






## Social motives of university students in seven countries: Measurement development and validation

Emiko S. Kashima,<sup>1</sup>  Nicholas Plusnin,<sup>1</sup>  Danielle P. Ochoa,<sup>2</sup> Hongfei Du,<sup>3</sup>  Johannes Klackl,<sup>4</sup> Getrude C. Ah Gang,<sup>5</sup> Su Wan Gan,<sup>6</sup> Siti Nor Yaacob,<sup>7</sup> Shin Ling Wu,<sup>8</sup> Tamara Qumseya,<sup>9</sup> Gandalf Nicolas,<sup>10</sup>  and Susan T. Fiske<sup>11</sup> 

<sup>1</sup>La Trobe University, Bundoora, Victoria, Australia, <sup>2</sup>University of the Philippines Diliman, Quezon City, Philippines, <sup>3</sup>Beijing Normal University, Beijing, China, <sup>4</sup>University of Salzburg, Salzburg, Austria, <sup>5</sup>University Malaysia Sabah, Sabah, <sup>6</sup>Universiti Tunku Abdul Rahman, Petaling Jaya, <sup>7</sup>Universiti Putra Malaysia, Seri Kembangan, <sup>8</sup>Sunway University, Subang Jaya, Malaysia, <sup>9</sup>Victoria University of Wellington, Wellington, New Zealand, <sup>10</sup>Rutgers University, New Brunswick New Jersey, and <sup>11</sup>Princeton University, Princeton, New Jersey, USA

A new scale to measure core social motives was developed based on the BUC(K)ET framework (Belong, Understand, Control, Esteem, and Trust). The scale was completed by 1,516 university students from seven countries: Australia, the United States, New Zealand, the Philippines, Malaysia, China (Macao), and Austria. Multigroup confirmatory factor analysis supported the scale's full scalar invariance between Australia and the United States and between Australia and Austria. Partial scalar invariance was established for all countries after omitting the Understand motive, suggesting that the remaining four subscales can be used to compare levels of social motives across diverse cultural groups with caution. We further established the scale's construct validity by examining its correlations in the nomological networks involving several individual difference variables. The profile of social motives was remarkably similar across countries and gender groups, although three Asian groups showed higher motives to belong than non-Asian groups, and women showed generally stronger core social motives than men, especially the Belong motive. Implications and possible directions of research are discussed.

*Keywords:* core social motives, cultural differences, gender, scale validation.

Social relationships are essential in life. Although culture and technology allow individuals to maintain physical isolation by choice or out of necessity, every infant requires bonding with caregivers and peers, and most people find regular social interactions gratifying and indispensable for their well-being. Evidence indeed supports the significant health benefits of social connections (e.g., Hawkey & Cacioppo, 2010), and humans have developed a repertoire of psychological mechanisms that enable social living (Caporael & Brewer, 1991), including various motivations to be social (Stevens & Fiske, 1995). Social motives influence people's thoughts, feelings, and behaviours to orient them towards peaceful coexistence that aids survival and adaptation in changing environments.

Many different types of social motives have been proposed. Among them, the *Belong* motive is the most

fundamental and involves the desire to form and maintain lasting and positive interpersonal relationships (e.g., Baumeister & Leary, 1995). Several other motives are also considered essential as they provide individuals with the means to interact with others under different social situations to form lasting relationships. For instance, the *Understand* motive aids people to acquire and maintain a shared understanding of the world that envelopes them, thereby making interpersonal interactions effective and meaningful (e.g., Higgins, 1992). The *Control* motive propels people to increase their competence and effectiveness in interacting with others; a lack thereof would compromise the quality of the relationships. The *Esteem* motive urges individuals to monitor their reputation or "fit" in a group and improve this fit, registered as the social value of the self (Leary et al., 1995), while the *Trust* motive ensures that individuals form and maintain benevolent and reliable relationships with others. These motives help facilitate adaptive coexistence within groups.

