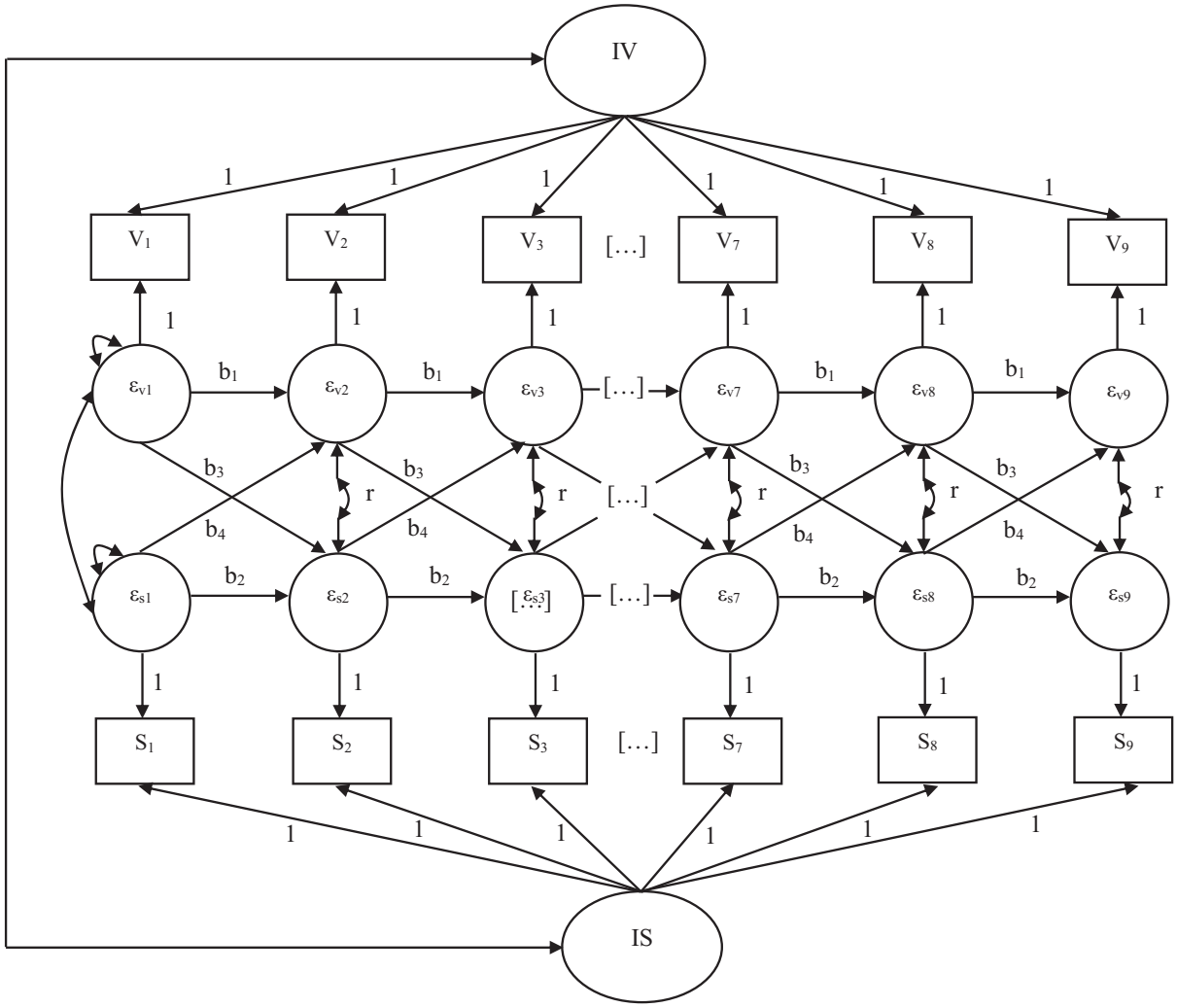
Statistical Analysis

To examine the dynamic reciprocal relations between each value dimension and each stress variable (general and domain-specific stressor exposure and perceived stress), we fitted a series of RI-CLPMs (Hamaker et al., 2015). For the analyses for each pair of values and stress variables, participants who provided usable data on the stress variables in at least one wave were included. Full information maximum likelihood was used for estimation due to missingness (see Supplemental Table S14 for sample sizes for analyses for each stress domain). The composite scores of each value dimension and the composite scores of stress variables were used as time-specific indicators for each wave of assessment. As displayed in Figure 2, in the RI-CLPM, we first constructed random intercepts for both value and stress by constraining the factor loadings of indicators at each time point to 1. The random intercepts estimate the time-invariant components of value and stress across waves. The two random intercepts were allowed to correlate with each other to estimate the association between values and stress at the between-person level. After controlling their between-person relations, the dynamic associations between value and stress were estimated at the within-person level. Specifically, the latent variables (ε_{vt} and ε_{st} in Figure 2) reflect participants' time-specific deviations from their own general levels of value and stress. The value and stress levels (V_t and S_t in Figure 2) for a

[3] Analyses for perceived family relationship stress were conducted using data for all three items from Time 3 to Time 9 in 2011–2021; two items that were available across all nine waves were used to calculate general perceived stress.

Figure 2

Conceptual Representation of the Random Intercept Cross-Lagged Panel Model of the Longitudinal Associations Between Values and Stress



Note. V = value; S = stress; I = intercept.

certain individual at a specific time point can be expressed as $V_{it} = \mu_t + IV_i + \varepsilon_{vit}$ and $S_{it} = \pi_t + IS_i + \varepsilon_{sit}$, where μ_t and π_t are the time-specific population means for value and stress. To capture changes in values and stress, the model includes autoregressive components that estimate the within-person carry-over effects between repeated measures (b_1 and b_2 in Figure 2). In the bivariate version of the RI-CLPM as fitted in the present study, in addition to evaluating the autoregressive effects, we also included the cross-lagged effects between values and stress (b_3 and b_4 in Figure 1), which estimate the extent to which participants' time-specific deviations from their own general levels of stress can be predicted by their preceding deviations from their relatively stable levels of the value while controlling for their preceding deviations from their general stress levels, and vice versa. According to the specification of the model, the deviations in value and stress at a specific time point can be described as $\varepsilon_{vit} = b_1\varepsilon_{vi,t-1} + b_4\varepsilon_{si,t-1} + u_{it}$ and $\varepsilon_{sit} = b_2\varepsilon_{si,t-1} + b_3\varepsilon_{vi,t-1} + v_{it}$. To consider the time-specific associations between values and stress at the within-person level (r in Figure 2), we estimated the correlations between values and stress at Time 1, as well as the contemporaneous covariances between their residuals at subsequent time points. We fitted two sets of models. In the first set, we allowed all parameters (except loadings on the random intercept factors) to be estimated freely. In the second set, we constrained the autoregressive, cross-lagged coefficients, and the contemporaneous covariances between value and stress to be equal across waves so that five parameters were estimated (b_1–b_4 and r in Figure 2). As shown in Supplemental Table S15, imposing the equality constraints did not result in substantial decreases in model fit across all the models. Hence, we report results from the models with the equality constraints given that they result in more parsimonious solutions and reduced model complexity, allow for consistency in findings across time, provide greater precision in estimation due to more degrees of freedom (Little et al., 2007; MacCallum et al., 2006), and allow for easier interpretation.

Results

Descriptive Statistics

Supplemental Tables S16 and S17 display the correlations between values and general and domain-specific self-reported stressor exposure and perceived stress across waves. In general, the correlations demonstrated evidence for prospective associations between values and stress, with values measured at earlier time points related to subsequent stress, and vice versa. However, the patterns (presence and direction of effects) varied across combinations of values in different dimensions, stress in different dimensions (stressor exposure and perceived stress), and life domains. We also present the correlations between the self-report stressor exposure variables and the perceived stress variables assessed in 2011 in Supplemental Table S18 (as the variables used in the analyses for perceived family relationship stress were first measured in 2011). As expected, the stressor variables and the perceived stress variables demonstrated small to moderate correlations, suggesting that they were related but still distinct from each other.

Associations Between Values and Stress at the Between-Person Level

Values and Self-Reported Stressor Exposure. We tested the associations between values and stress using the RI-CLPMs. Fit indices suggested reasonable to good fit across all the models, with the comparative fit index ranging from .969 to .990 and the root-mean-square error of approximation from .016 to .028. As in Study 1, effects were identified as significant at p values equal to or smaller than .01. 99% confidence intervals for all the effects are reported in the main text. We also present exact p values in the Supplemental Materials if a more conservative interpretation of the results is preferred.

Table 2 displays the correlation coefficients and 99% confidence intervals for the associations between the time-invariant components of values and the time-invariant components of general and domain-specific self-reported stressors at the between-person level (correlation between IV and IS in Figure 2; see Supplemental Table S19 for p values). As indicated in Table 2, prosocial value, restrictive conformity, self-direction, maturity, and security showed significant negative associations with total stressors at the between-person level. For domain-specific stressors, at the between-person level, self-direction and maturity demonstrated significant positive associations with job and financial stressors; additionally, achievement also showed positive relations with job stressors, and prosocial value displayed positive relations with financial stressors. Achievement showed positive links to close relationship stressors at the between-person level, whereas other values (except enjoyment) exhibited negative associations with close relationship stressors. Also, prosocial value, restrictive conformity, security, and achievement displayed negative connections with housing stressors at the between-person level.

Values and Perceived Stress. Table 2 presents the correlation coefficients and 99% confidence intervals for the associations between the time-invariant components of values and the time-invariant components of general and domain-specific perceived stress at the between-person level (see Supplemental Table S19 for p values). At the between-person level, the time-invariant components of enjoyment and achievement demonstrated significant negative connections with the time-invariant component of overall stress

Table 2
Correlation Coefficients and 99% Confidence Intervals for the Relations Between the Time-Invariant Components of Values and the Time-Invariant Components of General and Domain-Specific Stressors and Perceived Stress at the Between-Person Level in LISS

Stress domain	Prosocial	Restrictive conformity	Enjoyment	Self-direction	Maturity	Security	Achievement
Stressor exposure							
TS	−.15** [−.18, −.12]	−.12** [−.15, −.09]	.02 [−.02, .05]	−.08** [−.11, −.05]	−.04** [−.07, −.01]	−.19** [−.22, −.15]	.02 [−.01, .05]
JS	.01 [−.02, .05]	.01 [−.03, .05]	.00 [−.03, .04]	.08** [.04, .12]	.06** [.03, .10]	.01 [−.03, .05]	.09** [.06, .13]
CRS	−.12** [−.16, −.08]	−.08** [−.12, −.05]	−.01 [−.05, .02]	−.07** [−.11, −.04]	−.04** [−.08, −.01]	−.17** [−.20, −.13]	.04** [.003, .074]
FS	.06** [.03, .09]	.03* [.00, .07]	.01 [−.03, .05]	.06** [.03, .10]	.06** [.03, .09]	−.01 [−.05, .02]	.03* [−.01, .06]
HS	−.10** [−.14, −.06]	−.16** [−.20, −.12]	−.04* [−.08, .00]	.00 [−.04, .04]	−.02 [−.06, .02]	−.18** [−.21, −.14]	−.08** [−.12, −.04]
Perceived stress							
GPS	−.03* [−.07, .00]	−.01 [−.05, .02]	−.16** [−.20, −.13]	.00 [−.04, .03]	−.04* [−.07, .00]	−.02 [−.06, .02]	−.06** [−.09, −.02]
PJS	−.07** [−.11, −.03]	−.06** [−.09, −.02]	−.10** [−.14, −.06]	−.05** [−.09, −.01]	−.07** [−.11, −.03]	−.07** [−.11, −.03]	−.07** [−.10, −.03]
PFRS	−.20** [−.24, −.16]	−.13** [−.17, −.09]	−.21** [−.25, −.17]	−.09** [−.13, −.04]	−.12** [−.16, −.07]	−.17** [−.22, −.13]	−.12** [−.16, −.08]
PFS	.10** [.07, .14]	.09** [.05, .12]	−.06** [−.09, −.02]	.04** [.002, .076]	.03 [−.01, .06]	.08** [.05, .12]	.00 [−.03, .04]

Note. LISS = Longitudinal Internet Studies for the Social Sciences; TS = total stressor; JS = job stressor; CRS = close relationship stressor; FS = financial stressor; HS = housing stressor; GPS = general perceived stress; PJS = perceived job stress; PFRS = perceived family relationship stress; PFS = perceived financial stress.
* $p \leq .05$. ** $p \leq .01$.

perception. For domain-specific perceived stress, a similar pattern emerged for perceived job stress and perceived family relationship stress, such that the time-invariant components of all values were significantly negatively related to their time-invariant components at the between-person level. While enjoyment was negatively associated with perceived financial stress at the between-person level, prosocial value, restrictive conformity, self-direction, and security were positively linked to perceived financial stress.

