Motivation and Emotion
https://doi.org/10.1007/s11031-025-10189-z

ORIGINAL PAPER

# Development and validation of the self-supportive and self-thwarting styles of basic psychological needs scale

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Received: 25 June 2024 / Accepted: 3 December 2025


**Abstract**
Within Self-Determination Theory, basic psychological needs are central to well-being and optimal functioning. Extensive research indicates that social contexts can support or thwart the basic psychological needs for autonomy, competence, and relatedness, .yet, how individuals themselves contribute to these need-based experiences remains largely unexplored. The current study therefore developed and validated the Self-Supportive and Self-Thwarting Styles ofBSasic Psychological Needs Scale (SSSTSBPNS) and explored the relative contribution of the context and the person to need-based experiences across cultures. In Study 1, the structural validity of the SSSTSBPNS was confirmed and its psychometric properties proved satisfactory among university students (Iran: $N=358$; $M_{age}=20.99$, 79.9% female/U.S.: $N=321$; $M_{age}=19.93$, 69.8% female). In Study 2, it showed consistency over a one-month period among Iranian students ($N=108$, $M_{age}=26.78$, 60% female). In Study 3 (Iran: $N=269$, $M_{age}=20.06$, 62.8% female; U.S.: $N=255$, $M_{age}=19.90$, 67.5% female), the hypothesized mediations from self- and contextual support to motivation via need-based experiences (support model), and from self- and contextual thwart to need-based experiences and motivation (thwart model) were confirmed. Self-styles contributed uniquely to need-based experiences and motivation beyond contextual influences, with even stronger effects on need satisfaction. Culture moderated these associations, such that among Iranian students, the use of a self-supportive style was more strongly linked to need satisfaction, whereas among American students, contextual support showed a stronger association. This study extends SDT research by highlighting the role of self-support to need-based experiences and directs future research to interventions targeted on the pro-active side of humans.

**Keywords** Self-determination theory · Basic psychological needs · Self-support and self-thwarting · Social contexts · Motivation

## Introduction

According to self-determination theory (SDT; Deci & Ryan, 1985; Ryan & Deci, 2017), all human beings have three fundamental/basic psychological needs (autonomy, competence, and relatedness) that are essential nutriments for growth, development, and well-being. The satisfaction of these basic psychological needs results in intrinsic motivation, well-being, and greater performance, whereas, frustration of the basic needs results in negative outcomes such as amotivation, ill-being, and disengagement (e.g., Ntoumanis et al., 2021). Abundant research has shown that figures in the social context, such as teachers (Howard et al., 2024) or parents (Bradshaw et al., 2024), can affect need-based experiences. When social contexts either implicitly or explicitly support these basic needs, basic psychological needs are satisfied, whereas when social contexts thwart these basic needs, it results in the frustration of these needs (Vansteenkiste & Ryan, 2013). However, SDT also posits that individuals themselves play a role in the experience of basic need satisfaction and frustration (Ryan & Deci, 2002). Recent studies indeed indicate that people can take pro-active actions to aim at need satisfaction (Behzadnia

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Published online: 22 April 2026

& FatahModares, 2020; De Bloom et al., 2020). Likewise, people's behavior can elicit need frustration, for example by pursuing extrinsic goals (Bradshaw, 2023). Currently, no measure captures both the need-supportive and need-thwarting styles that individuals may adopt toward their own needs for autonomy, relatedness, and competence. Developing such a measure would facilitate investigations of the relative contributions of the social context and the person to individuals' need-based experiences. Therefore, as a first step, the current study aimed to develop the Self-Supportive and Self-Thwarting Styles of Basic Psychological Needs Scale (SSSTSBPNS), validate it across Iranian and American students, and test the stability of the self-styles. Next, the relative contribution of the person and the context to need-based experiences was examined, thereby examining cultural differences.

## Basic psychological needs

SDT (Deci & Ryan, 1985; Ryan & Deci, 2017) is a macro-theory of human motivation and well-being, and its propositions have received empirical support across cultures. At the core of the SDT framework lies the empirically supported assumption that fulfillment of three basic psychological needs is a prerequisite for adaptive functioning (Vansteenkiste et al., 2020). The need for *autonomy* refers to the experience of choice, willingness, and making decisions for oneself in the things undertaken. Frustration of autonomy is experienced when one feels pressured or forced to feel, think or act in certain ways. The need for *competence* refers to the experience of effectiveness in doing work and in interactions with the environment. Competence frustration is elicited by experiences of failure and by feeling unable to meet expectations. The need for *relatedness* refers to the experience of meaningful and close relationships with others. Relatedness frustration occurs when one feels rejected or neglected by significant others.

What these three psychological experiences have in common, and what grants them the label of "basic needs", is that they are universal, essential, and directional (Baumeister & Leary, 1995; Vansteenkiste et al., 2020). *Universal* means that all individuals possess these basic needs, regardless of their age (Soenens & Vansteenkiste, 2023), gender (Rodríguez-Meirinhos et al., 2020), personality (Mabbe et al., 2016) or culture (Chen et al., 2015). *Essential* refers to the fact that satisfaction of these needs is crucial for individuals' well-being and development, whereas the thwarting of these same needs elicits ill-being and maladaptive behaviors (Vansteenkiste & Ryan, 2013). Lastly, the basic needs direct people's behavior to seek out experiences that can foster the need for autonomy, relatedness, and competence (Vansteenkiste et al., 2023). In sum, depending on the satisfaction or frustration of the needs, basic psychological needs underlie both the "bright" and "dark" sides of human functioning (Ryan et al., 2016).

## Pathways to need-based experiences

### The social context

Previous research has mostly focused on the role of social contexts in individuals' basic psychological needs. In SDT, the effects of social contexts on individuals' basic needs are conceptualized in terms of need-supportive versus need-thwarting interpersonal behaviors (Ryan & Deci, 2017). Need-supportive behaviors involve providing individuals with choice and taking one's perspective (autonomy support), encouraging their ability and effectiveness in doing things (competence support), and interacting in a caring and warm way (relatedness support). In contrast, need-thwarting behaviors include pressuring individuals to act, think, or feel in certain ways (autonomy thwarting), overly criticizing mistakes or setting unrealistic expectations (competence thwarting), and acting distant or dismissive (relatedness thwarting).

Meta-analyses convincingly show the beneficial effects of need-supportive teachers (Howard et al., 2024), coaches (Mossman et al., 2024), and parents (Vasquez et al., 2016) on need satisfaction and well-being. For example, young adults who feel their autonomy is supported by their parents, report more progress in achieving their goals, thereby indirectly contributing to their well-being (Koestner et al., 2020). On the other hand, when parents report using a controlling parenting style, their adolescents tend to experience more need frustration (Costa et al., 2019), which in turn predicts less self-control and externalizing problems (Bai et al., 2020). Even among emerging adults, dysregulation is still associated with perceived parental control (Wei et al., 2022). Similarly, teachers' need-supportive and need-thwarting styles affect students' functioning. When teachers are perceived to take students' perspectives and offer clear expectations, students report higher attention, effort and persistence (Jang et al., 2010), whereas changes in teachers' controlling style are related to changes in fear of failure, contingent self-worth and challenge avoidance (Bartholomew et al., 2018).

### The person

Despite the impact of social contextual effects on individuals' experience of need satisfaction and need frustration, humans are not considered passive recipients of contextual input (Baumeister & Leary, 1995). Instead, people are believed to have an innate tendency to pro-actively interact with the environment, thereby being directed by the basic

psychological needs to strive for need satisfaction (Deci & Ryan, 1985). Individuals have the capacity to experience need satisfaction and find ways to fulfill their needs (Vansteenkiste et al., 2020), thereby taking charge of their energy and regulating stress even during challenging times (Behzadnia & FatahModares, 2020). On the other hand, SDT posits that all humans are susceptible to experiencing need frustration, which is associated with enhanced extrinsic goal orientation (Deci & Ryan, 2000), negative self-perceptions (Deci & Ryan, 1995), and controlling self-talk (Sheldon et al., 2021), thereby hindering personal growth and contributing to illbeing.

The role of the person as a pathway to need-based experiences has received disproportionately less empirical attention compared to the role of the social context. Nevertheless, this field is being explored increasingly. For example, the basic needs have been examined in their distinct functions of experiential requirements and behavioral motives, showing that people desire to fulfill their needs when they experience a need deficit (Sheldon & Gunz, 2009). However, this does not guarantee that people act accordingly to restore their needs (Sheldon, 2011). Instead, people who experience persistent basic psychological need frustration are more inclined to pursue extrinsic goals such as beauty, status and wealth that only serve as a temporary band-aid solution (Kasser & Ryan, 1996; Vansteenkiste & Ryan, 2013). Paradoxically, pursuing these extrinsic goals moves them even further away from restoring their needs as extrinsic goal pursuit is associated with declines in well-being (Kasser et al., 2014) through need frustration (Behzadnia et al., 2020). In contrast, people who act in search of intrinsic goals, such as personal growth and meaningful relationships, experience more need satisfaction (Kasser & Ryan, 2001), meaning in life (Zhang et al., 2019), vitality (Unanue et al., 2014) and life satisfaction (Martela et al., 2019).

Recently, an umbrella term was introduced to refer the pro-active search for need-fostering experiences, called, need crafting. Need crafting is defined as the *awareness* of activities, people, and contexts that could satisfy the basic needs, and the intentional *actions* taken to aim for need satisfaction (Laporte et al., 2021). Cross-sectional, longitudinal, and daily diary designs show that adolescents who engage more in need crafting experience greater need satisfaction, lower need frustration, and consequently report higher well-being, including more positive affect, less negative affect, fewer depressive symptoms, and greater vitality (for an overview see van den Bogaard et al., 2025c). These results hold both at the between- and within- person levels, supporting the dynamic and meaningful role of need crafting in adolescent well-being. Although need crafting serves as a unique source of need satisfaction for adolescents on top of parental support (Laporte et al., 2021), adolescents report more need crafting on days they feel more supported in their autonomy by their parents (Laporte et al., 2022).

Moreover, need crafting might also prompt autonomy support from the social context, instead of solely being facilitated by it. This is indicated by research on the pro-active actions students undertake to optimize their learning environment by asking questions, expressing preferences, or proposing ideas to the teacher (*agentic engagement*; Reeve, 2013). Students who report more agentic engagement also report more autonomy support from their teachers over time, thereby strengthening their own experience of autonomy, which is associated with improved academic performance (Matos et al., 2018; Reeve, 2013).