Stevens and Fiske (1995) referred to these five social motives, namely Belong, Understand, Control, Esteem (or self-enhancement), and Trust, as *core social motives* forming the BUC(K)ET framework (hereafter, BUCET framework). The five core social motives emerged from

*Correspondence:* Emiko Kashima, La Trobe University, Bundoora, Victoria 3086, Australia. E-mail: e.kashima@latrobe.edu.au

Received 27 October 2020; revision 24 April 2021; accepted 1 May 2021.

analysing over 100 years of scientific psychology to see what motives were consistently used to explain human behaviour, thereby identifying recurring themes. Never intended to be exhaustive or exclusive, the synthesis of prior work provided a framework for the most common motivations in social perception research dating back to Freud, with the contribution of over 30 psychological theories (Fiske, 2002; Stevens & Fiske, 1995). The BUCET framework soon expanded to organize the motivations studied across areas in personality and social psychology (Fiske, 2004). Table 1 updates the original citations with illustrative theories (Van Lange *et al.*, 2021), again neither exhaustive nor exclusive.

As the five core social motives are key to social adaptation and survival, they are expected to all be correlated, with the Belong motive being the most essential (Stevens & Fiske, 1995). To belong successfully in a group, however, requires individuals to be familiar with the group's shared meanings (*i.e.*, Understand) and use them to connect effectively to the group by regulating contingencies between self and other (*i.e.*, Control); thus, the Belong, Understand, and Control motives are interlinked. Belong should also go hand in hand with the attribution of benevolence and respect towards others (*i.e.*, Trust) and an expectation of positive regard towards the self (*i.e.*, Esteem) associated with benevolence. This line of thought suggests that there may be stronger intercorrelations among Belong, Understand, and Control on the one hand (the agency motives), and among Belong, Trust, and Esteem on the other (the communal motives), although there is no prior research to support such speculation.

To that end, we developed the Social Motive Scale (SMS), comprised of five subscales based on the BUCET framework. To our knowledge, this is the first time the properties of these five motives were examined together. While each of the motives appears in prior theory—that being the process for generating these five—this list is distinctive in synthesizing across more than two dozen theories. The current task innovates from previous work to validate five standard scales, simultaneously, in a compatible format, across cultures. Never testable as a group, the five core social motives aim to be a useful framework and tool to facilitate further research. As such, they are not presented as a theory and, therefore, are without causal chain, mediating processes, or qualifying moderators. However, they do nominate the apparently most salient social motives in the minds of social and cognitive psychologists.

This paper will report on the development of the SMS (see the Method section) and its validation in seven diverse cultures. The approach to assessing the core social motives as a multidimensional scale is more advantageous than using various scales with linguistic and stylistic differences and some conceptual