The Dynamic Associations Between Values and Stress at the Within-Person Level

Cross-Lagged Associations.

Values and Self-Reported Stressor Exposure. After partitioning the between-person effects from the within-person effects, we examined the dynamic relations between changes in values and changes in stress at the within-person level. Table 3 shows the standardized path coefficients and 99% confidence intervals for the cross-lagged within-person effects tested for all values and general and domain-specific self-reported stressors (see Supplemental Table S20 for *p* values). As depicted in Table 3, the within-person connections between changes in values and changes in total stressors were generally observed in a unidirectional manner, such that decreases in total stressors were preceded by increases in prosocial value and security. In terms of domain-specific stressors, as the results revealed, a bidirectional relation emerged in the connection between prosocial value and close relationship stressors, such that increases in prosocial value were preceded and followed by decreases in close relationship stressors. Also, an elevation in financial stressors was significantly connected to subsequent decreases in restrictive conformity. Overall, changes in values and changes in job stressors and housing stressors were not connected to each other at the within-person level.

Values and Perceived Stress. Table 4 displays the standardized path coefficients and 99% confidence intervals for the within-person cross-lagged effects tested for all values and general and domain-specific perceived stress (see Supplemental Table S21 for *p* values). Different from the within-person connections between values and total stressors, in which the effects were mainly observed in a unidirectional way from values to total stressors, in general, it was changes in overall perceived stress that predicted subsequent within-person changes in certain values. As the results indicated, decreases in overall stress perception were followed by increases in prosocial value, enjoyment, self-direction, and achievement. Within-person associations between changes in values and changes in domain-specific perceived stress were largely found in perceived job stress. As shown in Table 4, at the within-person level, increases in prosocial value and maturity predicted subsequent decreases in perceived job stress. Meanwhile, a bidirectional connection was observed between changes in enjoyment and changes in perceived job stress, such that increases in enjoyment were preceded and followed by decreases in perceived job stress. Generally, changes in values and changes in perceived family relationship stress and perceived financial stress were not linked to each other at the within-person level.

Time-Specific Associations.

Values and Self-Reported Stressor Exposure. Table 5 displays the time-specific associations (*r* in Figure 2) between values and general and domain-specific self-reported stressors at the within-person level (see Supplemental Table S22 for *p* values). As Table 5

Table 3
Standardized Path Coefficients and 99% Confidence Intervals in the Random Intercept Cross-Lagged Panel Models for the Within-Person Cross-Lagged Relations Between Values and General and Domain-Specific Stressors in LISS

	TS		JS		CRS		FS		HS	
Value dimension	$V_t \rightarrow S_{t+1}$	$S_t \rightarrow V_{t+1}$	$V_t \rightarrow S_{t+1}$	$S_t \rightarrow V_{t+1}$	$V_t \rightarrow S_{t+1}$	$S_t \rightarrow V_{t+1}$	$V_t \rightarrow S_{t+1}$	$S_t \rightarrow V_{t+1}$	$V_t \rightarrow S_{t+1}$	$S_t \rightarrow V_{t+1}$
PS	−.03** [−.05, −.01]	−.01 [−.03, .01]	.00 [−.02, .02]	−.01 [−.04, .01]	−.02** [−.043, −.003]	−.02** [−.04, .00]	.00 [−.02, .01]	−.02* [−.04, .00]	−.01 [−.03, .01]	.00 [−.03, .02]
RC	−.02* [−.03, .00]	−.01 [−.03, .01]	.00 [−.02, .02]	.00 [−.03, .02]	−.01 [−.03, .01]	.00 [−.02, .02]	.00 [−.02, .02]	−.02** [−.043, −.002]	.00 [−.02, .02]	.00 [−.02, .02]
E	−.02* [−.03, .00]	−.01 [−.03, .01]	−.01 [−.03, .01]	−.01 [−.04, .02]	−.01 [−.03, .01]	−.02* [−.04, .00]	−.01 [−.03, .01]	−.01 [−.03, .01]	−.01 [−.03, .01]	.00 [−.02, .02]
SD	−.01 [−.03, .01]	.00 [−.02, .02]	−.01 [−.03, .01]	−.01 [−.03, .02]	−.01 [−.03, .01]	−.01 [−.03, .01]	.00 [−.02, .02]	−.01 [−.03, .01]	.00 [−.02, .02]	.00 [−.02, .03]
M	−.01 [−.03, .01]	−.01 [−.03, .01]	.00 [−.02, .02]	−.01 [−.03, .02]	−.01 [−.03, .01]	−.02* [−.04, .00]	−.01 [−.02, .01]	.00 [−.02, .02]	−.01 [−.03, .01]	−.01 [−.03, .02]
S	−.02** [−.037, −.001]	.01 [−.01, .02]	−.01 [−.03, .01]	.00 [−.03, .02]	−.02 [−.04, .01]	−.01 [−.04, .01]	.00 [−.02, .02]	.00 [−.02, .02]	−.01 [−.03, .01]	.01 [−.02, .03]
A	.00 [−.02, .01]	.00 [−.02, .02]	−.01 [−.03, .01]	.00 [−.03, .02]	.00 [−.02, .02]	.01 [−.02, .03]	.00 [−.02, .02]	−.01 [−.03, .01]	−.01 [−.03, .01]	.00 [−.02, .02]

Note. LISS = Longitudinal Internet Studies for the Social Sciences; PS = prosocial; RC = restrictive conformity; E = enjoyment; SD = self-direction; M = maturity; S = security; A = achievement; TS = total stressor; JS = job stressor; CRS = close relationship stressor; FS = financial stressor; HS = housing stressor.
* $p \leq .05$. ** $p \leq .01$.

Table 4

Standardized Path Coefficients and 99% Confidence Intervals in the Random Intercept Cross-Lagged Panel Models for the Within-Person Cross-Lagged Relations Between Values and General and Domain-Specific Perceived Stress in LISS

	GPS		PJS		PFRS		PFS	
Value dimension	$V_t \rightarrow S_{t+1}$	$S_t \rightarrow V_{t+1}$	$V_t \rightarrow S_{t+1}$	$S_t \rightarrow V_{t+1}$	$V_t \rightarrow S_{t+1}$	$S_t \rightarrow V_{t+1}$	$V_t \rightarrow S_{t+1}$	$S_t \rightarrow V_{t+1}$
PS	−.01 [−.03, .01]	−.03** [−.05, −.01]	−.02** [−.045, −.002]	−.02* [−.04, .00]	.00 [−.03, .03]	−.02 [−.05, .01]	−.01 [−.03, .01]	−.01 [−.03, .01]
RC	−.01 [−.03, .01]	−.02* [−.04, .00]	.00 [−.02, .02]	−.01 [−.03, .01]	−.01 [−.04, .02]	−.01 [−.04, .02]	.00 [−.02, .02]	−.01 [−.03, .01]
E	−.02* [−.04, .00]	−.04** [−.06, −.01]	−.03** [−.05, −.01]	−.03** [−.051, −.004]	.00 [−.02, .03]	−.01 [−.04, .02]	.00 [−.02, .01]	−.02* [−.04, .00]
SD	−.02* [−.04, .00]	−.03** [−.048, −.002]	−.02* [−.04, .00]	−.02 [−.04, .01]	−.01 [−.03, .02]	−.01 [−.05, .02]	.00 [−.02, .02]	−.02* [−.03, .00]
M	−.01 [−.03, .01]	−.02 [−.04, .01]	−.03** [−.05, −.01]	−.02* [−.04, .00]	.01 [−.02, .03]	.01 [−.02, .04]	.00 [−.02, .02]	.00 [−.02, .02]
S	.00 [−.02, .02]	−.02* [−.05, .00]	−.02* [−.04, .00]	−.02* [−.04, .01]	.00 [−.02, .03]	−.02 [−.05, .01]	.00 [−.02, .02]	−.01 [−.03, .01]
A	−.01 [−.03, .01]	−.03** [−.05, −.01]	−.01 [−.03, .01]	−.02 [−.04, .00]	.00 [−.03, .03]	.00 [−.03, .03]	.00 [−.02, .02]	−.01 [−.03, .01]

Note. LISS = Longitudinal Internet Studies for the Social Sciences; PS = prosocial; RC = restrictive conformity; E = enjoyment; SD = self-direction; M = maturity; S = security; A = achievement; GPS = general perceived stress; PJS = perceived job stress; PFRS = perceived family relationship stress; PFS = perceived financial stress.
* $p \leq .05$. ** $p \leq .01$.

shows, though substantially smaller in magnitude, the overall pattern for the time-specific associations between changes in values and changes in total stressors at the within-person level was similar to their counterpart at the between-person level in terms of direction and significance. However, the patterns at the two levels were more likely to diverge for domain-specific stressors. Specifically, despite their significant connections at the between-person level, changes in values and changes in job stressors, close relationship stressors (except the association with prosocial value), and housing stressors were barely related to each other at the within-person level. Although prosocial value and self-direction showed positive between-person associations with financial stressors, together with enjoyment, they demonstrated negative relations to financial stressors at the within-person level.

Values and Perceived Stress. For general and domain-specific perceived stress, when significant time-specific associations with values were present at the within-person level, they were in the same direction as their counterpart at the between-person level, though substantially smaller in magnitude. As Table 5 depicts, changes in all value dimensions displayed significant contemporaneous connections with changes in general perceived stress, despite that only enjoyment and achievement showed significant links at the between-person level. In contrast, while the value dimensions generally demonstrated significant between-person associations with domain-specific perceived stress, at the within-person level, significant contemporaneous relations were only observed in the associations between changes in restrictive conformity, achievement, and changes in perceived job stress, as well as the associations for changes in security and changes in perceived close relationship stress, and changes in enjoyment and changes in perceived financial stress.