Lastly, a study conducted among hikers of the Pacific Crest trail (Sheldon et al., 2021) did not investigate need fostering behaviors or intentions, but focused on self-talk. Results showed that more well-being was obtained after the hike if participants motivated themselves in an autonomy-supportive way, whereas controlling self-talk did not affect or negatively affected well-being. These changes in well-being were mediated by basic need satisfaction. Interestingly, self-support explained more variance than need support from authorities.

## Self-supportive and self-thwarting styles

Despite the initiatives of scholars to capture the effects of the person on their own need-based experiences, to date no measure has been developed to examine the general style people use to support or thwart their own basic needs. However, the role of the context has consistently been measured as a style that either satisfies or thwarts experiences of autonomy, relatedness and competence (e.g., Reeve, 2009; Reeve et al., 2014). Accordingly, a measure capturing individuals' self-supportive and self-thwarting styles would provide a critical step in addressing this gap and advancing research on the person's role in need-based functioning.

That is, individuals who have a *self-supportive* style would try to act based on their choices, make decisions that they personally endorse, aim to discover opportunities that express who they truly are, and do things that are aligned with their beliefs (autonomy self-support); try to do things well, seek out opportunities to learn new things, challenge themselves to develop abilities, and overcome difficult tasks (competence self-support); and try to foster and develop their relationships with others, spend time with people who accept and understand them, and find time to share with people they care about (relatedness self-support) (Behzadnia & FatahModares, 2023).

In contrast to the self-supportive style, individuals may adopt a *self-thwarting style*. People with a self-thwarting style tend to pressure themselves to do things, not take

time to pursue their interests, and ignore the choices that they have in life (autonomy self-thwarting); tend to remind themselves of past failures, prevent themselves from trying new things they are unsure about, and not use their skills or abilities effectively (competence self-thwarting); and tend to prevent themselves from connecting with others, from developing new relationships, and from allowing themselves to care about others (relatedness self-thwarting).

### Motivation

Within SDT the most important outcomes of need-based experiences relate to motivation toward activities (Deci & Ryan, 1985; Ryan & Deci, 2017). Motivation is described as a continuum from autonomous motivation to controlled motivation and amotivation. Autonomous motivation refers to engaging in activities out of interest and enjoyment (intrinsic motivation), and to personally valuing the importance of those activities (identified regulation). Controlled motivation refers to being motivated by internal pressures such as anxiety and ego-involvement (introjected motivation), and external pressures such as expectations imposed by others (external regulation). Amotivation describes a lack of intention or inability to do things. Research has shown that the experience of need satisfaction is positively related to autonomous motivation, and that autonomous motivation in turn is important for full functioning (e.g., Behzadnia et al., 2018). In contrast, controlled motivation and amotivation result from need frustration, and these low-quality forms of motivations are associated with negative outcomes such as anxiety and antisocial behaviors (Cheon et al., 2018; Ntoumanis, 2005). Research has shown that need-supportive behaviors from the social context are related to the experience of need satisfaction, which in turn relates to autonomous motivation, whereas need-thwarting behaviors from the social context are related to need frustration and are in turn associated with controlled motivation and amotivation (e.g., Ntoumanis et al., 2021). In a similar vein, it is expected that people with a self-supportive style experience more need satisfaction and autonomous motivation, whereas a self-thwarting style is expected to relate to need frustration, controlled motivation and amotivation.

### Cultural differences

Research on SDT's universality claim (Deci & Ryan, 2000; Ryan & Deci, 2017) shows that the basic psychological needs for autonomy, competence, and relatedness are universal prerequisites for optimal functioning across individualistic and collectivistic cultures (Chen et al., 2015; Chirkov et al., 2003). Besides testing the universal effects of need satisfaction and need frustration on well-being, some studies have examined the source of need based-experiences cross-culturally. For instance, adolescents in an authoritarian and moderately collectivistic country (Russia) showed equal effects of autonomy support from parents and teachers on well-being and school motivation compared to adolescents from a democratic and individualistic country (U.S.; Chirkov & Ryan, 2001). Parents across cultures also have a similar effect on adolescents' pursuit of intrinsic life goals by supporting their adolescents' autonomy (Lekes et al., 2010).

To the best of our knowledge, however, no research to date has investigated cultural differences in the contribution of the person to need-based experiences and motivation. In individualistic cultures, where personal freedom, self-expression, and independence are emphasized (Oyserman et al., 2002), the person may have a stronger influence on need-based experiences and motivation. The current research therefore compared the contribution of the self-styles to need-based experiences and motivation in the U.S., which is generally considered to be one of the most individualistic countries (score of 91 on individualism; Hofstede, 2025), and Iran, which is generally considered as a less individualistic country (score of 41 on individualism; Hofstede, 2025; Hofstede et al., 2010).

## The present research

Abundant research has shown that the social context can have a need-supportive or need-thwarting effect on individuals' basic psychological needs. However, studies investigating the role of the person to satisfy or thwart the basic needs are scarce. A measure that includes both a self-supportive and a self-thwarting style to test the relative contribution to need-based experiences does, not yet exist. The present research therefore aimed to develop such a measurement (Self-Supportive and Self-Thwarting Styles of Basic Psychological Needs Scale; SSSTSBPNS), validate its structure cross-culturally (Hypothesis 1; Study 1), and test the assumed stability of the self-styles over time (Hypothesis 2; Study 2). Next, to establish construct validity across cultures, we examined the predicted pattern of correlations between the self-supportive and self-thwarting styles and theoretically related constructs (i.e., evidence of convergent and discriminant validity; Hypothesis 3; Study 3). We expected that the self-supportive style will correlate positively with need support from the social context, need satisfaction and autonomous motivation, and negatively with contextual need thwart, need frustration, controlled motivation, and amotivation among students across Iran and the U.S. The opposite pattern was expected for the self-thwarting style. After establishing construct validity, the second main aim of the

present study was to examine the unique contribution of the self-styles to need-based experiences and motivation on top of contextual support/thwart. More precisely, we expected the self-styles to contribute substantially on top of contextual support/thwart to need-based experiences, with need-based experiences, in turn, affecting motivation for daily activities (Hypothesis 4a). Although largely exploraoryr, we expect that the contribution of the self-styles will be significantly greater than contextual need support/thwart based on the scarce literature (Sheldon et al., 2021) (Hypothesis 4b). Lastly, we examined cultural differences in how self-styles and social context contribute to need-based experiences. We predicted that students from a more individualistic culture (U.S.) will experience relatively stronger effects from the self-supportive and self-thwarting style, and weaker effects from contextual need support/thwart, on need-based experiences than students from a less individualistic country (Iran) (Hypothesis 4c).

## Study 1: development and validation of SSSTSBPNS

In Study 1, we aimed to develop and validate the Self-Support and Self-Thwarting Styles of Basic Psychological Needs Scale (SSSTSBPNS). To do so, we collected data from university students in Iran and the U.S., similar to previous psychological need-based scales (e.g., Chen et al., 2015; Rocchi et al., 2017). Previous research showed that each specific need (autonomy, competence, and relatedness) loads onto their corresponding general factors (i.e., need support, need thwart; Rocchi et al., 2017). Thus, based on a hierarchical structure of the basic psychological needs (Vansteenkiste et al., 2020), we expected items to load onto their respective first-order factors (e.g., autonomy, competence, relatedness), which in turn would load onto two second-order factors (self-support and self-thwart).

## Method

### Participants and procedure

Participants were 358 (79.9% female) Iranian and 321 (69.8% female) American students. The mean age of Iranian students was 20.99 (range = 17 – 48 years, *SD* = 3.01), and all of them held Iranian nationality. The mean age of American students was 19.93 (range = 18 – 37 years, *SD* = 1.74), and only 49.8% held American nationality.

Due to the COVID-19 restriction and the closure of universities, data in both samples were collected through Google Forms. Before data collection, the Institutional Review Board approved the study protocols in both countries.

Items for the SSSTSBPNS were developed and selected through a two-step procedure. In a first step, items were created based on the well validated Basic Psychological Need Satisfaction and Need Frustration Questionnaire (BPNSNFQ; Chen et al., 2015), the theoretical definition of the basic needs (Deci & Ryan, 2000), and previous intervention studies to strengthen students ability to foster their basic needs (Behzadnia & FatahModares, 2020, 2023). This resulted in a pool of 66 items generally reflecting the styles of self-support and self-thwart regarding the three basic needs (i.e., autonomy, relatedness, and competence). In a second step, the pool of items was reduced by excluding items that somehow referred to other sources of need-support and need-thwart (e.g., social agents or personality-related items), or consequences of these styles (e.g., well-being and performance). After applying this exclusion criteria, 44 items were retained to examine their psychometric properties.

### Measures

*Self-Supportive and Self-Thwarting Styles of Basic Psychological Needs Scale (SSSTSBPNS).* A pool of items was generated and discussed by researchers from Iran and the United States with expertise in SDT. Self-support was assessed with 22 items that measured self-support of autonomy, self-support of competence, and self-support of relatedness. Self-thwart was assessed with 22 items that measured self-thwart of autonomy, self-thwart of competence, and self-thwart of relatedness. Participants responded on a scale ranging from 1 (*not at all true*) to 7 (*very true*). Participants first read a short description: "The following statements are about your behaviors *when doing things*. Please read each of the following items carefully". The stems of the two self-styles were "In general, I support myself…" (for the self-supportive style) and "In general, I tend to…" (for the self-thwarting style). We used general rather than domain-specific stems to capture a broad construct and allow the scale's use across domains.

The original version of the scale was created in English and then translated into Persian for Iranian samples. That is, it was first translated into Persian by two Iranian researchers fluent in English and experts in SDT. Back-translation (into English) was done by an Iranian psychologist fluent in English. Non-equivalencies and disagreements were resolved through a consensus meeting.

*Demographic information.* To test the validity of participants' self-support and self-thwart of their basic psychological needs, their gender, age, education, and socio-economic status were collected. Socio-economic status was assessed by the MacArthur Scale of Subjective Status (Adler et al., 2000), in which participants selected a staircase from 1 (*Lowest level*) to 10 (*Highest level*) with respect to their income, and economic status.