**Table 1**  
*Social and Personality Theories of Motives*

Core Social Motive	Social and Personality Theorists Who Endorse a Similar Motive
Belonging (original)	Angyal (1951), Bakan (1966), Baumeister and Leary (1995), Bowlby (1969, 1973), Epstein (1991), Freud (1915/1963), Fromm (1955), Horney (1945), Maslow (1962), McClelland (1951), Murray (1954, 1959), Rank (1929, 1945), Staub (1989), Sullivan (1947)
Update	Algoe and Jolink (2021), Balliet <i>et al.</i> (2021), DeWall and Chester (2021), Echterhoff and Higgins (2021), Finkel and Fitzsimons (2021), Hales and Williams (2021), Reis (2021), Simpson <i>et al.</i> , (2021)
Understanding (original)	Baumeister and Newman (1994), Bartlett (1932), Epstein (1991), Festinger (1958), Fromm (1955), Heider (1958), Janoff-Bulman (1992), Jones and Davis (1965), Kelley (1967), Kelly (1955), Maslow (1955, 1962), Murray (1954; Murray & Kluckhohn, 1959), Staub (1989)
Update	Echterhoff and Higgins (2021), Epley and Kardas (2021), Fiedler and McCaughey (2021), Fiske <i>et al.</i> (2021), Higgins and Nakkawita (2021), Hubbard <i>et al.</i> (2021), van Kleef (2021)
Controlling (original)	Angyal (1951), Bakan (1966), Baumeister and Newman (1994), Brehm (1966), Fromm (1947), Heider (1958), Jones and Davis (1965), Kelley (1967), Kelly (1955), Maslow (1962), McClelland (McClelland, 1951; McClelland <i>et al.</i> , 1953), Rank (1929, 1945), Rogers (1959), Staub (personal communication, April, 1994), Sullivan (1947), White (1959)
Update	Balliet <i>et al.</i> (2021), DeWall and Chester (2021), Finkel and Fitzsimons (2021), Higgins and Nakkawita (2021), Ryan and Deci (2021)
Esteeming Self (original)	Adler (1930), Allport (1955), Baumeister and Newman (1994), Epstein (1991; O'Brien & Epstein, 1973), Janoff-Bulman (1992), Maslow (1962), Rogers (1959), Staub (1989)
Update	DeWall and Chester (2021)
Trusting (original)	Baumeister and Newman (1994), Epstein (1991), Janoff-Bulman (1992), Maslow (1962), Rogers (1959), Staub (1989), Sullivan (1947)
Update	Balliet <i>et al.</i> (2021)

misalliances across those dimensions. Such nuisance factors could interact with cultural differences to threaten internal validity in cross-cultural comparisons. A

multidimensional scale with closer conceptual and surface-level alignments facilitates a rigorous examination of motivational processes in which motives may interact with contextual and individual difference variables. We further expect the conceptual distinctions among the core motives and the five motives' psychological functions to be similar across many cultural groups. We expected that the SMS would demonstrate its structural equivalence (also called conceptual equivalence) and functional equivalence across cultures (van de Vijver & Leung, 2011). Further effort to establish the cross-cultural applicability of the SMS, such as a test of differential item functioning, is beyond the scope of this study. We begin by introducing the theoretical and methodological considerations that guided our validation exercise.

### Scale Validation

Two methods are widely used to test the construct validity of a new scale. The first method examines the factor structure of the measurement instrument by employing an exploratory factor analysis (EFA) followed by confirmatory factor analysis (CFA). The validity of the instrument is supported by an excellent fit of the model, involving the expected number of dimensions defined by the appropriate items. Further, the scale's factor structure must be comparable across cultural samples (van de Vijver, & Leung, 2011). The second method, establishing the nomological networks of the instrument, involves demonstrating the correlation of the instrument with measures of the constructs that should correlate (i.e., convergent validity) and the absence of correlation with measures that conceptually should not correlate (i.e., discriminant validity). Evidence that the nomological networks are similar across cultural samples will demonstrate functional equivalence (van de Vijver, & Leung, 2011). We used both methods to establish the SMS's measurement invariance.

We chose individual difference variables that are conceptually relevant to at least one of the core social motives to stipulate nomological networks. We also searched the literature to find prior evidence of relationships between the core social motives and those individual difference variables by exercising caution in noting conceptual and measurement gaps. For instance, prior studies may have not measured felt motivation (i.e., the strength of striving or energy) but the level of satisfaction of the motive or behavioural engagement to approach the desired goal. Further, a reportedly high level of satisfaction may imply that the motive was once high but satiated, or that the motive had never been high.