Summary

Table 6 provides a summary of results from Study 2 for the relations between the four higher order value dimensions and self-reported stressor exposure and perceived stress at the between- and within-person levels. Similar to Study 1, results from Study 2 also provided support for the role of values in individual differences in stress experiences, including both stressor exposure and perceived stress. Furthermore, Study 2 found evidence for associations between changes in values and changes in stress experiences at the within-person level, both concurrently and prospectively. The within-person prospective links between values (prosocial value and security) and *total stressor exposure* were observed in the unidirectional effects of changes in values on subsequent changes in total stressor exposure. In contrast, the within-person prospective relations between values (prosocial value, enjoyment, self-direction, and achievement) and *general perceived stress* were driven by the unidirectional effects of changes in overall stress perception on subsequent changes in values. Evidence was also found for the within-person connections between changes in values and changes in domain-specific stress, but the presence and the direction of the effects varied across stress dimensions (stressor exposure vs. perceived stress) and life domains. In addition, results indicated differential patterns (e.g., presence of effects, direction of effects) in the value-stress associations across the between-person and within-person levels.

Table 5

Standardized Correlation Coefficients and 99% Confidence Intervals in the Random Intercept Cross-Lagged Panel Models for the Contemporaneous Associations Between Values and General and Domain-Specific Stressors and Perceived Stress at the Within-Person Level in LISS

Stress domain	Prosocial	Restrictive conformity	Enjoyment	Self-direction	Maturity	Security	Achievement
Stressor exposure							
TS	−.04** [−.05, −.02]	−.02** [−.038, −.003]	−.02* [−.03, .00]	−.01 [−.03, .01]	−.02** [−.037, −.002]	−.02** [−.04, −.01]	.00 [−.02, .01]
JS	−.01 [−.03, .01]	−.01 [−.03, .01]	.00 [−.02, .02]	.00 [−.02, .02]	.00 [−.02, .02]	−.02 [−.04, .01]	.01 [−.01, .03]
CRS	−.02** [−.041, −.002]	−.01 [−.03, .01]	−.02* [−.04, .00]	.00 [−.02 .02]	−.02* [−.04, .00]	−.01 [−.03, .01]	.00 [−.02, .02]
FS	−.02** [−.037, −.003]	−.01 [−.03, .01]	−.02** [−.039, −.005]	−.02** [−.035, −.001]	−.01 [−.03, .01]	−.01 [−.03, .00]	−.01 [−.03, .01]
HS	.00 [−.02, .02]	.00 [−.02, .02]	.00 [−.02, .02]	−.01 [−.03, .01]	.00 [−.02, .02]	.00 [−.02, .02]	.01 [−.01, .03]
Perceived stress							
GPS	−.03** [−.05, −.01]	−.03** [−.05, −.01]	−.03** [−.05, −.01]	−.02** [−.042, −.003]	−.02** [−.043, −.003]	−.03** [−.05, −.01]	−.03** [−.05, −.01]
PJS	−.01 [−.04, .01]	−.02** [−.04, .00]	−.01 [−.04, .01]	−.02* [−.04, .00]	−.01 [−.03, .01]	−.02 [−.04, .00]	−.02** [−.043, −.001]
PFRS	−.02* [−.05, .00]	−.03* [−.05, .00]	−.02* [−.05, .00]	−.02 [−.05, .01]	−.01 [−.03, .02]	−.04** [−.06, −.01]	.00 [−.03, .02]
PFS	−.01* [−.03, .00]	.00 [−.02, .02]	−.03** [−.04, −.01]	−.01* [−.03, .00]	−.01 [−.03, .00]	−.01* [−.03, .00]	−.01 [−.03, .01]

Note. LISS = Longitudinal Internet Studies for the Social Sciences; TS = total stressor; JS = job stressor; CRS = close relationship stressor; FS = financial stressor; HS = housing stressor; GPS = general perceived stress; PJS = perceived job stress; PFRS = perceived family relationship stress; PFS = perceived financial stress.
* $p \leq .05$. ** $p \leq .01$.

Discussion

The present study investigated the associations between values and general and domain-specific stress (including self-reported stressor exposure and perceived stress) at both the between- and within-person levels using data from two large longitudinal studies. According to the current results, personal values play meaningful roles in individual differences in general and domain-specific stress, with significant prospective effects of values found on perceived stress measured nearly a decade later. The pattern of the value-stress links at the individual level varied across stress domains. Also, after controlling for their between-person variance, we found evidence for the connections between values and stress at the within-person level; however, the significance and direction of the within-person cross-lagged effects were contingent upon the stress dimension (self-reported stressor exposure vs. perceived stress) and life domains. Furthermore, the findings also suggest that overall, there are distinct patterns in the between- and within-person associations between values and stress.

Associations Between Values and Stress at the Between-Person Level

First, we note that all the analyses conducted to examine the association between values and individual differences in stress at the between-person level (both in Study 1 and Study 2) are correlation-based. The present study did not aim to make any causal inferences at the between-person level. Overall, results from Study 1 and Study 2 support that values, both in their static form and dynamic changes, demonstrate meaningful associations with individual differences in stress, including stressor exposure and perceived stress across life domains. Consistent with the implications of previous theories (e.g., self-determination theory), higher levels of growth-related values were associated with lower levels of perceived stress at the between-person level, with the relations of self-transcendence and perceived job stress particularly robust across samples and analytic designs. However, contrary to the prior theoretical implications, social-focused orientation values did not display detrimental relations to stress. In terms of stressor exposure, the presence and direction of the associations for different value dimensions were largely dependent upon the life domains of stressors.

Perceived Stress

Results from Study 1 demonstrated negative concurrent and prospective associations between self-transcendence and perceived stress across different life domains (including job, financial, and interpersonal domains), as well as between changes in self-transcendence and perceived stress across domains. Prospective associations were observed for perceived job stress and perceived financial stress even after controlling for the baseline perceived stress measures. Consistently, results from Study 2 supported negative between-person relations between self-transcendence values and perceived stress in job and interpersonal (relationship with family in Study 2) domains after controlling for their variances at the within-person level. As implied by the "healthy" values perspective and the self-determination theory (Bilsky & Schwartz, 1994; Deci & Ryan, 2012; Fischer & Karl, 2023; Grosz et al., 2021; Ryan & Deci, 2001; Sagiv & Schwartz, 2000), emphasizing growth-related values

Table 6

Summary of Results of the Between- and Within-Person Relations Between the Broad Value Dimensions and General and Domain-Specific Stress in LISS

Analysis	$V_b \leftrightarrow S_b$	$V_w \leftrightarrow S_w$	$V_w \rightarrow S_w$	$S_w \rightarrow V_w$
General perceived stress				
Openness to change	−[a]	−	/	−
Self-transcendence	/	−	/	−
Self-enhancement	−	−	/	−
Conservation	/	−	/	/
Perceived Job stress				
Openness to change	−	/	−[a]	−[a]
Self-transcendence	−	/	−	/
Self-enhancement	−	−	−[a]	−[a]
Conservation	−	−	/	/
Perceived family relationship stress				
Openness to change	−	/	/	/
Self-transcendence	−	/	/	/
Self-enhancement	−	/	/	/
Conservation	−	−	/	/
Perceived financial stress				
Openness to change	+ & −[a]	−[a]	/	/
Self-transcendence	+	/	/	/
Self-enhancement	−[a]	−[a]	/	/
Conservation	+	/	/	/
Total stressor				
Openness to change	−	/	/	/
Self-transcendence	−	−	−	/
Self-enhancement	/	/	/	/
Conservation	−	−	−	/
Job stressor				
Openness to change	+	/	/	/
Self-transcendence	+	/	/	/
Self-enhancement	+	/	/	/
Conservation	/	/	/	/
Close relationship stressor				
Openness to change	−	/	/	/
Self-transcendence	−	−	−	−
Self-enhancement	+	/	/	/
Conservation	−	/	/	/
Financial stressor				
Openness to change	+	−	/	/
Self-transcendence	+	−	/	/
Self-enhancement	/	−[a]	/	/
Conservation	/	/	/	−
Housing stressor				
Openness to change	/	/	/	/
Self-transcendence	−	/	/	/
Self-enhancement	−	/	/	/
Conservation	−	/	/	/

Note. If multiple subdimensions are tested for the higher order value dimensions (see Supplemental Table S12 for details), effects are marked as significant when the effects were found for at least one of the subdimensions. "+" indicates a significant positive effect; "−" indicates a significant negative effect; "/" indicates a nonsignificant effect; "+ & −" indicates that significant positive and negative effects were found for different subdimensions of the broad value dimensions; "V_b" and "S_b" refer to between-person results; "V_w" and "S_w" refer to within-person results. LISS = Longitudinal Internet Studies for the Social Sciences.
[a] Effects were found in the dimension of enjoyment, which is generally considered as overlapping with both openness to change and self-enhancement; when significant effects were found for enjoyment, the effects are marked for both openness to change and self-enhancement.

facilitates the pursuit of personal interests and goals, making individuals less likely to attend to uncertainty and interpret situations as threatening. Although social-focused values were suggested to undermine the fulfillment of individuals' personal desires (Fischer & Boer, 2011; Fischer & Karl, 2023), prior work also proposed that the altruistic nature of self-transcendence values may result in less attention being paid to threats to self-interested outcomes (Schwartz et al., 2000). Moreover, in the present study, we found evidence for negative links between self-transcendence and stress in the interpersonal domains (perceived interpersonal stress in Study 1, perceived family relationship stress, and close relationship stressors in Study 2). Hence, the altruistic nature of self-transcendence may benefit individuals' social relationships and networks and the need for relatedness (Schwartz, 2010;

Sortheix & Schwartz, 2017; van der Wal et al., 2024), leading to increased actual and/or perceived social support. Because of its high relevance to secondary appraisal (the appraisal of coping resources), high levels of social support have been found to be closely tied to lowered perceived stress, especially stress perceived in occupational settings (Halbesleben, 2006; Jiang et al., 2023; Pines et al., 2002; Wang et al., 2021). Indeed, in the present study, the negative associations between self-transcendence values and perceived job stress were robust across samples and different analytic designs. When specific value items were scrutinized in Study 1, endorsement of the item of "positive family relationships" consistently displayed negative links to perceived job stress across analytic approaches. Thus, findings from the present study supported the role of self-transcendence in individual differences in perceived stress; in general, higher levels of and increases in self-transcendence were linked to lower levels of perceived stress, with the effects particularly robust in the job domain.

Also congruent with our expectation, after differentiating the between-person variance from the within-person variance, results from Study 2 indicated associations between higher levels of openness to change values and lower levels of perceived stress at the between-person level. The pattern was consistently observed across different life domains. Together with the negative relations between self-transcendence and perceived stress, the current results are aligned with the implications from previous theoretical work, such as the self-determination theory and the "healthy" values hypotheses, that growth-related values contribute to self-actualization and the pursuit of personal goals, leading to reduced perceptions of threat and uncertainty (Deci & Ryan, 2012; Fischer & Karl, 2023; Grosz et al., 2021; Ryan & Deci, 2001; Sagiv & Schwartz, 2000). Findings from the present study also extended the prior theoretical frameworks and suggested that, in addition to benefits to well-being, growth-related orientations also play roles in mitigating individuals' stress perceptions.

Due to its combined self-protection and social-focused orientations, theories proposed compromised effects of conservation on self-actualization and subjective well-being (Fischer & Karl, 2023; Sortheix & Schwartz, 2017). However, previous research on the associations between conservation values and subjective well-being, mental health, and relationship quality reported mixed findings (Grosz et al., 2021; Heim et al., 2019; van der Wal et al., 2024). Results from the present study suggested that the relations of conservation values to stress perception varied across life domains. As expected, in Study 2, conservation was positively associated with perceived financial stress at the between-person level; conversely, conservation was negatively linked to perceived job stress and perceived family relationship stress. As discussed above, the social-focused orientation may not have deleterious effects on stress perception. In addition, in the present study, conservation was found to be related to lower levels of total stressor exposure and stress exposure in some life domains at the between-person level (more details below). It is possible that through its associations with lowered stressor exposure, conservation contributed to mitigating perceived stress in the job and family relationship domains. Given that conservation values were assessed in LISS only, future studies are needed to examine if the pattern can be generalized.