## Results

### Plan of analysis

The univariate distributions of the 44 items were tested using skewness and kurtosis values. To develop and validate the SSSTSBPNS, we started with a set of Explanatory Factor Analyses (EFAs) using maximum likelihood method of extraction and Promax rotation to explore the psychometric quality of items, and each of the three needs was examined individually. We repeated this process three times, once for each of the three needs (e.g., Chen et al., 2015). Next, based on a theoretical explanation for modeling the overall two-factor model of self-support and self-thwart or six-factor need specific dimensions (e.g., autonomy self-support and autonomy self-thwart), we tested the factor structure of the SSSTSBPNS. To do this, we first performed Confirmatory Factor Analysis (CFA) with maximum likelihood estimation. Finally, to prevent overestimated factor correlations we used explanatory equation modeling (ESEM) (Morin et al., 2016). We thus tested six theoretically factor structures that load on the two specific general factors (self-support and self-thwart) that served as second-order factors using CFA and ESEM in Mplus 7.4 (Muthén & Muthén, 2010).

To evaluate the model fit, we used the $\chi^2$ goodness of fit statistics, the Comparative Fit Index (CFI), the Standardized Root Mean Square Residual (SRMR), and the Root Mean Square Error of Approximation (RMSEA). Based on Hu and Bentler (1999), values of .90 or higher for CFI, values close to .06 for RMSEA, and values close to .08 for SRMR indicate good model fit. In addition, values lower than .10 for SRMR and RMSEA were considered as indicative of acceptable to mediocre fit (Brown, 2015; Kline, 2015).

Item selection was based on the CFA models. We first tested and compared the two overall factors of self-support and self-thwart with the six-factor need-specific dimensions (e.g., autonomy self-support and autonomy self-thwart). Next, we tested the invariance of the retained items between two cultures (Iran and the U.S.) through a multi-group CFA.

### Scale development and validation of SSSTSBPNS

Initial results showed all items were normally distributed, ranging from -.16 to 1.23 for skewness, and from -.19 to 2.24 for kurtosis. The results of EFA, based on the eigenvalues, showed that 13 autonomy items loaded on two factors (autonomy self-support = 6 items, and autonomy self-thwarting = 7 items) except for one item that loaded below .40. After removing that item (i.e., "I tend to ignore the choices I have in life"), the two retained factors (eigenvalues = 4.47 and 1.86) explained 34.63% of the variance. A similar two-factor pattern emerged for the 15 relatedness items (eigenvalues = 6.10 and 2.76 respectively), and for the 15 competence items (eigenvalues = 6.36 and 2.39 respectively), that explained 40.66% of the variances of relatedness items (relatedness self-support = 6 items, and relatedness self-thwarting = 9 items), and 42.39% of the variance of competence items (competence self-support = 8 items, and competence self-thwarting = 7 items).

Goodness of fit indices tested six theoretically derived factor structures using Multigroup (Iran and the U.S.) CFA and ESEM approaches based on 43 items (Table 1). To evaluate all models, we used maximum likelihood estimation that is also robust to the missing values (missing was rare). None of the models achieved satisfactory fit, except for six-correlated factors in ESEM that showed numerous cross-loadings. Before attempting to improve model fit using modification indices, we compared the six-factor CFA model with the two-factor CFA model. The six-factor model fit the data significantly better than the two-factor model ($\Delta \chi^2$ (14) = 1775.69, $p < .001$). Thus, item selection was based on the six-factor CFA model, representing the basic psychological need dimensions. Item selection was guided by theoretical consideration, with a focus on retaining items that loaded primarily on their intended constructs. Items with poor standardized loadings (< .3) and/or cross-loadings (> .2) were removed. To remove the problematic items, we first excluded items from the six-factor CFA in both samples (Iran and US). At this stage, eleven problematic items with high cross-loadings were excluded through a process of stepwise removal, yielding the following fit: $\chi^2 = 1563.53$, $df = 449$, CFI = .89, TLI = .88, RMSEA = .06, RMSEA 95% CI = .06—.07, SRMR = .05. Although three items per latent

**Table 1** Goodness-of-fit statistics using CFA and ESEM models (Study 1)

| Model | $X^2$ | $p$* | $df$ | CFI | TLI | SRMR | RMSEA [90% CI] |
|---|---|---|---|---|---|---|---|
| Two-factor CFA | 5127.57 | < .001 | 859 | .74 | .73 | .07 | .09 [.08, .09] |
| Six-correlated factors CFA | 3351.88 | < .001 | 845 | .85 | .84 | .06 | .07 [.06, .07] |
| H-CFA (two-H, six-L) | 3477.47 | < .001 | 853 | .84 | .83 | .06 | .07 [.07, .07] |
| H-CFA (one-H, six-L) | 4150.52 | < .001 | 854 | .80 | .79 | .11 | .08 [.07, .08] |
| Two-factor ESEM | 3933.77 | < .001 | 818 | .76 | .73 | .06 | .08 [.07, .08] |
| Six-correlated factors ESEM | 1735.35 | < .001 | 660 | .92 | .88 | .03 | .05 [.05, .05] |

*Note*: *=Chi square p-value, *df* Degree of freedom

construct have been recommended by Kline (2015), based on a theoretical approach and previous research that has tested basic psychological needs in different contexts (e.g., Chen et al., 2015; Rocchi et al., 2017), we decided to retain at least four items per scale. In this way, we can also drop an item that would not function psychometrically well in the particular samples and contexts.

### Measurement equivalence

To compare the six-factor model between two groups (Iran and US), a multi-group CFA was conducted with the remaining 32 items, in which the constraint model ($\chi^2$=2668.72, df=956, CFI=.84, TLI=.84, RMSEA=.07, RMSEA 95% CI=.07—.08, SRMR=.08) was compared with the unconstrained model ($\chi^2$=2517.97, df=925, CFI=.86, TLI=.85, RMSEA=.07, RMSEA 95% CI=.07—.08, SRMR=.07). This comparison suggested non-equivalence between the two countries (Iran and the US), $\Delta X^2$ (31)=150.75, $p$<.001. In the multi-group CFA, we again identified several cross-loading items ($\chi^2$=2661.52, df=950, CFI=.84, TLI=.84, RMSEA=.07, RMSEA 95% CI=.07—.08, SRMR=.08). After removing five items, the model yielded the following fit: $\chi^2$=1715.26, df=660, CFI=.88, TLI=.87, RMSEA=.07, RMSEA 95% CI=.065—.073, SRMR=.06. Although the fit of the multigroup model already approached the criteria for satisfactory fit, modification indices suggested adding error-correlations between items within each subscale to improve model fit. This adjustment is theoretically justifiable and consistent with prior SDT-based scale development studies (e.g., Laporte et al., 2021). The final six-factor model with 27 items fit the data well: $\chi^2$=1425.23, df=642, CFI=.91, TLI=.90, RMSEA=.06, RMSEA 95% CI=.056—.064, SRMR=.06 (see Table 2 for factor loadings in each group).

**Table 2** Factor loadings, items means, standard deviations, and Cronbach's alphas (Study 1)

| | Iran | | | | US | | | |
|---|---|---|---|---|---|---|---|---|
| Item | Factor loading | *M* | *SD* | α | Factor loading | *M* | *SD* | α |
| **Self-support** | | | | | | | | |
| **In general, I support myself …** | | | | | | | | |
| 1. To make decisions that I personally endorse. [A] | .47 | 6.00 | 1.16 | .70 | .58 | 5.73 | 1.07 | .70 |
| 2. To pursue my interests regularly. [A] | .69 | 6.18 | 1.19 | | .69 | 5.41 | 1.27 | |
| 3. To discover new ways of doing things. [A] | .66 | 5.87 | 1.27 | | .68 | 5.20 | 1.29 | |
| 4. To do things that are aligned with my beliefs and feelings. [A] | .67 | 6.35 | 1.03 | | .65 | 5.68 | 1.21 | |
| 5. To accomplish things well. [C] | .73 | 6.41 | 0.95 | .89 | .62 | 5.85 | 1.11 | .85 |
| 6. To seek out opportunities to learn new things. [C] | .71 | 6.19 | 1.13 | | .67 | 5.64 | 1.21 | |
| 7. To find new ways to be effective in what I do. [C] | .74 | 6.20 | 1.07 | | .66 | 5.61 | 1.13 | |
| 8. To try to do things well. [C] | .74 | 6.35 | 1.01 | | .69 | 5.90 | 1.06 | |
| 9. To challenge myself to develop my abilities. [C] | .76 | 6.09 | 1.14 | | .73 | 5.49 | 1.22 | |
| 10. To do difficult tasks well. [C] | .75 | 6.19 | 1.08 | | .66 | 5.51 | 1.26 | |
| 11. To find time to enjoy spending with others. [R] | .74 | 5.82 | 1.45 | .86 | .77 | 5.48 | 1.32 | .87 |
| 12. To have time to share with people I care about. [R] | .87 | 6.15 | 1.26 | | .87 | 5.75 | 1.21 | |
| 13. To develop my relationships with friends and family. [R] | .85 | 6.13 | 1.27 | | .82 | 5.84 | 1.17 | |
| 14. To do things with people who are important to me. [R] | .67 | 5.94 | 1.36 | | .70 | 5.84 | 1.24 | |
| **Self-thwart** | | | | | | | | |
| **In general, I tend …** | | | | | | | | |
| 15. To not listen to myself. [A-] | .72 | 2.04 | 1.50 | .65 | .63 | 3.12 | 1.67 | .65 |
| 16. To not take time to pursue my interests. [A-] | .54 | 2.52 | 2.09 | | .59 | 2.99 | 1.70 | |
| 17. To pressure myself to do certain things. [A-] | .40 | 4.36 | 1.95 | | .45 | 4.62 | 1.65 | |
| 18. To change myself to be someone who I am not. [A-] | .60 | 2.58 | 1.89 | | .62 | 3.01 | 1.65 | |
| 19. To doubt my ability to overcome challenges. [C-] | .77 | 2.58 | 1.76 | .75 | .79 | 4.28 | 1.81 | .77 |
| 20. To be very self-critical. [C-] | .63 | 3.48 | 1.78 | | .68 | 5.33 | 1.58 | |
| 21. To prevent myself from trying new things if I am unsure about doing them well. [C-] | .45 | 3.42 | 1.90 | | .51 | 3.83 | 1.75 | |
| 22. To tell myself that I will probably fail at new things. [C-] | .72 | 2.34 | 1.78 | | .69 | 3.53 | 1.93 | |
| 23. To not allow myself to get close with others. [R-] | .79 | 2.99 | 1.89 | .87 | .73 | 3.51 | 1.88 | .84 |
| 24. To not share my feelings and opinions with others. [R-] | .60 | 3.72 | 1.96 | | .58 | 3.68 | 1.88 | |
| 25. To not look to others for support, even when I need it. [R-] | .61 | 3.51 | 2.08 | | .64 | 4.02 | 1.91 | |
| 26. To not develop new relationships with others. [R-] | .89 | 2.64 | 1.80 | | .86 | 3.25 | 1.77 | |
| 27. To prevent myself from connecting with others, even those who really care about me [R-] | .79 | 2.61 | 1.85 | | .72 | 3.20 | 1.85 | |

In these CFA models, to obtain the best-fitting solution, items were removed when they showed poor factor loadings in at least one of the samples. That is, if an item loaded poorly in either sample, it was removed from the model. The results of re-running the six-factor ESEM model with 27 items did not converge.