**Self-Construal (SC).** According to Markus and Kitayama (1991), people with interdependent self-

construal (SC) value belonging and promoting others' goals. Experimental studies have shown, for instance, that people report higher motivation to belong, to be accepted, and to conform when primed with concepts reflecting interdependence (*we, us, our*) than control concepts; however, they report higher motivation to be alone and different from others when primed with concepts reflecting independence (*I, me, my, mine*; Wiekens & Stapel, 2008). In interdependent cultures, highlighting interdependence and expectations of others increases performance and persistence on the task (e.g., Hamedani et al., 2013; Iyengar & Lepper, 1999), whereas in independent cultures where motivation hinges on the sense of autonomy, control, and personal uniqueness (Stephens et al., 2012), highlighting independence enhances performance and persistence on the task (e.g., Iyengar & Lepper, 1999). Based on Markus and Kitayama's (1991) conceptualizations and relevant research findings, we expected that interdependent SC should have various ties with social motives. More specifically, interdependent SC would correlate positively and most robustly with the Belong motive (Hypothesis [H]<sub>1a</sub>), as forming and maintaining interpersonal bonds is central in being interdependent (e.g.,  $r = .54$  for the desire to stay connected with others in Dogan, 2015;  $r = .28$  for the need to belong in Chang et al., 2015). It would also positively correlate with the Understand, Esteem, and Trust motives (H<sub>1b</sub>), because those who orient towards interdependent SC tend to emphasize shared understanding (e.g., concern for the needs of others and self-disclosure, Cross et al., 2011), trust in friends (Morry & Kito, 2009), generalized trust (Takemura et al., 2016), and positive interpersonal regard (Chang et al., 2015). Interdependent SC would also correlate positively with the Control motive (H<sub>1c</sub>), as its empirical link with secondary control has been reported ( $r = .35-.39$  by Lam & Zane, 2004). However, because interdependent SC does not emphasize competence or personal agency, its correlation with the Control motive might be limited.

In contrast, independent SC should correlate positively with the Control motive (H<sub>2a</sub>), in part because both are concerned with competence and personal agency (Markus & Kitayama, 1991). A positive correlation has been reported between independent SC and primary control ( $r = .40-.43$  in Lam & Zane, 2004). Prior research has also found a positive link between independent SC and generalized trust (e.g., Takemura et al., 2016), suggesting that independent people are open to others beyond their close-knit communities. This does not directly translate into expecting that independent SC should be positively associated with the Trust motive, although that is plausible (H<sub>2b</sub>). In turn, no links have been found between independent SC and the Belong motive ( $r = -.02$  in Chang et al., 2015) or positive self-regard based on the competitive comparison (Thomsen

*et al.*, 2007). We did not find any research relevant to the relationship between independent SC and the Understand motive, so no specific predictions are stated.

**Personal Need for Structure.** The personal need for structure (PNS) factor refers to individual differences in the desire to see the world as a structured, simple, and coherent place (Neuberg & Newsom, 1993). Those who are high on PNS desire a clear understanding and high predictability and orderliness in their circumstances and in the world, which implies a solid motive to understand. Nonetheless, the appetite for understanding does not necessarily imply a desire for *socially* shared understanding, and therefore, the Understand motive and PNS would be positively correlated but only to a moderate degree (H<sub>3a</sub>). Van Yperen *et al.*, (2014) reported a low positive link between PNS and the need for social connection (relatedness), which suggests a potential positive association between PNS and the Belong motive (H<sub>3b</sub>). The PNS factor may also correlate with the Control motive (H<sub>3c</sub>) since compensatory control theory maintains that the desire for personal control is part of a broader motivation to maintain the belief that the world is predictable, orderly, and non-random (Landau *et al.*, 2015). Consistent with theory, correlational and experimental studies have found higher PNS was tied to lower perceptions of control (e.g., Ma *et al.*, 2019), implying that higher PNS is also tied to a higher Control motive. Other theories such as terror management theory (Greenberg *et al.*, 1986), the tripartite security model (Hart *et al.*, 2005), and the meaning maintenance model (Heine *et al.*, 2006) further claim that psychological threats are buffered by affirming social motives, including motives to Belong, Understand (e.g., meanings and worldviews), Control, and Esteem. From those perspectives, PNS could correlate positively also with the Esteem motive, especially when threat is provoked, but not necessarily when threat is absent. We approached the positive link between PNS and the Esteem motive in an exploratory light (H<sub>3d</sub>).