Some inconsistencies in the results warrant attention and further investigations in future research. First, while self-enhancement generally displayed positive associations with perceived stress across domains in MIDUS, self-enhancement showed negative between-person connections with perceived stress in LISS. However, in LISS, self-enhancement did exhibit positive between-person relations to stressor exposure in the job and close relationship domains. Future research may further clarify the associations between self-enhancement values and perceived stress by taking individuals' stressor encounters into account. Also, prior work suggested that culture may play a role in shaping how values are related to other life outcomes (Sortheix & Schwartz, 2017). As the two samples used in the present study differed in country of origin, future research may examine whether the links between self-enhancement and perceived stress are contingent upon cultures. In addition, although self-transcendence generally showed negative connections to perceived stress in different life domains in both samples, the direction of its relation to perceived financial stress is opposite in MIDUS and LISS. A close inspection of the measures of perceived financial stress in the two samples revealed that the measure in MIDUS focused on individuals' appraisal of their overall financial situation, whereas the items in LISS were weighted toward the evaluations of income and expenditure, particularly. In LISS, it was also found that values displayed different patterns in their between-person relations to financial stressors versus housing stressors. Compared to financial stressors in income and expenditure, housing stressors can be more indicative of accumulating rather than temporary financial hardship. Hence, future studies may examine whether self-transcendence values play differential roles in different aspects of financial stress perceptions (e.g., short vs. long term). Another source that may give rise to the inconsistencies is that though the cross-sectional and prospective associations in Study 1 are commonly interpreted as evidence at the between-person level, without disaggregating the between- and within-person processes explicitly via longitudinal modeling approaches (as in Study 2), the associations are nonetheless confounded by within-person effects (Berry & Willoughby, 2017; Hamaker et al., 2015) and thus should be interpreted with caution.

Self-Reported Stressor Exposure

Consistent with our expectations, values demonstrated sophisticated patterns in their between-person relations to self-reported stressor exposure. Specifically, as the results from Study 2 revealed, the growth-related value dimensions, openness to change and self-transcendence, were negatively connected to self-reported total stressors and close relationship stressors but positively linked to job stressors and financial stressors at the between-person level. The results suggest that, in vocational contexts, while emphasizing autonomous and self-expressive exploration as opposed to self-protection may make individuals less likely to interpret the situations as threatening, it does not necessarily reduce the occurrence of job and financial stressors. Rather, seeking self-expansion and growth may expose individuals to novel situations, increasing the likelihood of challenging experiences. Conservation was negatively related to self-reported total stressors, close relationship stress, and housing stressors at the between-person level. Therefore, combined with the findings on the links between conservation and perceived stress, conservation values do not necessarily have adverse effects in terms of individual differences in stress experiences. The self-protection orientation of conservation values and their primary focus on avoiding conflict and uncertainty may prevent individuals from engaging in activities that potentially involve conflicts with others, decreasing the occurrence of

stressors and consequently, lowering stress perceptions. As discussed above, self-enhancement showed positive between-person associations with exposure to job stressors and close relationship stressors, the pattern of which was more aligned with the findings for perceived stress in MIDUS than that in LISS, suggesting a possible complexity in the relations between self-enhancement values and stress. Moreover, based on the current findings, values displayed differential patterns in their between-person connections to self-reported stressor exposure and perceived stress, even when the same life domain was targeted, underscoring the importance of distinguishing between stressor exposure and perceived stress in studying the role of values in individual differences in stress. However, given that stressor exposure was assessed in LISS only, future research is needed to test for replication and generalizability.

Dynamic Transactions Between Values and Stress at the Within-Person Level

The primary focus of Study 2 was investigating the dynamic transactions between values and general and domain-specific stress, including self-reported stressor exposure and perceived stress, at the within-person level after controlling for their between-person variance. As implied by the COR theory (Hobfoll, 1989), there are likely to be dynamic transactions between values and stress (both stressor exposure and perceived stress) at the within-person level. Based on the current results, the pattern differed across dimensions of values and conceptualizations/life domains of stress.

Effects of Changes in Values on Changes in Stress

The effects of changes in values on changes in perceived stress at the within-person level were observed in the job domain. Specifically, after controlling for the between-person effects, increases in self-transcendence were found to show significant effects on subsequent decreases in perceived job stress at the within-person level, suggesting that the pattern for their association found at the between-person level across the two samples could be generalized to their relation at the within-person level. Also, increases in enjoyment, overlapping with both openness to change and self-enhancement, displayed lagged within-person effects on subsequent decreases in perceived job stress. In general, in line with the patterns that emerged at the between-person level, at the within-person level, increases in values with growth-related orientation preceded decreases in perceived job stress at later time points. Following the ideas outlined in the COR theory (Halbesleben et al., 2014; Hobfoll, 1989, 2002), the findings demonstrated that growth-oriented values acted as resources protecting individuals from resource losses/threat of resource losses.

Lagged effects of changes in values were also observed on changes in self-reported stressor exposure at the within-person level. Increases in self-transcendence were found to be followed by decreases in self-reported total stressor exposure and self-reported exposure to stressors in the close relationship domain at the within-person level. Additionally, increases in conservation also exhibited significant within-person effects on subsequent decreases in self-reported total stressor exposure. Thus, similar to the between-person patterns, social-focused values demonstrated beneficial associations with subsequent stress. It is possible that increasing salience of social-focused values made individuals more likely to engage in altruistic behaviors, which in turn decreased stressful encounters. The observed protective effects of self-transcendence values against stressors in close relationships are in alignment with previous findings on the positive associations between self-transcendence and enhanced romantic relationship quality (van der Wal et al., 2024).

Effects of Changes in Stress on Changes in Values

Evidence was also found for changes in stress experiences as potential sources driving changes in value priorities. At the within-person level, increases in general perceived stress preceded decreases in openness to change, self-transcendence, and self-enhancement values; meanwhile, increases in perceived job stress were also followed by decreases in enjoyment values (overlapping with openness to change and self-enhancement). As suggested by the resource conservation tenet of the COR theory (Halbesleben et al., 2014; Hobfoll, 1989), following resource losses (e.g., occurrence of stress), individuals are likely to withdraw themselves from activities that can potentially further deplete their resources. According to the current results, individuals who appraised their circumstances as more stressful than usual tended to pull back from growth- and achievement-related activities to protect themselves from experiencing more threats and uncertainties.

Increases in self-reported close relationship stressors were found to predict subsequent decreases in self-transcendence at the within-person level; increases in self-reported financial stressors preceded decreases in conservation. Thus, the results suggested that when individuals experienced more stressful encounters than usual, they refrained from engaging in altruistic and other-caring activities. Under the ideas of the COR theory (Halbesleben et al., 2014; Hobfoll, 1989), engaging in altruistic activities requires further resource investment (e.g., time, energy), contrary to the motivation to retain and protect remaining resources after experiencing resource losses. Overall, inconsistent with our expectations, elevations in stress experiences (stressor exposure and/or perceived stress) did not lead to increased priorities of values related to self-protection. However, evidence did suggest that following the experiences of higher than usual levels of stress, individuals were prone to de-emphasize values that could potentially result in further resource investment.

Bidirectional Associations Between Changes in Values and Changes in Stress

Bringing these results together, bidirectional associations were observed between changes in enjoyment values and changes in perceived job stress, as well as between changes in self-transcendence values and changes in close relationship stressors. Thus, some support was found for the intraindividual spirals between values and stress experiences as proposed by the COR theory (Hobfoll, 1989). For example, at the within-person level, a loss spiral can occur when heightened perceived job stress reduces activities related to hedonic gains, which further increases the stressful feeling about work later on. On the other hand, a gain spiral can be established when increases in engaging in hedonic activities mitigate the stressful feelings at work, which affords individuals with more psychological resources for subsequently engaging in enjoyment-related activities. Similarly, increases in close relationship stressors and decreases in activities/behaviors related to self-transcendence (e.g., growth-related and altruistic behaviors and activities) can reinforce each other in a loss

spiral, whereas increased priorities of self-transcendence and diminished close relationship stressors can also reciprocally influence each other in a gain spiral. These findings have practical implications by suggesting that interventions that target improving enjoyment/self-transcendence values may contribute to forming positive feedback loops in which activation of those values may lead to decreases in stress in the job and close relationship domain, which further benefit positive changes in those values.

Contemporaneous Associations Between Changes in Values and Changes in Stress

Evidence was found for contemporaneous relations between changes in values and changes in stress, including perceived stress and stressor exposure, at the within-person level. Overall, when compared to the between-person level links, values and stress showed fewer significant associations at the within-person level, and when both between- and within-person relations were present, the within-person associations were generally in the same direction as their between-person counterparts but weaker in strength. However, in some cases, within-person associations were present despite the absence of between-person relations. For example, in LISS, despite no significant links between self-transcendence, conservation, and general perceived stress at the between-person level, changes in self-transcendence and conservation were negatively connected to changes in general perceived stress at the within-person level. In addition, divergent patterns emerged in the associations between self-transcendence, conservation, and financial stressors (positive between-person relations and negative within-person relations). Thus, the results highlight the importance of distinguishing between the between- and within-person effects and suggest that the between- and within-person connections between values and stress are distinct from each other.

Taken together, findings from the present study highlight the importance of investigating the within-person dynamic relations between values and stress. Within-person level examination provides us with unique information about the directionality for the links between specific value dimensions and stress under different conceptualizations and in different life domains. The findings also provide us with insight into the processes underlying changes in values and changes in stress experiences over time. We note that although temporal connections were found between values and stress at the within-person level and the use of RI-CLPMs could help rule out additive confounding effects of time-invariant variables (Berry & Willoughby, 2017; Bollen & Brand, 2010; Grosz et al., 2021), the causal relation between values and stress still warrants further examination. Confounding effects of time-varying variables (e.g., life events such as health-related events) and nonadditive confounding effects of time-invariant variables may drive the observed cross-lagged effects. Nonetheless, the present study provides a strong foundation upon which future research can be conducted to uncover the causal relations between values and stress.

Limitations and Future Directions

Despite the strengths of the present study (e.g., examining stress in different dimensions, differentiating the between- and within-person processes), some qualifications need to be considered when interpreting the study findings. First, although using data from large panel studies provided us with longitudinal data collected from large samples, the measures used to assess values and stress were not optimal. Value items used in MIDUS did not fully cover the four higher order value dimensions specified in Schwartz's value theory (Schwartz, 1992; Schwartz et al., 2012), and the items and response formats did not allow us to assess the reliability of the measure. The measure used in LISS had items assessing each of the four dimensions, but the subdimensions belonging to each of the four higher order value dimensions were not fully captured. Also, values were measured in different formats in the two samples (endorsement based on ordered importance of all value items in MIDUS and rating the degree of importance for each value item in LISS). Evidence has been reported by previous research that values assessed with rating scales performed better in validity than their counterpart with ranking scales (Maio et al., 1996). It has also been suggested that, compared to ranking scales, values measured in rating scales contain more trait-like features (DeYoung, 2015; Schwartz, 1992). In the present study, we observed divergent patterns in the between-person associations between values and perceived stress, which could be at least partly due to these measurement differences. Also, stress was not assessed using standardized measures (e.g., Perceived Stress Scale; S. Cohen et al., 1983), which generally possess higher reliability. Therefore, future work using improved value and stress measures is needed.