In addition, the two second-order multigroup CFA model comprising overall self-support and overall self-thwart as second-order factors with three self-support (autonomy self-support, competence self-support, and relatedness self-support) and the three self-thwart (autonomy self-thwart, competence self-thwart, and relatedness self-thwart) first-order constructs, fit the data well, $\chi^2 = 1525.77$, df = 650, CFI = .90, TLI = .89, RMSEA = .06, RMSEA 95% CI = .059—.067, SRMR = .07. Based on modification indices, error-correlations were added between items within each subscale. All item loadings across the groups were above .41, $p < .001$. Moreover, Cronbach's alpha for overall self-support and overall self-thwart were .92 and .89, respectively.

Factor loadings in the six-factor model did not differ from the two second-order model, with only minor differences for a small number of items. Cronbach's alpha coefficients for each subscale and both groups are reported in Table 2, and Fig. 1 provides a visual overview of the factor structure.

Correlations between self-support and self-thwart of basic needs and their subscale scores are presented in Table 3. Overall, self-support and self-thwart were strongly related to their respective subscales. Self-support was negatively associated with self-thwart and its subscales, whereas self-thwart was negatively associated with all self-support subscales. Autonomy self-support was strongly related to competence self-support and moderately related to relatedness self-support. Competence self-support was moderately related to relatedness self-support. Similarly, autonomy self-thwart was related to competence and relatedness self-thwart, and competence self-thwart was related to relatedness self-thwart.

Self-support and self-thwart, as well as all corresponding subscales, were positively and negatively related to age, respectively. Socioeconomic status (SES) was positively related to relatedness self-support and competence self-thwart. Next, we examined gender differences using a MANOVA. The results indicated a multivariate effect of gender, Wilk's Lambda (6, 647) = .975, $F = 2.72$, $p = .013$, $\eta_p^2 = .03$. Females reported higher overall self-support [$F = (1, 654) = 10.54$, $p = .001$, $\eta_p^2 = .02$], autonomy self-support [$F = (1, 654) = 7.82$, $p = .005$, $\eta_p^2 = .01$], competence self-support [$F = (1, 654) = 6.49$, $p = .011$, $\eta_p^2 = .01$], and relatedness self-support [$F = (1, 654) = 9.21$, $p = .002$, $\eta_p^2 = .01$], whereas they reported lower autonomy self-thwart [$F = (1, 654) = 6.37$, $p = .012$, $\eta_p^2 = .01$] than males.

## Brief discussion

Study 1 provided initial evidence for the potential validity of a newly developed scale for measuring self-support and self-thwart of basic psychological needs, with the six-factor and two second-order models providing the best fit for the data. The results indicated that the scale demonstrated adequate psychometric properties. Positive associations were observed among the self-support subscales (i.e., autonomy self-support, relatedness self-support, and competence self-support), as well as among the self-thwart subscales (i.e., autonomy self-thwart, relatedness self-thwart, and competence self-thwart). In addition, the self-support subscales were negatively related to the self-thwart subscales, indicating that the constructs were related in theoretically expected ways. Moreover, age was positively associated with all self-support subscales, and negatively associated with all

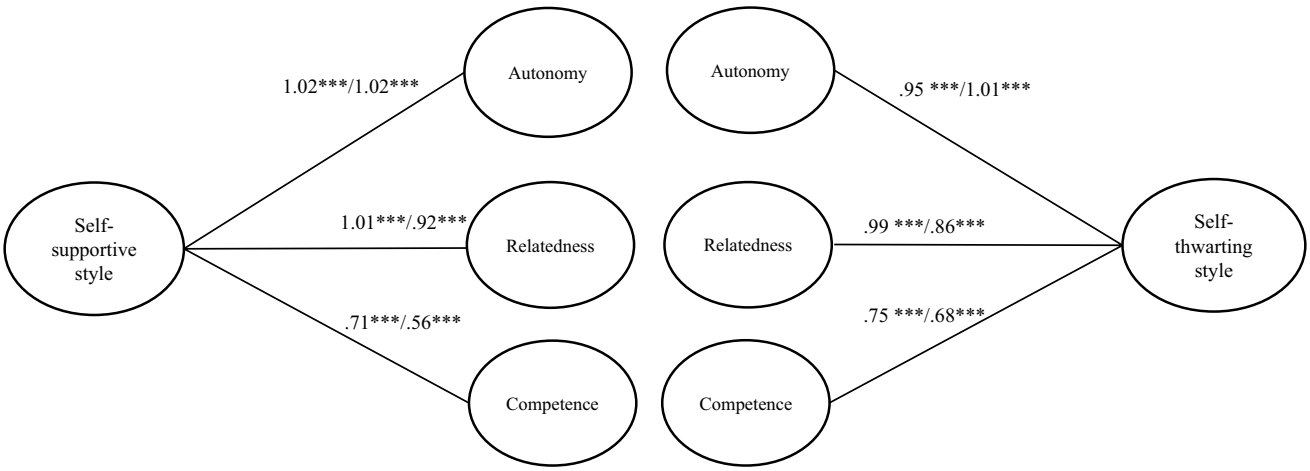


**Fig. 1** Confirmatory factor analysis with standardized coefficients. *Note*. *p < 0.05, **p < 0.01, ***p < 0.001; Values before the slash "/" are for Iranian samples, and values after the slash "/" are for American samples

**Table 3** Correlation between the study variables (Study 1)

| | *M* | *SD* | Skewness | Kurtosis | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Self-supportive style | 5.88 | 0.85 | − 0.82 | 0.44 | | | | | | | | | |
| 2. Autonomy | 5.82 | 0.92 | − 0.67 | − 0.03 | .89*** | | | | | | | | |
| 3. Competence | 5.97 | 0.92 | − 0.92 | 0.31 | .80*** | .89*** | | | | | | | |
| 4. Relatedness | 5.88 | 1.1 | − 1.26 | 1.57 | .56*** | .55*** | .83*** | | | | | | |
| 5. Self-thwarting style | 3.33 | 1.23 | 0.45 | − 0.01 | −.42*** | −.38*** | −.39*** | −.32*** | | | | | |
| 6. Autonomy | 3.14 | 1.28 | 0.54 | 0.2 | −.39*** | −.32*** | −.30*** | −.24*** | .86*** | | | | |
| 7. Competence | 3.56 | 1.51 | 0.3 | − 0.77 | −.39*** | −.41*** | −.41*** | −.23*** | .87*** | .68*** | | | |
| 8. Relatedness | 3.30 | 1.52 | 0.35 | − 0.74 | −.34*** | −.24*** | −.28*** | −.36*** | .84*** | .58*** | .55*** | | |
| 9. Age | 20.49 | 2.55 | | | .16*** | .17*** | .13* | .12* | −.13* | −.09* | −.15** | −.08 | |
| 10. SES | 5.91 | 1.75 | | | .07 | .02 | .04 | .09* | .05 | .03 | .09* | −.01 | −.06 |

*Note*: *** p < .001,** p < .01,* p < .05; SES = socioeconomic status

self-thwart subscales. Socioeconomic status was also positively related to competence self-thwart and relatedness self-support.

## Study 2: test–retest reliability

In Study 2, we expanded on the previous study by assessing test–retest reliability, that is the temporal stability of the SSSTSBPNS. Given that SSSTSBPNS is intended to assess relatively stable individual approaches toward the basic psychological needs, the scale was administrated once (T1) and again one month later (T2). We expected that individuals high in a self-supportive and self-thwarting styles at T1 would show similar levels at T2, respectively.

## Method

### Participants and procedure

New samples of Iranian college students filled out the SSSTSBPNS (N = 108; $M_{age}$ = 26.78; *SD* = 6.49, range = 18 - 49 years; female = 60%). One month following their initial *participation* 86 of these participants (retention = 79.6%) filled out the SSSTSBPNS again. Attrition analysis using Little's MCAR test revealed that attrition at T2 was random, $X^2$ (2) = 1.45, $p$ = .40.

To assess students' self-support and self-thwarting styles, the 27-item SSSTSBPNS developed in Study 1 was used. Cronbach's alphas for self-support (T1 α = .88, T2 α = .90) and self-thwarting (T1 α = .68, T2 α = .81) styles were acceptable.

## Results

Test–retest reliability to test the intraclass coefficients (ICCs; Conversano et al., 2020) between T1 and T2 on the SSSTSBPNS indicated substantial consistency for both self-supportive style (ICC = .86, CI = .78 to .91, $F$ = 6.87, $p$ < .001) and self-thwarting style (ICC = .71, CI = .56 to .81, $F$ = 3.45, $p$ < .001). These findingsindicated that the self-supportive and self-thwarting styles (SSSTBPNS) showed adequate stability over a one-month period (DeVellis & Thorpe, 2021).

## Brief discussion

In Study 2, the results supported the expectation that the self-supportive and self-thwarting styles represent stable individual approaches to the basic psychological needs over time. This study extended the previous study by demonstrating the consistency of the SSSTSBPNS over a month-long period.

## Study 3: construct validity and unique contribution of the self-styles

In Study 3, we extended Studies 1 and 2 in three important ways. First, through new samples from Iran and the U.S., we re-examined the validity and reliability of the 27-item six-factors CFA model and the two second-order CFA models of the SSSTSBPNS. Second, we examined associations between the self-supportive and self-thwarting styles and basic psychological need support and thwart from the social context, experienced need satisfaction and frustration, and motivation (i.e., autonomous, controlled, and amotivation) across cultures. Lastly, we investigated the relative importance of the self styles and contextual support or thwart in predicting need-based experiences, which in turn relate to different types of motivation for daily activities. In this model, we also examined cultural differences in the association between the predictors (context and self-styles) and need-based experiences.