**Generalized Trust.** Trust can be defined as the expectation of goodwill and benign intent (Yamagishi & Yamagishi, 1994). Trust serves to reduce social uncertainty because someone who trusts another person can assume the latter's goodwill, which likely strengthens the relationship over time. People who display a stronger tendency to trust are likely to desire such trust-based relationships more than people who tend not to trust. We, therefore, expected that individual differences in generalized trust should positively correlate with the Trust motive (H<sub>4a</sub>). Generalized trust may further correlate positively with social motives to Belong (H<sub>4b</sub>) and Understand (H<sub>4c</sub>), and in doing so, offer novel corollary findings. For instance, evidence suggests that individuals low in trust

tend to be lonely (Rotenberg, 1994), which may be associated with a low motivation to belong coupled with suspiciousness (Gurtman, 1992) and low motivation to understand. No report was found concerning generalized trust and the Control motive except Morling and Fiske (1999), in which research participants who reported higher harmony control—the sense of control derived from contextual forces—tend to trust others more. As the concepts of harmony control and the motive to control were quite distinct, no specific expectation was developed.

**Global Self-Esteem.** There is an expectation that people with high global self-esteem strive to enhance their self-esteem (e.g., W. K. Campbell & Sedikides, 1999 for meta-analysis; Kurman, 2003; Sedikides *et al.*, 2015). The degree of striving can be extreme at times as individuals with high levels of global self-esteem can become egoistic, defensive, or arrogant (e.g., Baumeister *et al.*, 1996; Heatherton & Vohs, 2000), although global self-esteem can be a relatively stable tendency that does not require frequent buttressing (e.g., Bartholomew & Horowitz, 1991). Therefore, the Esteem motive—the desire to feel that the self is worthy and deemed worthy by others—may not necessarily correlate with global self-esteem. Further, although evidence suggests higher self-esteem is associated with the recruitment of positive thoughts, especially after failure (Dodgson & Wood, 1998; Harris *et al.*, 2019), this does not necessarily mean individuals with high self-esteem tend to have stronger esteem motives. Theoretically, self-esteem can derive from living up to the standard of cultural norms (Solomon *et al.*, 1991) and maintaining positive personal relationships (Leary *et al.*, 1995). Both imply that higher self-esteem should be associated with a self-perception of being connected, which should satisfy the need to belong (Lee & Robbins, 1998). Consistent with this expectation that lower self-esteem activates the belonging motive, research evidence demonstrates a negative correlation between the need to belong and global self-esteem (Barnes *et al.*, 2010; Leary *et al.*, 2013; Pillow *et al.*, 2015; Walsh *et al.*, 2011).

Taken together, we expected that global self-esteem would be negatively correlated with the Belong motive (H<sub>5a</sub>). Several studies had also examined the relationship between global self-esteem and the desire for control over events in one's life. A majority of these studies have found that people with a strong desire for control are also high in self-esteem (e.g., *r* from .10 to .54 in Schönbach, 1990); however, some have argued that people with a strong desire for control could have low self-esteem, due to childhood adversities which may heighten the desire for control but impair self-esteem (e.g., Burger, 1995). The relationship may thus not be general. Although the tendency to trust may positively correlate with higher self-esteem (e.g., *r* = .34, *p* < .01, in Van

Dyne et al., 2000) in an organizational context, this may not necessarily suggest that global self-esteem and the Trust motive would be positively correlated.

**Attachment Style.** Individual differences in adult attachment (Bowlby, 1969; Mikulincer & Shaver, 2003) are typically conceptualized and measured along the two orthogonal dimensions of anxious and avoidant insecurity (e.g., Brennan et al., 1998). Attachment anxiety is associated with a strong desire for intimacy and closeness alongside fears of being abandoned, whereas attachment avoidance is associated with emotional distancing, excessive self-reliance, and discomfort with intimacy. Individuals low in anxious and avoidant insecurity have a secure attachment style, which is defined by a fundamental trust in others and comfort with closeness and interdependence, which fosters a repertoire of constructive means of dealing with psychological threats and stressors (Mikulincer & Shaver, 2003). These individual differences may be revealed, especially while goal pursuits are threatened: Those with an anxious disposition tend to strive for security goals, including the need to belong, whereas those with an avoidant disposition tend to strive for control goals (e.g., Mikulincer & Shaver, 2003). Prior research has found a moderate-to-strong positive association between the need to belong and attachment anxiety ( $r = .44$ , Leary et al., 2013;  $r = .53$ , Pillow et al., 2015), but not attachment avoidance ( $r = -.02$ , Leary et al., 2013;  $r = -.04$ , Pillow et al., 2015).