Second, in the present study, we tested stress in life domains. Given that nuanced associations with values were observed for stress in some domains (e.g., values showed differential relations with financial and housing stressors), a more comprehensive coverage of stressors and perceived stress across life domains should be adopted. In addition, we only examined micro stress (stress about the self and related extensions such as family and close friends) but not macro stress (stress pertaining to external entities such as society and environment). Previous research suggested that value dimensions, such as self-transcendence and self-enhancement, may show differential relations to micro and macro stress. For example, when the relations of values to micro (about self and its extension) and macro (about society and world) worries were tested, individuals who prioritized self-transcendence values displayed low micro but high macro worries, whereas those who emphasized self-enhancement values reported high micro but low macro worries (Schwartz et al., 2000). Although we generally found negative relations between self-transcendence values and stress, because of their emphasis on caring for others and larger society, they may be positively related to macro stress (Schwartz et al., 2000). Future studies should examine whether the pattern for the value-stress link differs for micro versus macro stress.

Third, previous research has found evidence for the temporal relations between values and well-being at the within-person level over a short period (e.g., daily assessment over a 6-day period in Fischer & Karl, 2023), suggesting that short-term fluctuations in values can serve as a meaningful predictor of other outcomes. In the present study, the time interval between the two waves in Study 1 was about a decade, and the time interval between adjacent waves in Study 2 was about 1.6 years on average, supporting the presence of significant connections between values and stress over a relatively long period of time. Future work is needed to examine whether the pattern differs when value fluctuations are assessed over a short period.

Finally, we included demographic variables (age, sex, and education) as covariates in the analyses for the concurrent and

prospective associations between values and stress. However, it is possible that the value-stress associations differ across life stages, sex, and educational attainment. Future research can examine the moderating effects of these demographic variables to obtain a more nuanced understanding of the relations between values and stress. In addition, values and their associations with other outcomes (e.g., well-being) have been found to be sensitive to cultural differences (Heim et al., 2019; Schwartz et al., 2012; Sortheix & Schwartz, 2017) and other contextual features. Although samples from two different countries were examined in the present study, future research should directly test the moderating role of culture in the value-stress links using more diverse samples and in different historical contexts.

Conclusion

In summary, the present study examined the associations between values and general and domain-specific stress, including stressor exposure and perceived stress, at both the between- and within-person levels. The results supported meaningful relations of values to individual differences in stress. Evidence was also found for temporal connections between values and stress at the within-person level after controlling for their between-person variance. The current findings provide us with new insights into the interindividual and intraindividual variations of values and stress experiences that are critical to both theoretical advancement and practical application.

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Appendix

Preregistration and Item-Level Analyses in Study 1

Table A1
Preregistration Deviations

No.	Details	Original wording	Deviation description	Reader impact
1	Type Hypotheses Reason New knowledge Timing After doing thorough literature views (before organizing, writing, and interpreting the results)	Original hypotheses were made for the subdimensions of values (i.e., "we predict that generally, values related to power are positively associated with stress; values related to benevolence and openness to change are negatively associated with stress; it remains exploratory for the associations between values related to universalism and achievement and stress").	After a careful review of the literature, we decided that there was no sufficient theoretical and empirical evidence from prior work to make hypotheses for the subdimensions of values (e.g., power, benevolence). Thus, at the places where specific hypotheses were made (others remained exploratory), we referred to the four higher order value dimensions.	The hypotheses specified in the article better match the theoretical arguments and empirical findings we reported from previous research. These hypotheses were still made before we conducted the analyses, so the resulting hypothesis tests can still be interpreted as confirmatory.
2	Type Covariates Reason Peer reviews Timing After results known (first R&R)	In the original preregistration, no covariates were proposed to include for Study 1.	Upon the suggestions from the reviewers, for the prospective analyses in Study 1, we conducted analyses to include baseline age, sex, and education as covariates, as well as analyses including baseline stress measures in addition to the demographic covariates.	The results from these analyses can be interpreted as more conservative relative to the unadjusted analyses that were preregistered.
3	Type Variable computation Reason Peer reviews Timing After results known (first R&R)	In the original preregistration, for Study 1, we proposed to conduct item-based (values) analyses only (i.e., "Individual items for different values will be used in the analyses").	Upon the suggestions from the reviewers, we aggregated items and computed scores for self-transcendence and self-enhancement in Study 1. Analyses were conducted for self-transcendence and self-enhancement in addition to the item-based analyses.	Compared to the item-based analyses, results for the value dimensions are better aligned with the theories reviewed in the introduction, and the pattern is more interpretable. In addition, we report the results from the preregistered analyses in the appendix.
4	Type Variable computation Reason Peer reviews Timing After results known (first R&R)	In the original preregistration, for Study 2, we proposed to conduct item-based (values) analyses (i.e., "Individual items for different values will be used in the analyses").	Upon the suggestions from reviewers, in Study 2, we computed dimensional scores for values by adopting the value structure employed in a previous study using the LISS data.	Compared to the item-based analyses, results for the value dimensions are better aligned with the theories reviewed in the introduction, and the pattern is more interpretable.

Note. LISS = Longitudinal Internet Studies for the Social Sciences; R&R = revision and resubmission.

(*Appendix continues*)

Table A2

Standardized Estimates and 99% Confidence Intervals for the Concurrent Effects of Value Items on General and Domain-Specific Perceived Stress in MIDUS

Value item	GPS	PJS	PFS	PIS-CR	PIS-C	PIS-FM	PIS-F
Autonomy	.07 [−.04, .18]	.07 [−.03, .17]	.06 [−.05, .17]	.12* [−.01, .25]	.13 [.01, .24]	.09* [−.02, .21]	.10* [−.01, .22]
Good job	.06 [−.05, .17]	.16** [.06, .26]	.04 [−.07, .14]	.06 [−.06, .18]	.03 [−.08, .14]	.06 [−.05, .17]	.04 [−.07, .15]
Learning/growth	−.14** [−.24, −.04]	−.07 [−.16, .03]	−.03 [−.13, .06]	−0.02 [−.13, .09]	.04 [−.06, .14]	.08* [−.02, .18]	.05 [−.05, .15]
Life's pleasures	−.01 [−.12, .10]	−.02 [−.11, .08]	−.09* [−.19, .02]	.03 [−.09, .14]	−.01 [−.12, .10]	−.07 [−.17, .04]	.03 [−.08, .14]
Enough money	.18** [.09, .27]	.09** [.001, .174]	.20** [.11, .28]	.09* [−.01, .19]	.01 [−.08, .10]	.00 [−.10, .09]	.02 [−.08, .12]
Extra money	.29** [.17, .42]	.05 [−.07, .17]	.09 [−.03, .21]	.26** [.13, .40]	.13** [.01, .25]	.23** [.10, .35]	.08 [−.05, .21]
Faith	−.12** [−.21, −.02]	−.01 [−.10, .07]	.03 [−.06, .12]	−.15** [−.25, −.05]	−.08* [−.17, .01]	.01 [−.09, .10]	−.02 [−.12, .08]
Giving to community	−.10 [−.25, .04]	.02 [−.11, .15]	−.07 [−.21, .07]	−.01 [−.16, .15]	.04 [−.10, .18]	.01 [−.14, .15]	.08 [−.07, .23]
Love/care for self	.04 [−.11, .18]	.08 [−.05, .22]	.11* [−.03, .25]	.09 [−.08, .26]	.05 [−.09, .19]	.21** [.07, .35]	.18** [.03, .32]
Physical fitness	−.05 [−.16, .05]	−.07 [−.17, .03]	−.10* [−.20, .00]	.01 [−.10, .12]	.02 [−.08, .12]	.08 [−.03, .18]	.03 [−.08, .14]
Positive attitude	−.28** [−.37, −.19]	−.19** [−.27, −.11]	−.11** [−.19, −.02]	−.07 [−.17, .03]	.01 [−.08, .10]	−.12** [−.21, −.03]	−.07 [−.16, .03]
Family relations	−.16** [−.25, −.06]	−.11** [−.20, −.03]	−.11** [−.20, −.02]	−.28** [−.39, −.18]	−.35** [−.44, −.25]	−.28** [−.38, −.19]	−.24** [−.33, −.14]
Friend relations	−.10** [−.202, −.002]	−.08* [−.17, .02]	−.06 [−.16, .04]	−.15** [−.26, −.04]	−.13** [−.23, −.04]	−.19** [−.29, −.10]	−.14** [−.25, −.04]
Relax/peace	.18** [.06, .29]	.10* [−.01, .21]	.07 [−.04, .18]	.15** [.02, .27]	.10* [−.01, .22]	.04 [−.08, .15]	.00 [−.11, .12]
Absence of illness	.22** [.13, .32]	.06 [−.03, .15]	.04 [−.05, .13]	.06 [−.05, .16]	−.02 [−.11, .08]	.08* [−.02, .17]	.05 [−.05, .15]
Sense of accomplishment	.08 [−.04, .20]	.08 [−.03, .19]	−.07 [−.19, .04]	.08 [−.05, .21]	.16** [.04, .28]	−.02 [−.14, .10]	.00 [−.12, .13]
Sense of purpose	.02 [−.08, .12]	−.01 [−.10, .09]	.05 [−.05, .15]	.00 [−.11, .11]	.09 [−.01, .19]	.08 [−.03, .18]	.03 [−.08, .13]

Note. Baseline age, sex, and education were controlled in all analyses. MIDUS = Midlife in the United States; GPS = general perceived stress; PJS = perceived job stress; PFS = perceived financial stress; PIS-CR = perceived interpersonal relationship stress–close relationship; PIS-C = perceived interpersonal relationship stress–children; PIS-FM = perceived interpersonal relationship stress–other family members; PIS-F = perceived interpersonal relationship stress–friends.

* $p \leq .05$. ** $p \leq .01$.

(*Appendix continues*)

Table A3

Standardized Estimates and 99% Confidence Intervals for the Prospective Effects of Value Items on General and Domain-Specific Perceived Stress in MIDUS