### Method

#### Participants and procedure

New samples from both countries participated in Study 3, including 269 Iranian (62.8% female) and 255 American (67.5% female) students. The mean age of Iranian students was 20.06 (range = 17 – 48 years, *SD* = 3.30), and all held Iranian nationality. The mean age of American students was 19.90 (range 18 – 37 years, *SD* = 1.35), and only 49.8% held American nationality. Missingness was negligible (0.90%). Data in both samples were collected through Google Forms. The Institutional Review Board approved the study protocols in both countries prior to data collection.

#### Measures

*SSSTSBPNS.* To measure students' self-supportive and self-thwarting styles of their psychological needs, we used the 27-item version of the SSSTSBPNS developed in Study 1 (see Table 2).

*Demographic information.* The same demographic information as Study 1 was used in Study 3.

*Interpersonal behavior questionnaire.* Students' perceptions of their important people's need-supportive and need-thwarting behaviors were assessed using a modified version of the Interpersonal Behaviors Questionnaire (IBQ; Rocchi et al., 2016). Twelve items assessed need-supportive behaviors, with each need assessed by four items: autonomy support (e.g., "Support my decisions"), competence support (e.g., "Tell me that I can accomplish things"), and relatedness support (e.g., "Relate to me"). Twelve items assessed need-thwarting behaviors, with each need assessed by four items: autonomy thwarting (e.g., "Pressure me to adopt certain behaviors"), competence thwarting (e.g., "Doubt my capacity to improve"), and relatedness thwarting (e.g., "Do not care about me"). The stem of the IBQ was slightly changed by adding "The important people in my life…". Items were rated on a scale ranging from 1 (*Not at all true*) to 7 (*Completely true*).

*Basic psychological needs*. Students' experience of basic psychological needs was assessed through the Basic Psychological Need Satisfaction and Need Frustration Scale (BPNSNFS; Chen et al., 2015). Need satisfaction was assessed by twelve items, with each need assessed by four items: autonomy satisfaction (e.g., "I feel my choices express who I really am"), competence satisfaction (e.g., "I feel confident that I can do things well"), and relatedness satisfaction (e.g., "I feel that the people I care about also care about me"). Twelve items assessed need frustration, with each need assessed by four items: autonomy frustration (e.g., "I feel pressured to do too many things"), competence frustration (e.g., "I feel insecure about my abilities"), and relatedness frustration (e.g., "I feel the relationships I have are just superficial"). The stem of the questionnaire was "Please read each of the following items about the kind of experience you actually have in your life…". Items were rated on a scale ranging from 1 (*Not at all true*) to 7 (*Completely true*).

*Types of motivation*. Students' motivation was assessed through the Motivation for Daily Activities scale (Behzadnia & FatahModares, 2020). The original questionnaire of motivational self-regulations previously created by Ryan and Connell (1989). The stem of the scale was: "When you are performing your daily activities, how do you try to motivate yourself?". Autonomous motivation was assessed by five items (e.g., "Finding out how I can learn something interesting about the activity"), controlled motivation was assessed by four items (e.g., "Thinking I will feel bad in the case that I cannot bring the task to a close"), and amotivation was assessed by three items (e.g., "I used to have good reasons for doing my daily works, but now I am asking myself if I should continue doing them"). Items were rated on a scale ranging from 1 (*Not at all true*) to 7 (*Very true*).

### Results

#### Plan of analysis

The univariate distributions of the scales were tested using skewness and kurtosis values. To test the factor structure of the SSSTSBPNS, CFAs were tested using maximum likelihood estimation. We next tested the measurement equivalence of the six-factor model and the two second-order

factor model of the SSSTSBPNS across both samples. To do so, we used the same process as Study 1. To evaluate the model fit, we used the same cutoff values as in Study 1, based on $X^2$, CFI, RMSEA, and SRMR.

First, to test Hypothesis 3, means and correlations were estimated across cultures, and t-tests were used to compare the means between Iran and the U.S.

To test Hypotheses 4a-c, structural equation modeling (path analysis) in R (Lavaan; Rosseel, 2012) was conducted with MLR as estimator and full information maximum likelihood for missing data. We estimated two parallel models: a need-support model (with self-supportive style and contextual need support as predictors) and a need-thwart model (with self-thwarting style and contextual need thwart as predictors). All hypotheses were evaluated under identical model specifications: Exogenous predictors were entered simultaneously, covariates were included, and covariances among exogenous variables were freely estimated.

To compare the relative contributions of self-styles and context to need satisfaction and need frustration (Hypothesis 4b), we estimated an unconstrained model and a nested model in which the paths of interest were constrained to be equal. We evaluated the equality constraint with the Satorra–Bentler scaled chi-square difference test (SB-LR test; $\Delta\chi^2$_SB with 1 df; Satorra & Bentler, 2001). A significant $\Delta\chi^2$_SB indicates that the two paths differ in magnitude.

Finally, to examine whether the associations of contextual need support/thwarting and self-styles with need-based experiences differed across cultures, we conducted a series of multi-group structural equation models (SEM), with Iran and the United States as grouping variables. For both models (i.e., support and thwart model) an unconstrained multi-group model was compared with a constrained model in which one structural path was set equal across cultures. Models were estimated using robust maximum likelihood (MLR) with full information maximum likelihood (FIML) for missing data. Because the RMSEA is known to perform poorly and to systematically over-reject well specified models when degrees of freedom are small (Kenny et al., 2015), global fit indices were not used to evaluate model adequacy. Instead, cultural differences were exclusively evaluated using robust chi-square difference tests with the direction and magnitude of cultural differences inferred from group-specific parameter estimates in the unconstrained model (Satorra & Bentler, 2001).

### Preliminary analyses

To evaluate the CFA of the SSSTSBPNS in Study 3, we first tested the measurement equivalence of the six-factor model across the two groups (Iran and the US). Comparing the constrained model ($X^2$ = 1596.70, df = 666, CFI = .88, TLI = .87, RMSEA = .07, RMSEA 95% CI = .07—.08, SRMR = .08) with the unconstrained model ($X^2$ = 1516.67, df = 639, CFI = .88, TLI = .87, RMSEA = .07, RMSEA 95% CI = .07—.08, SRMR = .07) indicated non-equivalence between the two countries (Iran and the U.S.), $\Delta X^2$ (27) = 80.03, $p < .001$. The multi-group CFA yielded the following fit indices: $X^2$ = 1591.18, df = 659, CFI = .88, TLI = .87, RMSEA = .074, RMSEA 95% CI = .07—.08, SRMR = .08. To improve model fit, modification indices suggested adding error-correlations between items within each subscale. The final six-factor model with 27 items fit the data satisfactorily: $X^2$ = 1379.17, df = 646, CFI = .90, TLI = .90, RMSEA = .066, RMSEA 95% CI = .06—.07, SRMR = .075. All items loading across the groups were above .44, $p < .001$.

The two second-order multigroup CFA models, specifying overall self-support and overall self-thwart as second-order factors with three self-support (autonomy self-support, competence self-support, and relatedness self-support) and three self-thwart (autonomy self-thwart, competence self-thwart, and relatedness self-thwart) first-order constructs, fit data satisfactorily, $X^2$ = 1451.16, df = 663, CFI = .90, TLI = .89, RMSEA = .067, RMSEA 95% CI = .06—.07, SRMR = .08. Based on modification indices, error-correlations were added between items within each subscale. All item loadings across the groups were above .42, $p < .001$.

In sum, the factor structure identified in Study 1 was successfully replicated, with both the six-factor model (three self-support and three self-thwart subscales) and the two second-order factor model showing good fit. Moreover, the pattern of correlations among subscales aligned with theoretical expectations, supporting the structural validity of the Self-Supportive and Self-Thwarting Styles of Basic Psychological Needs Scale.

A MANCOVA was conducted with gender, age, education, and SES as predictors of the self-supportive style, the self-thwarting style, contextual need support, contextual need thwart, need satisfaction, need frustration, autonomous motivation, controlled motivation, and amotivation. Multivariate effects emerged for gender (Wilks' $\lambda = .95$, $F(9, 482) = 2.87$, $p = .003$), age (Wilks' $\lambda = .94$, $F(9, 482) = 3.31$, $p < .001$), education (Wilks' $\lambda = .95$, $F(9, 482) = 2.55$, $p = .007$), and SES (Wilks' $\lambda = .93$, $F(9, 482) = 3.83$, $p < .001$).

Follow-up univariate tests indicated that males reported higher contextual need thwarting, and lower controlled motivation. Older participants reported lower scores on the self-thwarting style and contextual need support, and higher levels of need thwart and autonomous motivation. Higher education was related to a higher self-thwarting style. Higher SES was associated with greater contextual need support and need satisfaction, and lower contextual need thwart and need frustration. To account for potential demographic confounds, age, gender, education, and

socioeconomic status were included as control variables in all subsequent analyses.

Across samples, internal consistencies were good to excellent for most scales (αs .80–.95), with a notably lower reliability for controlled motivation in the U.S. sample (α = .61) and Iranian sample (α = .74). All items were normally distributed, ranging from -1.10 to .46 for skewness, and from -.78 to 1.88 for kurtosis. Mean levels of the study variables showed significant differences between Iran and the U.S. Iranian students reported higher use of the self-supportive style, whereas American students reported more use of a self-thwarting style. Further, U.S. participants reported more contextual need support and need satisfaction and less contextual need thwart and need frustration than Iranian participants, whereas the Iranian sample reported more autonomous motivation and slightly higher amotivation. Descriptive statistics, Cronbach's alpha, and correlations are shown in Table 4. Need specific descriptives, alphas and inter-correlations for autonomy, relatedness and competence for each need-related construct are shown in online Table 6 in the Supplementary Material.