We thus expected that attachment anxiety should positively correlate with the Belong motive ( $H_{6a}$ ). However, it may correlate positively with other core motives also, given their strong striving for security. As exploratory hypotheses, we also posited a positive link between attachment anxiety and the Understand motive ( $H_{6b}$ ), the Control motive ( $H_{6c}$ ), and the Esteem motive ( $H_{6d}$ ). Trust is also a crucial component of attachment security (L. Campbell & Stanton, 2019), and Collisson et al., (2018) reported that those with anxious and avoidant dispositions tend to display lower dyadic trust ( $r = -.30$  and  $-.59$ , respectively; Collisson et al., 2018). However, given high security striving, a stronger anxious disposition should be associated with a stronger Trust motive ( $H_{6e}$ ) despite lower actual trust. Conversely, a stronger avoidant disposition should be associated with a higher Control motive ( $H_{6f}$ ) and a lower Trust motive ( $H_{6g}$ ), given their pervasive sense of distrust and need for control. Due to a lack of prior evidence, these predictions were exploratory.

### The Profile of Social Motives across Cultural and Gender Groups

Individual differences in core social motives likely underlie behaviours and emotional expressions of people

in everyday social contexts. For instance, people who scored high on the Need to Belong Scale (Leary et al., 2013) tend to be more sensitive to interpersonal cues (Pickett et al., 2004) and cooperate more in group settings (De Cremer & Leonardelli, 2003), supporting that the desire for belonging moderates interpersonal behaviour. It is expected that individual differences in core social motives also underlie variabilities in interpersonal behaviour observed across cultures, mediated by values, norms, and the pattern of interpersonal interactions they facilitate. According to Markus (2016), in Eastern, interdependent cultures compared to Western, independent cultures, social motives are intertwined more robustly with perceived interpersonal expectations and unspoken norms in the context. The strength of the social motive for behaviour will be greater if the appropriate behaviour and emotional expressions are sanctioned more strongly by the group. Therefore, social motives might be generally stronger in Eastern cultures than in Western cultures ( $H_{7a}$ ). Further, the interdependent cultures stress more strongly than independent cultures that individuals “fit in” to the group norms (Kitayama et al., 1997) and perceive the self as a group member (Triandis, 1989), which should enhance the Belong motive ( $H_{7b}$ ). By comparison, the independent cultures stress personal autonomy more strongly than interdependent cultures and thus should enhance the Control motive ( $H_{7c}$ ; e.g., Yamaguchi et al., 2005).

We also expected gender differences in strengths of core social motives, mediated in part by gender roles and stereotypes that prescribe distinct patterns of behaviour for women and men (Eagly & Wood, 1999). Traditional female stereotypes and role behaviours that emphasize socio-emotional functions may generally strengthen social motives ( $H_{8a}$ ), especially the Belong motive ( $H_{8b}$ ). In contrast, the male stereotypes and role behaviours that emphasize agency may foster the Control motive ( $H_{8c}$ ).<sup>1</sup> We conducted an initial test of these predictions with the SMS. Table 2 summarizes the definitions of the five social motives and their expected correlations with individual difference variables.