Value item	GPS	PJS	PFS	PIS-CR	PIS-C	PIS-FM	PIS-F
Autonomy	.09 [−.06, .23]	.13* [.00, .27]	.13* [.00, .27]	.06 [−.12, .23]	.11 [−.04, .25]	.09 [−.05, .24]	.12* [−.03, .26]
Good job	.07 [−.07, .21]	.06 [−.07, .20]	.02 [−.12, .15]	.10 [−.06, .26]	.10 [−.05, .24]	.10 [−.04, .25]	.11 [−.04, .25]
Learning/growth	−.05 [−.17, .08]	−.02 [−.14, .10]	.05 [−.07, .17]	.08 [−.07, .23]	.01 [−.12, .14]	.04 [−.09, .17]	.00 [−.13, .13]
Life's pleasures	−.02 [−.15, .12]	−.05 [−.18, .08]	−.06 [−.19, .07]	.10 [−.05, .26]	−.05 [−.19, .08]	−.05 [−.18, .09]	.02 [−.12, .16]
Enough money	.18** [.06, .30]	.16** [.04, .27]	.17** [.05, .28]	.09 [−.05, .23]	.01 [−.11, .13]	−.06 [−.18, .06]	.03 [−.09, .15]
Extra money	.21** [.06, .37]	.09 [−.06, .24]	.07 [−.07, .22]	.14* [−.04, .32]	.09 [−.06, .25]	.11 [−.05, .26]	.04 [−.12, .20]
Faith	−.11* [−.23, .00]	−.07 [−.18, .04]	.00 [−.11, .11]	−.15** [−.29, −.02]	−.11* [−.23, .01]	−.03 [−.14, .09]	−.02 [−.14, .10]
Giving to community	−.06 [−.24, .12]	−.02 [−.19, .15]	.01 [−.15, .18]	.03 [−.18, .23]	−.02 [−.19, .16]	.03 [−.15, .21]	.01 [−.17, .19]
Love/care for self	.05 [−.14, .23]	.03 [−.14, .21]	.11 [−.07, .28]	.14 [−.09, .36]	.05 [−.14, .23]	.21** [.03, .39]	.25** [.06, .43]
Physical fitness	−.06 [−.19, .07]	−.01 [−.13, .11]	−.11* [−.23, .02]	−.07 [−.22, .08]	.01 [−.12, .14]	.06 [−.07, .19]	.03 [−.10, .16]
Positive attitude	−.19** [−.30, −.07]	−.08* [−.19, .02]	−.04 [−.15, .06]	.02 [−.11, .15]	−.04 [−.15, .07]	−.04 [−.15, .08]	.00 [−.12, .12]
Family relations	−.22** [−.34, −.10]	−.14** [−.25, −.02]	−.22** [−.33, −.11]	−.22** [−.36, −.08]	−.22** [−.34, −.10]	−.20** [−.32, −.08]	−.25** [−.37, −.13]
Friend relations	−.11* [−.24, .01]	−.10* [−.21, .02]	−.11* [−.23, .00]	−.14** [−.282, −.002]	−.07 [−.20, .05]	−.16** [−.28, −.03]	−.11* [−.24, .02]
Relax/peace	.10 [−.04, .24]	.07 [−.06, .21]	.04 [−.09, .18]	.08 [−.09, .24]	.10 [−.04, .25]	−.03 [−.17, .12]	−.06 [−.20, .09]
Absence of illness	.22** [.10, .34]	.09* [−.03, .20]	.06 [−.05, .18]	.01 [−.13, .14]	.14** [.02, .25]	.06 [−.06, .18]	−.03 [−.15, .10]
Sense of accomplishment	.08 [−.07, .23]	−.02 [−.16, .13]	−.02 [−.17, .12]	.02 [−.14, .19]	.10 [−.05, .25]	−.02 [−.17, .13]	−.02 [−.17, .13]
Sense of purpose	−.01 [−.14, .11]	−.03 [−.15, .09]	.02 [−.10, .14]	−.03 [−.17, .12]	−.03 [−.15, .10]	.07 [−.05, .20]	.08 [−.05, .21]

Note. Baseline age, sex, and education were controlled in all analyses. MIDUS = Midlife in the United States; GPS = general perceived stress; PJS = perceived job stress; PFS = perceived financial stress; PIS-CR = perceived interpersonal relationship stress–close relationship; PIS-C = perceived interpersonal relationship stress–children; PIS-FM = perceived interpersonal relationship stress–other family members; PIS-F = perceived interpersonal relationship stress–friends.

* $p \leq .05$. ** $p \leq .01$.

(*Appendix continues*)

Table A4

Standardized Estimates and 99% Confidence Intervals for the Prospective Effects of Value Items on General and Domain-Specific Perceived Stress With Baseline Perceived Stress Controlled in MIDUS

Value item	GPS	PJS	PFS	PIS-CR	PIS-C	PIS-FM	PIS-F
Autonomy	.02 [−.09, .14]	.10* [−.03, .23]	.06 [−.06, .18]	.00 [−.14, .14]	.07 [−.06, .19]	.05 [−.08, .17]	.05 [−.09, .18]
Good job	.00 [−.12, .11]	.01 [−.12, .13]	.02 [−.10, .13]	.04 [−.08, .17]	.05 [−.07, .18]	.07 [−.06, .19]	.10 [−.03, .23]
Learning/growth	.03 [−.07, .13]	−.01 [−.13, .10]	.04 [−.06, .14]	.10* [−.01, .22]	.01 [−.10, .12]	−.02 [−.14, .09]	−.02 [−.14, .10]
Life's pleasures	.00 [−.11, .11]	−.04 [−.16, .08]	−.01 [−.13, .09]	.06 [−.06, .19]	−.01 [−.13, .11]	.00 [−.12, .12]	.00 [−.13, .12]
Enough money	.06 [−.04, .15]	.12** [.01, .22]	.07 [−.03, .16]	.04 [−.07, .15]	.03 [−.08, .13]	−.01 [−.11, .10]	.02 [−.09, .13]
Extra money	.00 [−.12, .13]	.07 [−.07, .21]	.01 [−.11, .14]	−.02 [−.16, .13]	.05 [−.09, .18]	−.04 [−.18, .09]	.00 [−.15, .14]
Faith	−.03 [−.12, .07]	−.05 [−.15, .06]	−.01 [−.10, .09]	−.07 [−.18, .04]	−.10** [−.207, −.002]	−.04 [−.14, .07]	.01 [−.10, .11]
Giving to community	.01 [−.13, .16]	.00 [−.16, .16]	.05 [−.10, .19]	.05 [−.11, .21]	−.07 [−.23, .09]	.02 [−.14, .17]	−.06 [−.22, .11]
Love/care for self	.05 [−.10, .20]	.03 [−.13, .20]	.05 [−.10, .20]	.11 [−.06, .29]	.02 [−.15, .18]	.08 [−.08, .24]	.17** [.00, .34]
Physical fitness	−.03 [−.13, .08]	−.01 [−.13, .11]	−.06 [−.16, .05]	.01 [−.15, .09]	−.01 [−.12, .11]	.02 [−.10, .13]	.00 [−.12, .12]
Positive attitude	.01 [−.09, .10]	−.01 [−.12, .09]	.00 [−.09, .09]	.04 [−.07, .14]	−.04 [−.14, .06]	.03 [−.07, .13]	.03 [−.07, .14]
Family relations	−.09* [−.19, .01]	−.11** [−.219, −.002]	−.15** [−.25, −.05]	−.06 [−.17, .06]	−.08 [−.19, .03]	−.03 [−.14, .08]	−.12** [−.23, −.01]
Friend relations	−.03 [−.13, .07]	−.08 [−.19, .03]	−.08* [−.18, .02]	−.07 [−.19, .04]	−.02 [−.13, .09]	−.05 [−.16, .06]	−.03 [−.14, .09]
Relax/peace	−.02 [−.13, .10]	.05 [−.08, .18]	.02 [−.10, .13]	−.03 [−.16, .10]	.06 [−.06, .19]	−.04 [−.16, .09]	−.06 [−.19, .08]
Absence of illness	.06 [−.04, .15]	.06 [−.05, .17]	.03 [−.07, .12]	−.02 [−.13, .09]	.13** [.03, .24]	.00 [−.11, .10]	−.05 [−.16, .06]
Sense of accomplishment	−.01 [−.13, .12]	−.05 [−.18, .09]	.04 [−.08, .16]	−.04 [−.18, .09]	.05 [−.08, .19]	−.02 [−.15, .12]	−.02 [−.16, .12]
Sense of purpose	.00 [−.10, .10]	−.01 [−.12, .11]	.01 [−.09, .11]	−.01 [−.12, .11]	−.06 [−.17, .05]	.01 [−.10, .12]	.05 [−.07, .17]

Note. In addition to baseline perceived stress, baseline age, sex, and education were also controlled in all analyses. MIDUS = Midlife in the United States; GPS = general perceived stress; PJS = perceived job stress; PFS = perceived financial stress; PIS-CR = perceived interpersonal relationship stress–close relationship; PIS-C = perceived interpersonal relationship stress–children; PIS-FM = perceived interpersonal relationship stress–other family members; PIS-F = perceived interpersonal relationship stress–friends.
* $p \leq .05$. ** $p \leq .01$.

(*Appendix continues*)

Table A5

Standardized Estimates and 99% Confidence Intervals for the Effects of Stability/Change in Value Items on General and Domain-Specific Perceived Stress With Non-Endorsers as the Reference Group in MIDUS