## Primary analyses

*Construct validity*. Consistent with SDT, the correlational pattern supported the construct validity of the self-supportive and self-thwarting styles and was highly consistent across countries (Hypothesis 3; see Table 4). The self-supportive style correlated positively with contextual need support, need satisfaction, and autonomous motivation, and negatively with the self-thwarting style, contextual need thwart, need frustration, and amotivation. Conversely, the self-thwarting style related negatively to contextual need support, need satisfaction, and autonomous motivation, and positively

**Table 4** Descriptives, Cronbach's alphas and correlations across the samples

| | M(SD) Iran/U.S | α Iran/U.S | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Self-supportive style | 5.90 (0.89) / 5.66 (0.87)** | .92 / .87 | | − 0.42*** | 0.42*** | − 0.17** | 0.59*** | − 0.36*** | 0.46*** | 0.19** | − 0.28*** |
| 2. Self-thwarting style | 3.13 (1.23) / 3.56 (1.14)*** | .88 / .89 | − 0.25*** | | − 0.32*** | 0.36*** | − 0.48*** | 0.68*** | − 0.23*** | 0.14* | 0.46*** |
| 3. Contextual need support | 5.28 (1.33) / 5.82 (0.95)*** | .95 / .93 | 0.45*** | − 0.22*** | | − 0.65*** | 0.67*** | − 0.41*** | 0.38*** | 0.09 | − 0.24*** |
| 4. Contextual need thwart | 3.03 (1.51) / 2.42 (1.13)*** | .94 / .92 | − 0.25*** | 0.56*** | − 0.54*** | | − 0.43*** | 0.58*** | − 0.07 | 0.04 | 0.39*** |
| 5. Need satisfaction | 5.53 (1.01) / 5.33 (0.90)* | .90 / .91 | 0.69*** | − 0.31*** | 0.59*** | − 0.34*** | | − 0.61*** | 0.48*** | 0.07 | − 0.47*** |
| 6. Need frustration | 3.45 (1.49) / 3.35 (1.14) | .93 / .89 | − 0.27*** | 0.60*** | − 0.36*** | 0.62*** | − 0.37*** | | − 0.20** | 0.12 | 0.64*** |
| 7. Autonomous motivation | 5.75 (1.17) / 5.21 (0.98)*** | .89 / .81 | 0.55*** | − 0.25*** | 0.43*** | − 0.22*** | 0.59*** | − 0.23*** | | 0.26*** | − 0.22*** |
| 8. Controlled motivation | 5.21 (1.23) / 5.14 (1.06) | .74 / .61 | 0.40*** | − 0.12 | 0.23*** | − 0.01 | 0.39*** | 0.03 | 0.53*** | | 0.16* |
| 9. Amotivation | 3.36 (1.70) / 3.01 (1.52)* | .80 / .85 | − 0.13* | 0.48*** | − 0.22*** | 0.52*** | − 0.15* | 0.58*** | − 0.17** | 0.09 | |

*Note*. *** p < .001,** p < .01,* p < .05; Correlations below the diagonal are from the Iranian sample, correlation above the diagonal are from the American sample

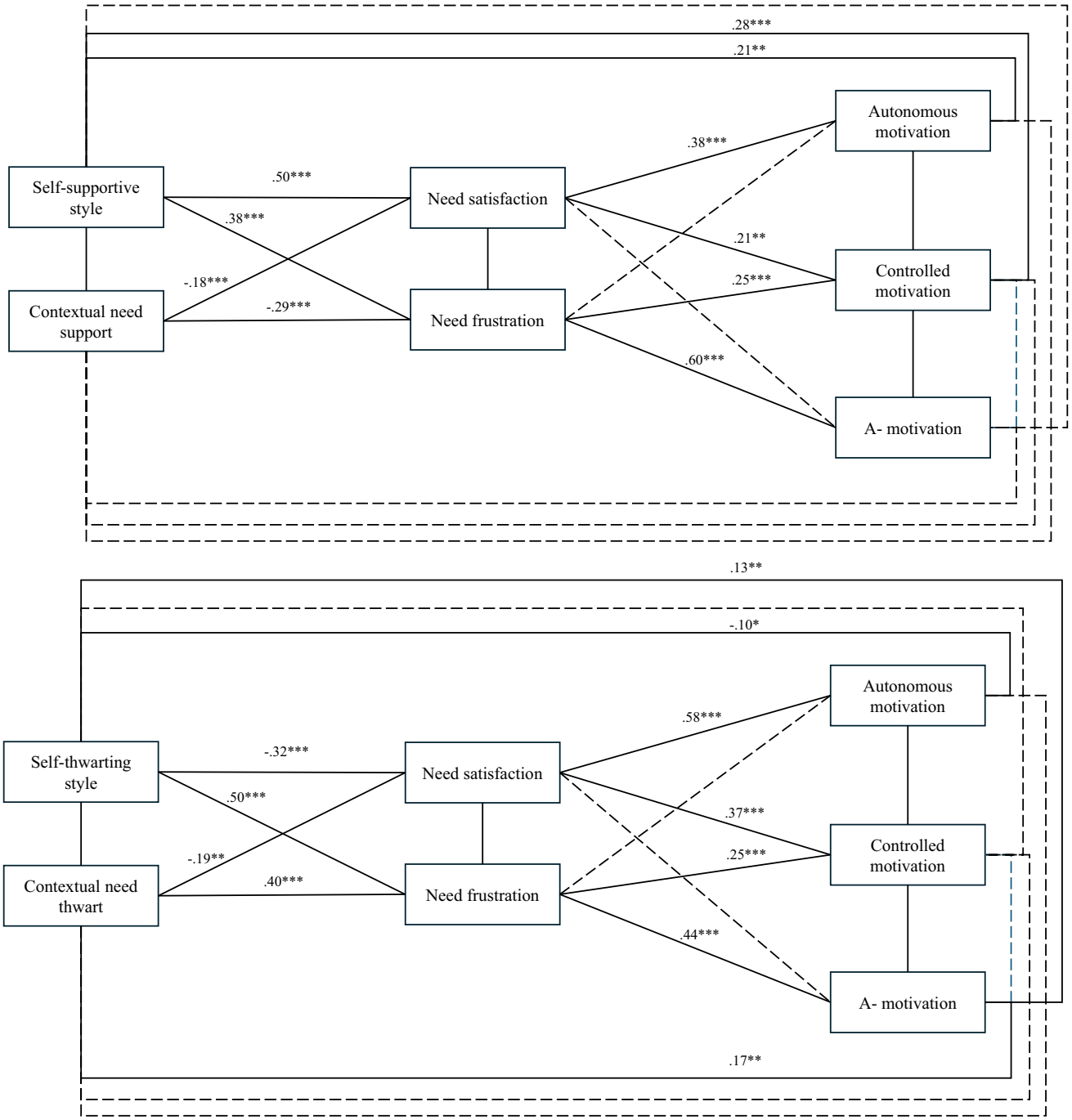


**Fig. 2** Support and thwart model with standardized coeficients. *Note*. Both models CFI = 1.00, RMSEA = 0.00, SRMR = 0.00; *p < .05, **p < .01, ***p < .001. Models were controlled for age, gender, education and SES

to contextual need thwart, need frustration, controlled motivation, and amotivation. Somewhat unexpectedly, the self-supportive style correlated positively with controlled motivation in both samples, while the self-thwarting style showed no association with controlled motivation in the Iranian sample and only a slightly positive correlation in the U.S. sample. Additionally, Iranian students who reported more contextual need support/more need satisfaction also experienced more controlled motivation (r = .23 and r = .39 respectively), whereas the other correlational patterns within this sample and the correlational pattern for American students were in line with SDT's predictions. An extension of the nomological network beyond SDT-based constructs can be found in the Supplementary Materials. In these two additional studies, conducted with Iranian undergraduate students (Study 4: $N = 212$, $M_{age} = 21.18 \pm 1.89$; Study 5:

$N$=162, $M_{age}$=21.62±2.62) the self-supportive style was positively related to self-connection, self-compassion, resilience, self-congruence and well-being (and negatively to ill-being), whereas the self-thwarting style was negatively associated with these constructs, and positively associated with susceptibility to control and ill-being (and negatively to self-congruence and well-being). Unexpectedly, none of the self-styles was related to interest-taking. Subscale analyses further revealed two additional unexpected findings: relatedness self-support was positively related to susceptibility to control, and competence self-thwarting was positively related to interest-taking.Overall, these results support convergent validity. Moreover, the self-supportive style was associated with well-being above and beyond the effects of autonomous functioning, demonstrating incremental validity. The self-thwarting style was not associated with well-being or ill-being outcomes beyond the effects demonstrated by IAF. *Support model.* A fully saturated path model (CFI/TLI=1.00; RMSEA=0; SRMR=0) was estimated. Hypothesis 4a was confirmed by demonstrating the contribution of the self-supportive style (β=0.51, $p$<.001) above and beyond contextual need support (β=0.38, $p$<.001) to need satisfaction and need frustration (β=−.18 and β=−.29 respectively, *ps*<.001). In addition, the self-supportive style showed direct associations with autonomous motivation (β=0.28, $p$<.001) and controlled motivation (β=0.21, $p$=.002), whereas contextual support did not. The path from the self-supportive style to need satisfaction exceeded the path from contextual need support, $\Delta\chi^2$SB(1)=4.65, $p$=.031. For need frustration, no difference in the relative contribution was found between the self-supportive style and contextual support. For controlled motivation, the equality constraint likewise worsened fit, $\Delta\chi^2$_SB(1)=5.54, $p$=.019, again indicating a stronger effect of the self-supportive style than contextual need support. Contextual support did not exceed the self-supportive style for any of the outcomes. These results partly confirm Hypothesis 4b.

In turn, the need-based experiences mediated the effects of both contextual- and self-support on motivation. Need satisfaction was positively associated with autonomous motivation (β=0.38, $p$<.001) and modestly with controlled motivation (β=0.22, $p$=.001). Need frustration related positively to controlled motivation (β=0.24, $p$<.001) and to amotivation (β=0.60, $p$<.001), while its link with autonomous motivation was not significant.

Indirect effects for the self-supportive style were significant via need satisfaction to autonomous and controlled motivation; via need frustration to controlled motivation and amotivation. Total effects were significant to autonomous motivation (via both satisfaction and frustration), controlled motivation (via both satisfaction and frustration), and amotivation (via frustration). Indirect effects for contextual need support were significant via need satisfaction to autonomous and controlled motivation; via need frustration to controlled motivation and amotivation. Total effects were significant to autonomous motivation (via satisfaction), controlled motivation (via both satisfaction and frustration), and amotivation (via frustration). An overview of all indirect and total effects is presented in Table 5.

The model accounted for substantial variance in need satisfaction ($R^2$=0.56) and autonomous motivation ($R^2$=0.38), and moderate variance in need frustration ($R^2$=0.18), controlled motivation ($R^2$=0.17), and amotivation ($R^2$=0.37).