## Method

### Participants

Participants were 1,516 university students from three Asian countries, the Philippines (219), China (233), and Malaysia (355), and four non-Asian countries, Australia (204), the United States (199), New Zealand (219), and Austria (87). Among Australian participants, 50 were recruited from a university in Melbourne and the remainder from a Qualtrics online panel. Among Malaysian participants, 247 were from a university in Kuala

**Table 2**  
***Social Motives, Definitions, and Expected Correlations with Individual Differences***

Social Motive	Definition	Expected Individual Difference Correlates
Belong	The desire to affiliate with other people, to be included and accepted.	Interdependent SC (H <sub>1a</sub> ) PNS (H <sub>3b</sub> ) Generalized Trust <sup>a</sup> (H <sub>4b</sub> ) <i>Global self-esteem</i> (H <sub>5a</sub> ) Attachment Anxiety (H <sub>6a</sub> )
Understand	The desire for shared attitudes and shared realities through common experiences.	Interdependent SC (H <sub>1b</sub> ) PNS (H <sub>3a</sub> ) Generalized Trust <sup>a</sup> (H <sub>4c</sub> ) Attachment Anxiety <sup>a</sup> (H <sub>6b</sub> )
Control	The desire to feel in charge of own life and see contingency between own actions and others' responses.	Interdependent SC (H <sub>1c</sub> ) Independent SC (H <sub>2a</sub> ) PNS (H <sub>3c</sub> ) Attachment Anxiety <sup>a</sup> (H <sub>6c</sub> ) Attachment Avoidance <sup>a</sup> (H <sub>6f</sub> )
Esteem	The desire to feel that the self is worthy and valued by others.	Interdependent SC (H <sub>1b</sub> ) Attachment Anxiety <sup>a</sup> (H <sub>6d</sub> ) PNS <sup>a</sup> (H <sub>3d</sub> )
Trust	The desire to feel that people are benevolent and intend beneficial relationships.	Interdependent SC (H <sub>1b</sub> ) Independent SC (H <sub>2b</sub> ) Generalized Trust (H <sub>4a</sub> ) Attachment Anxiety <sup>a</sup> (H <sub>6e</sub> ) <i>Attachment Avoidance</i> <sup>a</sup> (H <sub>6g</sub> )

*Note.* Italics denote an expected negative correlation (all others are expected positive correlations). PNS = personal need for structure; SC = self-construal.

<sup>a</sup>Associations between social motives and individual difference correlates that are conceptually meaningful but have not been empirically examined in the literature.

Lumpur, and 108 were from a university in Sabah, a regional city in Borneo. Chinese data were obtained in Macao. Given Macao's unique historical and geographical backgrounds, the findings may not be representative of China. All data were collected in 2016 and 2017. All participants were between 18 and 30 years old ( $M = 20.3$ ,  $SD = 2.2$ ), and a majority (62%) were between 18 and 20; 66% were females (see Table S1, in the Supporting Information's Technical Supplement for a summary of the demographic composition of each sample).

## Procedure and Materials

**Scale Construction.** The social motive questionnaire was constructed in English. Based on the definition of each social motive, the first author (ESK) and the senior author (STF) generated ten statements per motive that denoted either approaching a desired psychological state (e.g., "I want to feel...", "I often have a strong need to feel...", "I try hard to...") or defending against loss of such a state (e.g., "I try hard not to...", "I worry a lot if...", "It bothers me a great deal when..."). The Need

to Belong Scale (Leary et al., 2013) was consulted because of the conceptual similarity.<sup>2</sup> Author GN and several postgraduate students in the senior author's research lab were invited to comment on these items. Based on the comments provided, seven items were selected per motive and revised as appropriate. They were then pretested with a student sample drawn from the psychology subject pool at Princeton University. The scale (and the survey as a whole) was translated from English to Cantonese (HD), Malay (GC), and German (JK) using the back-translation method (International Testing Commission, 2017); multilingual authors with expertise in the target samples oversaw the process of respective back-translation.