Item endorsement status	GPS	PJS	PFS	PIS-CR	PIS-C	PIS-FM	PIS-F
Autonomy							
NN vs. EE	.13 [−.08, .33]	.20** [.02, .38]	.16* [−.03, .34]	.13 [−.12, .37]	.10 [−.11, .29]	.19* [−.01, .39]	.18* [−.02, .38]
NN vs. NE	.14* [−.04, .32]	.13* [−.04, .29]	.01 [−.16, .18]	.13 [−.08, .34]	.17* [−.01, .34]	.12 [−.05, .30]	.03 [−.15, .20]
NN vs. EN	.10 [−.10, .30]	.12 [−.06, .31]	.13 [−.06, .31]	.03 [−.20, .26]	.18* [−.01, .38]	.05 [−.14, .24]	.07 [−.13, .26]
Good job							
NN vs. EE	.23** [.01, .45]	.12 [−.08, .32]	−.01 [−.22, .20]	.22* [−.02, .46]	.11 [−.11, .33]	.24** [.03, .46]	.22* [−.01, .44]
NN vs. NE	.11 [−.10, .33]	.12 [−.07, .31]	−.03 [−.23, .16]	.00 [−.24, .24]	.02 [−.20, .23]	.26** [.05, .47]	.22** [.01, .43]
NN vs. EN	.00 [−.18, .19]	.05 [−.11, .21]	.04 [−.13, .20]	.02 [−.18, .22]	.09 [−.08, .27]	.08 [−.09, .26]	.11 [−.07, .28]
Learning/growth							
NN vs. EE	−.20** [−.38, −.03]	−.13* [−.29, .03]	.01 [−.15, .17]	.00 [−.19, .20]	−.03 [−.20, .15]	.09 [−.09, .26]	.04 [−.13, .21]
NN vs. NE	−.18** [−.358, −.002]	−.08 [−.25, .08]	.04 [−.13, .20]	.02 [−.18, .22]	−.03 [−.20, .14]	.07 [−.11, .24]	.02 [−.15, .20]
NN vs. EN	.04 [−.13, .22]	.06 [−.10, .22]	.09 [−.07, .25]	.19* [−.01, .38]	.05 [−.12, .22]	.03 [−.14, .21]	.02 [−.16, .19]
Life's pleasures							
NN vs. EE	.01 [−.19, .21]	.01 [−.19, .17]	−.07 [−.29, .12]	.12 [−.10, .34]	−.06 [−.26, .14]	.02 [−.18, .21]	.07 [−.13, .26]
NN vs. NE	−.11 [−.29, .07]	.01 [−.16, .17]	−.08 [−.24, .09]	−.08 [−.27, .12]	−.06 [−.24, .11]	.04 [−.14, .21]	−.01 [−.19, .17]
NN vs. EN	−.08 [−.26, .10]	−.07 [−.24, .09]	−.08 [−.24, .09]	.06 [−.14, .25]	−.09 [−.26, .08]	−.08 [−.26, .10]	−.01 [−.18, .17]
Enough money							
NN vs. EE	.33** [.18, .49]	.24** [.09, .38]	.31** [.17, .46]	.17* [−.01, .34]	.09 [−.06, .25]	−.01 [−.16, .15]	.06 [−.10, .22]
NN vs. NE	.23** [.07, .39]	.16** [.02, .31]	.25** [.10, .39]	.14* [−.03, .32]	.09 [−.07, .24]	.09 [−.06, .24]	.01 [−.15, .17]
NN vs. EN	.13 [−.05, .30]	.17** [.01, .32]	.14* [−.02, .30]	.14 [−.05, .34]	−.02 [−.19, .15]	−.04 [−.21, .13]	−.02 [−.19, .15]
Extra money							
NN vs. EE	.37** [.14, .61]	.11 [−.11, .33]	.03 [−.19, .25]	.11 [−.15, .37]	.16 [−.07, .39]	.04 [−.20, .27]	.02 [−.22, .25]
NN vs. NE	.32** [.11, .53]	.19** [.001, .380]	.08 [−.11, .27]	.16 [−.07, .38]	.09 [−.11, .29]	.17* [−.04, .37]	.08 [−.12, .29]
NN vs. EN	.17* [−.03, .38]	.11 [−.08, .30]	.12 [−.07, .30]	.20* [−.03, .43]	.06 [−.14, .26]	.20* [−.01, .40]	.08 [−.12, .28]
Faith							
NN vs. EE	−.16** [−.30, −.03]	−.08 [−.20, .05]	.00 [−.12, .12]	−.20** [−.35, −.05]	−.13** [−.262, −.002]	−.06 [−.19, .08]	−.04 [−.19, .08]
NN vs. NE	−.08 [−.31, .15]	−.01 [−.23, .20]	−.01 [−.23, .21]	.03 [−.24, .30]	−.05 [−.28, .19]	−.05 [−.29, .18]	−.06 [−.30, .18]
NN vs. EN	.00 [−.20, .21]	−.04 [−.23, .15]	−.01 [−.20, .18]	.03 [−.20, .26]	−.07 [−.28, .13]	.04 [−.17, .23]	.13 [−.08, .34]
Giving to community							
NN vs. EE	−.07 [−.32, .19]	−.01 [−.25, .23]	−.06 [−.30, .17]	−.01 [−.30, .27]	−.08 [−.33, .17]	.12 [−.13, .38]	.20* [−.05, .46]
NN vs. NE	−.11 [−.32, .10]	−.15* [−.35, .04]	−.10 [−.29, .10]	−.11 [−.34, .13]	−.17* [−.37, .04]	−.16* [−.36, .05]	−.01 [−.22, .20]
NN vs. EN	−.04 [−.28, .20]	−.06 [−.28, .17]	.07 [−.16, .29]	.03 [−.24, .31]	.01 [−.22, .25]	−.09 [−.32, .16]	−.16 [−.41, .08]
Love/care for self							
NN vs. EE	.05 [−.25, .35]	−.07 [−.34, .21]	.16 [−.12, .44]	.14 [−.24, .52]	.17 [−.14, .47]	.08 [−.22, .37]	.23* [−.07, .54]
NN vs. NE	−.11[−.32, .11]	−.01 [−.22, .19]	.00 [−.20, .20]	.08 [−.17, .33]	.07 [−.14, .29]	.13 [−.09, .34]	.06 [−.16, .28]
NN vs. EN	.02 [−.21, .26]	.08 [−.14, .29]	.09 [−.13, .30]	.13 [−.13, .39]	.01 [−.22, .23]	.30** [.07, .52]	.24** [.01, .47]
Physical fitness							
NN vs. EE	−.08 [−.26, .10]	.01 [−.16, .17]	−.18** [−.34, −.02]	−.01 [−.20, .19]	−.02 [−.19, .15]	.07 [−.10, .25]	.02 [−.16, .20]
NN vs. NE	.03 [−.14, .21]	.08 [−.09, .24]	−.04 [−.20, .12]	.05 [−.14, .24]	.11 [−.06, .27]	.07 [−.10, .24]	−.03 [−.20, .15]
NN vs. EN	.00 [−.18, .19]	.00 [−.17, .17]	−.04 [−.21, .12]	−.12 [−.33, .08]	.11 [−.07, .29]	.10 [−.08, .27]	.04 [−.14, .22]
Positive attitude							
NN vs. EE	−.33** [−.47, −.19]	−.15** [−.28, −.02]	−.10* [−.23, .03]	−.04 [−.20, .13]	−.09 [−.23, .05]	−.17** [−.31, −.03]	−.08 [−.22, .07]
NN vs. NE	−.29** [−.47, −.12]	−.20** [−.37, −.04]	−.11 [−.28, .05]	−.11 [−.31, .09]	−.03 [−.21, .14]	−.11 [−.29, .07]	−.09 [−.27, .09]
NN vs. EN	−.15* [−.32, .02]	−.14* [−.30, .01]	−.03 [−.19, .12]	−.01 [−.18, .20]	.00 [−.16, .17]	.07 [−.10, .24]	.05 [−.12, .22]
Family relations							
NN vs. EE	−.34** [−.49, −.18]	−.26** [−.41, −.12]	−.26** [−.40, −.11]	−.21** [−.41, −.02]	−.36** [−.52, −.20]	−.36** [−.51, −.20]	−.38** [−.53, −.22]
NN vs. NE	−.11 [−.32, .09]	−.14* [−.33, .05]	−.05 [−.24, .14]	.08 [−.12, .37]	−.17* [−.37, .04]	−.18* [−.38, .02]	−.14 [−.34, .07]
NN vs. EN	−.13 [−.32, .07]	−.05 [−.23, .13]	−.21** [−.40, −.03]	−.05 [−.19, .29]	−.10 [−.31, .10]	−.08 [−.28, .12]	−.12 [−.32, .08]

(*table continues*)

(*Appendix continues*)

Table A5 (*continued*)

Item endorsement status	GPS	PJS	PFS	PIS-CR	PIS-C	PIS-FM	PIS-F
Friend relations							
NN vs. EE	−.14* [−.31, .02]	−.15** [−.305, −.003]	−.13* [−.28, .02]	−.15* [−.33, .04]	−.08 [−.24, .08]	−.25** [−.41, −.09]	−.19** [−.35, −.02]
NN vs. NE	.00 [−.17, .17]	.00 [−.16, .16]	−.05 [−.20, .11]	−.01 [−.20, .19]	−.08 [−.24, .09]	−.21** [−.38, −.05]	−.22** [−.39, −.06]
NN vs. EN	−.08 [−.25, .10]	−.02 [−.18, .14]	−.12 [−.28, .04]	−.14 [−.33, .05]	−.10 [−.28, .07]	−.13* [−.31, .04]	−.11 [−.29, .06]
Relax/peace							
NN vs. EE	.13 [−.10, .36]	.10 [−.11, .31]	.07 [−.14, .29]	.08 [−.19, .34]	.14 [−.09, .38]	.02 [−.21, .24]	.04 [−.19, .26]
NN vs. NE	.13 [−.05, .32]	−.03 [−.20, .14]	−.02 [−.19, .15]	.03 [−.17, .24]	.13 [−.05, .31]	.20** [.02, .38]	.23** [.05, .41]
NN vs. EN	.12 [−.06, .30]	.06 [−.10, .23]	.04 [−.13, .20]	.08 [−.13, .28]	.10 [−.08, .27]	−.02 [−.19, .16]	−.07 [−.24, .11]
Absence of illness							
NN vs. EE	.29** [.13, .44]	.12* [−.02, .27]	.02 [−.12, .16]	.02 [−.16, .19]	.17** [.02, .32]	.10 [−.05, .25]	−.01 [−.14, .17]
NN vs. NE	.19** [.02, .36]	.11 [−.05, .27]	.09 [−.07, .25]	.10 [−.09, .29]	.20** [.03, .36]	.10 [−.07, .27]	.09 [−.09, .26]
NN vs. EN	.25** [.08, .43]	.11 [−.05, .28]	.17** [.02, .33]	.05 [−.14, .24]	.21** [.04, .37]	.07 [−.10, .24]	−.05 [−.22, .12]
Sense of accomplishment							
NN vs. EE	.12 [−.04, .10]	−.03 [−.19, .25]	−.06 [−.28, .16]	.00 [−.27, .27]	−.01 [−.25, .23]	−.03 [−.27, .20]	.01 [−.23, .25]
NN vs. NE	−.02 [−.21, .18]	−.04 [−.22, .14]	−.02 [−.19, .16]	−.01 [−.22, .21]	.18* [−.01, .37]	−.04 [−.23, .15]	−.02 [−.22, .17]
NN vs. EN	.07 [−.12, .26]	−.06 [−.23, .11]	−.01 [−.19, .16]	.03 [−.17, .24]	.18* [−.01, .36]	−.02 [−.21, .16]	−.06 [−.25, .12]
Sense of purpose							
NN vs. EE	.12 [−.06, .29]	.08 [−.07, .24]	.10 [−.06, .26]	.04 [−.15, .23]	.08 [−.09, .25]	.18** [.01, .35]	.20** [.03, .37]
NN vs. NE	.17* [.00, .34]	.10 [−.05, .26]	.18** [.03, .34]	.09 [−.19, .28]	−.06 [−.23, .10]	.02 [−.14, .19]	.15* [−.02, .32]
NN vs. EN	−.08 [−.25, .10]	−.10 [−.26, .07]	.02 [−.14, .18]	−.07 [−.25, .15]	−.15* [−.32, .02]	−.05 [−.23, .12]	.02 [−.16, .19]

Note. Baseline age, sex, and education were controlled in all analyses. MIDUS = Midlife in the United States; NN = not endorsed at both time points; EN = endorsed at Time 1 but not endorsed at Time 2; NE = not endorsed at Time 1 but endorsed at Time 2; EE = endorsed at both time points; GPS = general perceived stress; PJS = perceived job stress; PFS = perceived financial stress; PIS-CR = perceived interpersonal relationship stress–close relationship; PIS-C = perceived interpersonal relationship stress–children; PIS-FM = perceived interpersonal relationship stress–other family members; PIS-F = perceived interpersonal relationship stress–friends.
* $p \leq .05$. ** $p \leq .01$.

(*Appendix continues*)

Table A6

Standardized Estimates and 99% Confidence Intervals for the Effects of Stability/Change in Value Items on General and Domain-Specific Perceived Stress by Comparing Among New Endorsers, Former Endorsers, and Consistent Endorsers in MIDUS