Multi-group SEM analyses revealed a significant cultural difference for the association between contextual need support and need satisfaction, $\Delta\chi^2(1) = 6.26$, p = .012. Contrary to our hypothesis (4c), this path was stronger in the United States (β = .52) than in Iran (β = .35). In the same unexpected direction, the association between self-related need support and need satisfaction showed a marginally significant cultural difference, $\Delta\chi^2(1) = 3.57$, p = .059, with a stronger effect in Iran (β = .53) compared to the United States (β = .36). No cultural differences emerged for associations with need frustration.

*Thwart model.* A fully saturated path model was estimated (CFI/TLI=1.00; RMSEA=0; SRMR=0) that confirmed the unique contribution of the self-thwarting style on top of contextual need thwart to need-based experiences and motivation (Hypothesis 4a). Specifically, self-thwarting related to lower need satisfaction (β=−0.32, p<.001) and higher need frustration (β=0.45, p<.001), with contextual need thwart relating similar to lower need satisfaction (β=−0.19, p=.001) and higher need frustration (β=0.41, p<.001). For motivation, the self-thwarting style showed a negative direct association with autonomous motivation (β=−0.10, p=.022) and a positive association with amotivation (β=0.13, p=.008), whereas its association with controlled motivation, was not significant. Direct effects of contextual need thwart on autonomous and controlled motivation were not significant, whereas a positive direct effect was observed for amotivation (β=0.17, p=.006). Finally, the effects of the self-thwarting style and contextual need thwart on the outcome variables did not differ significantly (SB-LR test), providing no support for Hypothesis 4b within the thwart model.

In turn, need satisfaction was positively related to autonomous motivation (β=0.58, p<.001) and controlled motivation (β=0.37, p<.001), whereas need frustration was positively related to controlled motivation (β=0.25, p<.001) and amotivation (β=0.44, p<.001), and was not significantly associated with autonomous motivation.

Indirect effects (see Table 5) for the self-thwarting style were significant via need satisfaction to autonomous and

**Table 5** Indirect and total effects of the two models

| | | Indirect via | | | | Total via | | | |
|---|---|---|---|---|---|---|---|---|---|
| Predictor | Outcome | Need satisfaction | | Need frustration | | Need satisfaction | | Need frustration | |
| Self-supportive style | Autonomous motivation | 0.190*** | [0.145, 0.333] | − 0.011 | [− 0.032, 0.004] | 0.467*** | [0.436, 0.734] | 0.265*** | [0.161, 0.503] |
| Self-supportive style | Controlled motivation | 0.104** | [0.045, 0.225] | − 0.044** | [− 0.090, − 0.024] | 0.318*** | [0.272, 0.550] | 0.169* | [0.050, 0.388] |
| Self-supportive style | Amotivation | 0.015 | [− 0.086, 0.142] | − 0.107*** | [− 0.292, − 0.100] | − 0.002 | [− 0.176, 0.168] | − 0.125* | [− 0.451, -0.005] |
| Contextual need support | Autonomous motivation | 0.145*** | [0.079, 0.193] | − 0.019 | [− 0.037, 0.003] | 0.202*** | [0.091, 0.287] | 0.038 | [− 0.062, 0.134] |
| Contextual need support | Controlled motivation | 0.079** | [0.026, 0.128] | − 0.073*** | [− 0.101, − 0.039] | 0.129** | [0.025, 0.225] | − 0.023 | [− 0.130, 0.086] |
| Contextual need support | Amotivation | 0.012 | [− 0.049, 0.081] | − 0.175*** | [− 0.323, − 0.155] | − 0.010 | [− 0.145, 0.117] | − 0.197*** | [− 0.420, -0.118] |
| Self-thwarting style | Autonomous motivation | − 0.186*** | [− 0.233, − 0.111] | 0.031 | [− 0.015, 0.071] | − 0.289*** | [− 0.368, -0.168] | − 0.073 | [− 0.144, 0.008] |
| Self-thwarting style | Controlled motivation | − 0.119*** | [− 0.162, − 0.064] | 0.111*** | [0.051, 0.161] | − 0.133* | [− 0.231, -0.023] | 0.097* | [0.007, 0.179] |
| Self-thwarting style | Amotivation | − 0.013 | [− 0.063, 0.027] | 0.196*** | [0.178, 0.350] | 0.121* | [0.029, 0.299] | 0.330*** | [0.313, 0.579] |
| Contextual need thwart | Autonomous motivation | − 0.111** | [− 0.147, − 0.033] | 0.028 | [− 0.010, 0.056] | − 0.033 | [− 0.129, 0.075] | 0.106* | [0.019, 0.153] |
| Contextual need thwart | Controlled motivation | -0.071* | [-0.100, -0.018] | 0.102*** | [0.038, 0.132] | − 0.071 | [− 0.157, 0.039] | 0.102* | [0.012, 0.158] |
| Contextual need thwart | Amotivation | -0.008 | [-0.033, 0.015] | 0.179*** | [0.121, 0.301] | 0.158** | [0.046, 0.328] | 0.345*** | [0.285, 0.529] |

Note. *** p < .001,** p < .01,* p < .05; Standardized coefficients are reported; 95% CIs are reported between brackets [lower, upper]

controlled motivation; via need frustration to controlled motivation and amotivation. Total effects were significant to autonomous motivation (via satisfaction), controlled motivation (via satisfaction and frustration), and amotivation (via satisfaction and frustration). Indirect effects for contextual need thwart were significant via need satisfaction to autonomous and controlled motivation; via need frustration to controlled motivation and amotivation. Total effects were significant to autonomous motivation (via frustration), controlled motivation (via frustration), and amotivation (via satisfaction and frustration).

The model accounted for substantial variance in need satisfaction ($R^2 = 0.21$), need frustration ($R^2 = 0.52$), autonomous motivation ($R^2 = 0.34$), controlled motivation ($R^2 = 0.14$), and amotivation ($R^2 = 0.40$).

Multi-group SEM analyses revealed no significant cultural differences in the associations between either contextual need thwarting or the self-thwarting style and need satisfaction or need frustration (all $\Delta\chi^2$s $\leq 2.98$, ps $\geq .08$). Thus, the strength of these associations was comparable across Iran and the United States.

## Brief discussion

Results of Study 3 confirmed the adequate psychometric properties of the SSSTSBPNS in new samples from Iran and the U.S. The six-factor and two-higher order factor models yielded a good fit. The self-styles related in a predictable, modest way to other validated constructs within and outside the SDT framework. The only unexpected positive correlation was found between the self-supportive style and controlled motivation in both samples, whereas the self-thwarting style did not show a significant association with controlled motivation in the Iranian sample.

Further, the self-styles contributed uniquely and independently of contextual effects in explaining variation in need-based experiences. The effect of the self-supportive style on need satisfaction even exceeded the effect of contextual support. Mediational findings confirmed that both contextual and self-related styles were associated with motivation primarily through need-based experiences, although small positive direct effects of the self-supportive style were found on autonomous motivation, whereas the self-thwarting style related slightly negatively to autonomous motivation and slightly positive to amotivation. Unexpectedly, a positive direct and indirect effect (via need satisfaction) from the self-supportive style on controlled motivation was found. Evidence for cultural moderation, tested via a multi-group SEM approach, was limited and largely unexpected. Within the support model, contextual support was more strongly associated with need satisfaction in the United States, whereas the association between self-related support and need satisfaction was marginally stronger in Iran.

## General discussion

The role of the social context to satisfy or thwart the basic psychological needs for autonomy, competence, and relatedness is empirically well established within the SDT framework (Ryan & Deci, 2017).Recently, interest in the contribution of the person to need-based experiences has increased. The current research aimed to contribute to this burgeoning research field by developing and validating the Self-Supportive and Self-Thwarting Styles of Basic Psychological Needs Scale (SSSTSBPNS), a measure that addresses both one's supportive and thwarting tendencies toward need-based experiences. In addition, the current research explored the relative roles of contextual influences and self-styles in need-based experiences and motivation, while also addressing possible cultural variations.

### Construct validity

Across studies, the SSSTSBPNS demonstrated adequate psychometric properties, with both the six-factor structure (three self-support and three self-thwart dimensions) and the two higher-order factors replicated across countries (Hypothesis 1). In Study 2, results showed that the self-supportive (ICC = .86) and self-thwarting styles (ICC = .71) were relatively stable over time (Hypothesis 2) (DeVellis & Thorpe, 2021). However, future research is encouraged to examine the temporal stability of the SSSTSBPNS over longer intervals (e.g., 3–6 months) to determine whether the self-styles reflect trait-like dispositions or are more context-dependent (Little, 2013). Moreover, although the CFA results across the samples were promising, replication in future studies is warranted to further evaluate the construct validity of the scale. Specifically, future research should test the CFA structure and assess the scale's validity across diverse demographic groups (e.g., age, education, culture) to ensure its conceptual clarity and generalizability.

In line with SDT, the observed correlational pattern further supported the construct validity of the self-supportive and self-thwarting styles, showing strong consistency across countries (Hypothesis 3). Individuals scoring higher on the self-supportive style tended to report greater contextual need support, need satisfaction, and autonomous motivation, along with lower need thwarting, need frustration, and amotivation. Conversely, those scoring higher on the self-thwarting style reported lower need support, need satisfaction, and autonomous motivation, and higher need thwarting, need frustration, controlled motivation, and amotivation. Further evidence for the convergent and discriminant validity of the SSSTSBPNS emerged from two supplementary studies with Iranian university students (see Supplementary Material). The self-supportive style was positively linked to self-connection, self-compassion, resilience, self-congruence, and well-being (and negatively to ill-being), whereas the self-thwarting style showed the opposite pattern.

Unexpectedly, the self-supportive style also showed a moderate positive (r = .40 Iran; r = .19 U.S.) association with controlled motivation in both samples, whereas the self-thwarting style was unrelated to controlled motivation in the Iranian sample (r = -.12) and only weakly related in the U.S. sample (r = .14). Correlational patterns concerning the contextual effects (i.e., support or thwart) were in line with SDT's assumptions, except a moderate positive association between contextual need support and controlled motivation in the Iranian sample. As controlled motivation was also positively correlated with need satisfaction in the Iranian sample (r = .39), but not in the U.S. sample (r = .07), is seems plausible that Iranian students interpret controlled motivation as more beneficial. Indeed, research related to this topic showed that cultural differences in controlling practices of parents are perceived less negatively by adolescents in more collectivistic countries (but once perceived as control it exerts the same negative effect on need-based experiences) than highly individualistic countries (Chen et al., 2016). The same difference in perception may apply to experienced motivation.