Item endorsement status	GPS	PJS	PFS	PIS-CR	PIS-C	PIS-FM	PIS-F
Autonomy							
NE vs. EE	−.01 [−.25, .24]	.07 [−.16, .30]	.16 [−.06, .37]	.02 [−.29, .32]	−.06 [−.31, .19]	.06 [−.19, .31]	.15 [−.11, .39]
EN vs. EE	.04 [−.22, .30]	.08 [−.17, .32]	.04 [−.19, .28]	.09 [−.22, .41]	−.08 [−.34, .18]	.14 [−.13, .41]	.11 [−.15, .38]
EN vs. NE	.04 [−.20, .28]	.01 [−.22, .24]	−.10 [−.31, .12]	.10 [−.19, .39]	.01 [−.24, .25]	.10 [−.15, .35]	−.01 [−.26, .23]
Good job							
NE vs. EE	.11 [−.17, .39]	.00 [−.26, .26]	.04 [−.21, .30]	.22 [−.09, .53]	.07 [−.21, .35]	−.02 [−.31, .26]	.00 [−.29, .28]
EN vs. EE	.21* [−.06, .47]	.05 [−.20, .29]	.01 [−.23, .25]	.25* [−.03, .53]	.00 [−.27, .26]	.11 [−.14, .37]	.05 [−.21, .31]
EN vs. NE	.11 [−.16, .37]	.04 [−.19, .28]	−.05 [−.28, .18]	.00 [−.28, .28]	−.09 [−.35, .16]	.14 [−.12, .39]	.07 [−.19, .32]
Learning/growth							
NE vs. EE	−.03 [−.26, .19]	−.04 [−.25, .16]	−.03 [−.24, .18]	−.03 [−.28, .22]	.01 [−.20, .23]	.02 [−.20, .23]	−.01 [−.22, .21]
EN vs. EE	−.25** [−.47, −.04]	−.19* [−.39, .01]	−.07 [−.26, .14]	−.18* [−.42, .06]	−.09 [−.31, .12]	.06 [−.15, .27]	.02 [−.20, .24]
EN vs. NE	−.19* [−.41, .03]	−.14 [−.34, .06]	−.04 [−.25, .16]	−.15 [−.39, .09]	−.08 [−.30, .14]	.04 [−.17, .26]	.02 [−.20, .24]
Life's pleasures							
NE vs. EE	.10 [−.15, .34]	−.04 [−.26, .18]	−.01 [−.23, .22]	.20 [−.06, .46]	−.01 [−.25, .24]	−.02 [−.25, .22]	.07 [−.17, .31]
EN vs. EE	.08 [−.16, .32]	.07 [−.16, .29]	.00 [−.23, .22]	.07 [−.14, .39]	.02 [−.22, .26]	.11 [−.13, .35]	.08 [−.16, .32]
EN vs. NE	−.03 [−.26, .20]	.08 [−.13, .29]	.00 [−.21, .21]	−.13 [−.38, .12]	.02 [−.20, .24]	.12 [−.11, .34]	.00 [−.23, .23]
Enough money							
NE vs. EE	.11 [−.08, .30]	.07 [−.10, .25]	.07 [−.11, .24]	.01 [−.20, .22]	−.01 [−.19, .18]	−.12 [−.30, .07]	.03 [−.15, .22]
EN vs. EE	.21** [.01, .41]	.07 [−.11, .26]	.15* [−.03, .34]	.01 [−.22, .24]	.10 [−.09, .30]	.00 [−.20, .20]	.06 [−.14, .25]
EN vs. NE	.10 [−.11, .30]	.00 [−.18, .19]	.10 [−.08, .29]	−.01 [−.24, −.22]	.10 [−.09, .29]	.14 [−.06, .33]	.03 [−.17, .23]
Extra money							
NE vs. EE	.05 [−.24, .33]	−.07 [−.34, .20]	−.03 [−.29, .24]	−.05 [−.37, .26]	.06 [−.23, .35]	−.13 [−.42, .16]	−.07 [−.38, .23]
EN vs. EE	.18 [−.11, .47]	.00 [−.27, .28]	−.07 [−.34, .20]	−.08 [−.41, .25]	.09 [−.20, .37]	−.15 [−.44, .14]	−.06 [−.35, .23]
EN vs. NE	.15 [−.11, .42]	.09 [−.16, .33]	−.03 [−.27, .22]	−.01 [−.30, .28]	.03 [−.24, .30]	−.02 [−.29, .25]	.01 [−.26, .29]
Faith							
NE vs. EE	−.10 [−.33, .14]	−.08 [−.29, .14]	−.01 [−.23, .21]	−.24* [−.50, .02]	−.09 [−.32, .14]	.00 [−.22, .23]	−.01 [−.24, .22]
EN vs. EE	−.18* [−.39, .02]	−.05 [−.23, .14]	−.03 [−.21, .16]	−.25** [−.47, −.04]	−.06 [−.25, .14]	−.10 [−.29, .10]	−.20** [−.392, −.001]
EN vs. NE	−.06 [−.34, .22]	.03 [−.23, .28]	−.02 [−.28, .24]	−.01 [−.32, .29]	.03 [−.25, .30]	−.11 [−.38, .16]	−.18 [−.45, .10]
Giving to community							
NE vs. EE	.09 [−.26, .44]	.15 [−.15, .44]	.03 [−.27, .33]	.13 [−.23, .48]	.10 [−.21, .41]	.29* [−.02, .60]	.20 [−.10, .51]
EN vs. EE	−.04 [−.39, .31]	.04 [−.27, .36]	−.11 [−.44, .22]	−.03 [−.41, .35]	−.10 [−.43, .23]	.21 [−.12, .54]	.34** [.01, .67]
EN vs. NE	−.11 [−.44, .22]	−.10 [−.39, .19]	−.14 [−.43, .15]	−.15 [−.49, .19]	−.19 [−.49, 0.11]	−.06 [−.37, .24]	.15 [−.16, .45]
Love/care for self							
NE vs. EE	.19 [−.18, .55]	−.04 [−.37, .29]	.17 [−.17, .50]	.10 [−.36, .55]	.07 [−.30, .43]	−.05 [−.41, .32]	.17 [−.19, .52]
EN vs. EE	.02 [−.35, .38]	−.12 [−.46, .21]	—	.03 [−.43, .48]	.14 [−.22, .51]	−.21 [−.58, .15]	.01 [−.35, .38]
EN vs. NE	−.15 [−.45, .16]	−.09 [−.37, .20]	−.07 [−.36, .21]	−.10 [−.44, .25]	.07 [−.23, .36]	−.16 [−.46, .14]	−.17 [−.46, .13]
Physical fitness							
NE vs. EE	−.10 [−.32, .12]	−.07 [−.28, .13]	−.15 [−.37, .06]	−.06 [−.31, .18]	−.13 [−.34, .09]	−.01 [−.23, .21]	.04 [−.19, .27]
EN vs. EE	−.08 [−.31, .15]	.02 [−.20, .23]	−.14 [−.36, .08]	.11 [−.15, .37]	−.12 [−.35, .10]	−.03 [−.25, .20]	−.02 [−.24, .21]
EN vs. NE	.04 [−.19, .26]	.08 [−.14, .29]	.01 [−.20, .22]	.17 [−.08, .43]	.01 [−.21, .24]	−.02 [−.25, .20]	−.06 [−.29, .17]
Positive attitude							
NE vs. EE	−.03 [−.22, .15]	.06 [−.10, .23]	.02 [−.14, .18]	.08 [−.12, .27]	−.05 [−.22, .12]	−.06 [−.23, .12]	.02 [−.16, .19]
EN vs. EE	−.20** [−.37, −.03]	−.01 [−.17, .14]	−.08 [−.23, .08]	−.04 [−.23, .14]	−.09 [−.25, .08]	−.23** [−.40, −.07]	−.13* [−.30, .03]
EN vs. NE	−.17* [−.37, .04]	−.07 [−.26, .12]	−.10 [−.29, .08]	−.11 [−.33, .11]	−.03 [−.22, .17]	−.16* [−.36, .03]	−.13 [−.33, .07]
Family relations							
NE vs. EE	−.22** [−.39, −.04]	−.12 [−.28, .05]	−.22** [−.38, −.06]	−.34** [−.53, −.15]	−.18** [−.34, −.01]	−.16 [−.33, .01]	−.24** [−.41, −.07]
EN vs. EE	−.22** [−.39, −.05]	−.22** [−.37, −.07]	−.04 [−.20, .11]	−.26** [−.44, −.07]	−.26** [−.42, −.10]	−.29** [−.45, −.13]	−.27** [−.43, −.10]
EN vs. NE	−.01 [−.22, .21]	−.11 [−.30, .09]	.17* [−.03, .36]	.08 [−.16, .32]	−.08 [−.29, .12]	−.12 [−.33, .09]	−.02 [−.23, .19]

(*table continues*)

Table A6 (*continued*)

Item endorsement status	GPS	PJS	PFS	PIS-CR	PIS-C	PIS-FM	PIS-F
Friend relations							
NE vs. EE	−.15 [−.36, .06]	−.16* [−.35, .03]	−.09 [−.28, .10]	−.14 [−.37, .09]	.00 [−.21, .20]	−.03 [−.24, .17]	.05 [−.16, .26]
EN vs. EE	−.07 [−.28, .15]	−.13 [−.33, .07]	.01 [−.19, .22]	−.01 [−.25, .23]	.02 [−.19, .24]	−.10 [−.31, .10]	−.07 [−.29, .15]
EN vs. NE	.08 [−.13, .30]	.03 [−.18, .23]	.08 [−.12, .28]	.14 [−.10, .38]	.03 [−.19, .24]	−.08 [−.30, .14]	−.13 [−.34, .09]
Relax/peace							
NE vs. EE	−.01 [−.28, .27]	.13 [−.12, .37]	.07 [−.17, .32]	.03 [−.29, .34]	.02 [−.26, .29]	−.17 [−.44, .10]	−.18 [−.45, .09]
EN vs. EE	−.02 [−.29, .26]	.02 [−.23, .27]	.03 [−.21, .28]	.00 [−.32, .32]	.05 [−.22, .32]	.02 [−.25, .28]	.08 [−.19, .35]
EN vs. NE	.02 [−.22, .26]	−.10 [−.31, .12]	−.04 [−.25, .17]	−.04 [−.31, .23]	.04 [−.19, .26]	.19* [−.04, .42]	.28** [.05, .51]
Absence of illness							
NE vs. EE	.07 [−.13, .27]	.01 [−.17, .20]	−.07 [−.26, .12]	−.10 [−.32, .13]	−.03 [−.22, .16]	−.01 [−.21, .19]	−.07 [−.27, .13]
EN vs. EE	.04 [−.16, .24]	.01 [−.17, .20]	−.14* [−.36, .01]	−.03 [−.26, .19]	−.05 [−.24, .14]	.04 [−.16, .23]	.07 [−.12, .27]
EN vs. NE	−.04 [−.25, .18]	.00 [−.20, .20]	−.08 [−.28, .12]	.05 [−.19, .29]	−.01 [−.22, .20]	.04 [−.17, .26]	.13 [−.09, .34]
Sense of accomplishment							
NE vs. EE	.12 [−.17, .42]	.08 [−.19, .35]	−.05 [−.31, .22]	.02 [−.30, .35]	−.17 [−.46, .13]	.02 [−.27, .30]	.05 [−.24, .34]
EN vs. EE	.04 [−.24, .32]	.08 [−.18, .35]	−.07 [−.34, .20]	−.02 [−.34, .29]	−.17 [−.45, .11]	−.01 [−.29, .27]	.06 [−.23, .35]
EN vs. NE	−.07 [−.32, .18]	.02 [−.22, .25]	−.01 [−.25, .23]	−.05 [−.32, .23]	.00 [−.24, .25]	−.02 [−.27, .23]	.02 [−.23, .27]
Sense of purpose							
NE vs. EE	−.04 [−.25, .17]	−.04 [−.23, .15]	−.09 [−.28, .11]	−.06 [−.30, .17]	.16* [−.04, .36]	.17* [−.03, .37]	.07 [−.14, .28]
EN vs. EE	.17* [−.04, .39]	.15 [−.06, .35]	.06 [−.14, .26]	.08 [−.16, .32]	.24** [.03, .45]	.22** [.02, .43]	.18* [−.04, .39]
EN vs. NE	.21* [.00, .42]	.17* [−.02, .37]	.14 [−.05, .34]	.18 [−.06, .43]	.08 [−.13, .29]	.06 [−.14, .27]	.11 [−.10, .32]

Note. Baseline age, sex, and education were controlled in all analyses. MIDUS = Midlife in the United States; NE = not endorsed at Time 1 but endorsed at Time 2; EE = endorsed at both time points; EN = endorsed at Time 1 but not endorsed at Time 2; GPS = general perceived stress; PJS = perceived job stress; PFS = perceived financial stress; PIS-CR = perceived interpersonal relationship stress–close relationship; PIS-C = perceived interpersonal relationship stress–children; PIS-FM = perceived interpersonal relationship stress–other family members; PIS-F = perceived interpersonal relationship stress–friends; "—" indicates results not available due to model nonconvergence.
* $p \leq .05$. ** $p \leq .01$.

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