#### Predictive validity

The present findings confirm the contribution of self-styles to explain need-based experiences and motivation beyond the effects of contextual influences (Hypothesis 4a). Consistent with SDT (Deci & Ryan, 2000; Ryan & Deci, 2017), the self-supportive style was positively associated with need satisfaction, which was in turn associated with higher autonomous motivation. Conversely, the self-thwarting style related positively to need frustration, which in turn predicted greater controlled motivation and amotivation. Notably, the effects of the self-styles on need-based experiences were unique and, in the case of the self-supportive style, even exceeded those of contextual support in their association with need satisfaction (partly confirming Hypothesis 4b). Although the self-styles primarily influenced motivation through need-based experiences, small additional direct effects were found.

The positive direct and indirect (via need satisfaction) association between the self-supportive style and controlled motivation may partly reflect cultural influences, as in the Iranian sample, need satisfaction was positively related to controlled motivation, whereas this link was non-significant in the U.S. sample. However, since controlled motivation was also positively correlated with the self-supportive style in the American sample, these results may partly reflect an

inherent characteristic of the self-supportive style itself. The self-style measure reflects individuals' general tendency to support their basic needs, predicting their overall motivation to engage in daily activities rather than the specific quality of motivation at play. For example, a student can generally tend to 'pursue a diploma in Law out of interest' (autonomy self-support), but still execute some of the tasks related to these tendencies (work on master thesis each evening) or unrelated to these tendencies (e.g., vacuum the house) with a feeling of internal and/or external pressure. In other words, the self-supportive style may reflect more self-regulation on *what* individuals do to support their needs, rather than *how* these tendencies are translated to the regulation of daily activities. Future research would benefit from using domain-specific measures for all variables (e.g., self-styles, need-based experiences, and daily motivation within the educational domain) to more precisely clarify the associations among them.

Apart from the questions raised by the unexpected correlations between the self-supportive style and controlled motivation, it is important to emphasize that the self-supportive style is more strongly associated with autonomous motivation (both directly and via need satisfaction), whereas the self-thwarting style shows a negative direct and indirect effect on autonomous motivation and a positive association with amotivation (both directly and via need frustration).

## Cultural differences

. The self-supportive style showed a marginally stronger association with need satisfaction in Iran, indicating that fostering one's own needs may constitute a slightly more salient a source of need satisfaction for Iranian students. In contrast, the association between contextual support and need satisfaction was stronger in the U.S. sample than in the Iranian sample, suggesting that American students may gain more benefit from contextual need support in fulfilling their basic needs. The reason for this opposite pattern remains a guess, as no study to date examined this before and overall studies show that collectivistic countries tend to focus more on the context (Triandis, 2001).

One explanation is that the traditional distinction between individualistic and collectivistic cultures may not best capture these results. Although Iran is typically described as more collectivistic and the U.S. as more individualistic (Hofstede et al., 2010, 2025), both cultures combine self-oriented and relational values (Ghorbani et al., 2003; Oyserman et al., 2002). On Hofstede's Masculinity dimension, which reflects achievement motivation, the U.S. scores higher (62) than Iran (43), indicating a stronger focus on competition and success. This aligns with the higher autonomous motivation in the Iranian sample (M = 5.75 vs. M = 5.21), suggesting Iranian students act more in line with personal interests and values (Deci & Ryan, 2000), whereas American students may depend more on contextual approval (Vansteenkiste et al., 2005). Hence, these differences may be better explained by cultural dimensions such as masculinity rather than by the individualism–collectivism divide. Cross-cultural research including a wider range of cultures varying on multiple value dimensions could clarify which aspects of culture most strongly moderate the link between self-styles and need-based experiences.

Setting cultural explanations aside, U.S. students perceived their context as more need supportive (M = 5.82 vs. 5.28) and less need thwarting (M = 2.42 vs. 3.03) than Iranian students. This may suggest a dynamic interplay between contextual and personal sources of need fulfilment: when the environment is supportive, individuals may rely more on it, whereas in less supportive contexts, they depend more on self-supportive tendencies. This interpretation aligns with Legault et al. (2017), who distinguished between *assisted* and *asserted* autonomy that both promote well-being but through distinct pathways. Assisted autonomy fosters well-being through agency that is fostered by supportive relationships and seamlessly facilitates need satisfaction, whereas asserted autonomy promotes well-being through claiming one's agency effortfully to fulfill one's needs in less supportive contexts.

## Future research and limitations

Future research could further clarify the (bidirectional) relationship between the self and the social context in shaping need-based experiences. First, as the correlation between the self-supportive style and contextual need-thwart were rather low in both samples, this could indicate that individuals are more resilient against the detrimental effects of a need thwarting context when they rely more on self-support. Findings from a need crafting intervention among students indeed show that students who craft their needs more after the intervention, report more well-being during COVID-19 restrictions (Behzadnia & FatahModares, 2020) or a stressful exam period one month after program ending (van den Bogaard, Soenens, Brenning, Van Hees et al., 2025). On the other hand, individuals who have developed a need-thwarting style may be less receptive to the potential benefits of the context when placed in a need-supportive context.

Second, the limited evidence available suggests that individuals' efforts to foster their own needs are facilitated by contextual support. For instance, adolescents reported more need crafting on days when they also experienced greater autonomy support from their parents (Laporte et al., 2022). The opposite direction has been demonstrated in the classroom, where more agentic engagement of students in the

first semester predicted more perceived autonomy support from the teacher at the end of the year (Reeve, 2013). Other research demonstrated that the role of students' perception of their teacher's style (Behzadnia et al., 2018), influenced by students' causality orientation (Behzadnia, 2020), was related to more perceived autonomy-support, need satisfaction and well-being.

Third, taking this thinking one step further, future research could explore how self-supportive and self-thwarting styles develop through ongoing interaction with the social context. Previous research already showed that more autonomy-supportive parenting across cultures is associated with more intrinsic life goals among adolescents, whereas less autonomy-supportive parenting is associated with more extrinsic life goals (Lekes et al., 2010). Therefore, it is expected that developing a self-supportive style is facilitated in a need-supportive context, whereas a self-thwarting style tends to develop more easily in a need-thwarting context. In addition, it would be interesting to look at the relative contribution of different social contexts on self-styles, as the current study did not differentiate between, for example, parents, peers, and teachers.

An important question for future research is whether a self-supportive style can be cultivated through interventions. Initial support for this idea is found in two studies with university students (Behzadnia & FatahModares, 2020, 2023). In these interventions, students were instructed to engage daily in activities that could satisfy one or more basic psychological needs. Over 10 days, and again in a six-day program prior to exams, these simple exercises (such as selecting personally meaningful, need-fulfilling activities and sharing them with others) produced substantial benefits. Students in the experimental conditions reported higher need satisfaction, autonomous self-regulation, and vitality, alongside lower need frustration, demotivation, stress, and test anxiety compared with controls. Complementing these results, other intervention studies have sought to promote awareness of the basic needs or actions to foster the basic needs. Some focused primarily on reflection and mindfulness about need-satisfying experiences (Cantarero et al., 2021), others encouraged participants to actively select and perform need-fulfilling activities (Weinstein et al., 2016) or explicitly trained both awareness and action in a need crafting intervention (Laporte et al., 2024; van den Bogaard et al., 2024; van den Bogaard, Soenens, Brenning, Van Hees et al., 2025b). Across studies, these interventions reliably enhanced need satisfaction and well-being, with need crafting emerging as a key mechanism underlying these improvements (Laporte et al., 2024; van den Bogaard et al., 2024; van den Bogaard, Soenens, Brenning, Van Hees et al., 2025b). Taken together, these studies demonstrate that at least the practice of self-support can be enhanced through targeted interventions. However, future research is needed to examine whether these skills are maintained over time and whether training can foster a more enduring, self-supportive style.

However, an important sidenote has to be made regarding the role of the person to foster need satisfaction, as a one-sided focus on agency risks obscuring the inherently relational nature of basic psychological needs and may impose an unrealistic responsibility on individuals to "self-regulate" their wellbeing. Over time, this may paradoxically lead to greater need frustration and ill-being. This concern is especially pertinent for children, adolescents, and emerging adults, whose need-based experiences remains strongly embedded in and dependent upon social contexts.

Despite its strengths, the present research also has several limitations. First, EFA and CFA were conducted within the same samples due to sample size constraints, which may limit cross-validation. Future research should replicate these findings using independent samples to confirm the robustness of the factor structure. Second, although widely used (Ozolins et al., 2020), back-translation has been criticised for solely focusing on linguistic equivalence, while cultural nuances can affect how items are interpreted, which can potentially influence the validity of the instrument in a new context (Son, 2018). Future research should therefore incorporate broader cultural adaptation steps (e.g., expert panels, cognitive interviews, pilot testing) to ensure true cross-cultural equivalence (Beaton et al., 2000). Third, the data were cross-sectional for most studies, which precludes firm causal conclusions about the directionality of effects between self-styles, need-based experiences, and motivation. Longitudinal or experimental designs could clarify whether self-support and self-thwarting styles causally influence changes in need satisfaction, frustration, and motivational quality. Lastly, the samples consisted primarily of university students, potentially limiting generalizability. Future studies should examine these self-styles across diverse age groups and sociocultural contexts.

## Conclusion

In conclusion, the present research introduces and validates the Self-Supportive and Self-Thwarting Styles of Basic Psychological Needs Scale, offering a novel construct to understand how individuals can act as both the facilitator and the obstructor of their basic need satisfaction and motivation for daily activities. By showing that the self-styles contribute substantially to need-based experiences on top of contextual effects and across cultures, this work extends previous SDT-based work and opens promising avenues for interventions

aimed at strengthening individuals' capacity to support their own psychological needs.

**Supplementary Information** The online version contains supplementary material available at https://doi.org/10.1007/s11031-025-10189-z.

**Acknowledgements** We would like to thank Professors Richard M. Ryan (University of Rochester) for the helpful guidance he provided on this study.

**Funding** Behzad Behzadnia has been supported by the University of Tabriz, International and Academic Cooperation Directorate (Tabriz U-300 program). Also, the contribution of Daphne van den Bogaard has been supported by the grant number FWO.OPR.2024.0079.01.

## Declarations

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

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