We constructed an online survey comprised of four parts: (a) beliefs about the past and the future of society and the self, (b) the 35-item draft SMS (with seven items per subscale), (c) individual difference measures, and (d) demographic questions (see Technical Supplement). Part one of the survey is not relevant to this paper and will not be mentioned further. All participants in China completed the Cantonese version of the questionnaire, and all participants in Austria completed

the German version of the questionnaire. Participants in Malaysia had an option to complete the English or the Malay version of the questionnaire, and 55 (15%, mostly from Sabah) chose the Malay version.

**Social Motive Questionnaire.** The section on social motives began with a general instruction: "Below, you will read different statements. Some of them look similar but they are all unique. Please read each statement carefully and rate the degree to which you agree or disagree with it, by using the scale below." A 7-point scale was provided (1 = *disagree completely*, 2 = *disagree*, 3 = *disagree slightly*, 4 = *neutral—neither agree nor disagree*, 5 = *agree slightly*, 6 = *agree*, and 7 = *agree completely*). The presentation order of the five motives was random for each respondent, as well as that of the seven items within each motive.

**Individual Differences Questionnaire.** The following measures of individual differences were presented in random order: Independent and Interdependent SC (Takata, 1993); PNS (Neuberg & Newsom, 1993); Generalized Trust Scale (Yamagishi & Yamagishi, 1994); Rosenberg Self-Esteem Scale (Rosenberg, 1965); Experiences in Close Relationship Scale—Short Form (ECR-S; Wei et al., 2007); and the Big-Five personality domains. All response scales assessed the degree of agreement at seven levels,

except for the self-esteem scale, which involved four, and the PNS, which involved six levels. See Table 3 for  $\alpha$  coefficients. The Big-Five personality domains generally had low  $\alpha$  coefficients and were therefore excluded from subsequent analyses. The  $\alpha$  coefficients were acceptable for all other scales except the interdependent SC scale, which must therefore be interpreted with caution.

## Results

### EFA

We first performed an EFA of the 35 social motive items (7 items per motive) in the whole sample. The Kaiser-Meyer-Olkin measure of sample adequacy was .93, showing excellent factorability. Five factors accounted for 49% of the total variance, and eigenvalues decreased from 9.0, 3.3, 2.0, 1.6, 1.3, 1.1, 1.0, and so on. Extracting five factors with the Principal Axis Factoring extraction method and rotating the factors with the Oblimin rotation method indicated that Belong items cross-loaded on Factor 1 and Factor 5; Factor 2 was defined by the Understand motive, Factor 3 by Trust motive, and Factor 4 by the Control motive. Esteem motives cross-loaded on Factor 1 and Factor 4.

To achieve a clearer separation of the five motives, we subsequently attempted to reduce the number of items to

Table 3

*Cronbach's  $\alpha$  coefficients of Five Subscales of the SMS with Four Items Each and Individual Difference Variables in Seven Countries*

	AUS	USA	NZ	PHI	CHN	MAL	AUT	All
Belong	.79	.83	.75	.77	.82	.70	.71	.77
Understand	.71	.75	.69	.65	.78	.72	.57	.74
Control	.78	.81	.77	.76	.82	.77	.81	.79
Esteem	.67	.76	.77	.74	.78	.80	.79	.76
Trust	.67	.74	.73	.70	.76	.76	.71	.74
Self-esteem	.90	.91	.88	.87	.83	.80	.89	.88
Need for structure (PNS) <sup>a</sup>	.79	.83	.80	.77	.70	.66	.80	.77
Independent SC	.79	.78	.77	.78	.78	.78	.76	.79
Interdependent SC	.44	.55	.59	.59	.72	.69	.57	.67
Attachment Anxiety <sup>b</sup>	.77	.80	.74	.73	.69	.64	.74	.73
Attachment Avoidance	.79	.79	.77	.70	.59	.46	.66	.73
General Trust	.81	.88	.83	.85	.90	.82	.84	.85
Agreeableness	.23	.52	.34	.21	.32	-.09	.01	.28
Conscientiousness	.43	.57	.55	.56	.11	.49	.65	.52
Extraversion	.59	.63	.71	.75	.56	.37	.60	.65
Neuroticism	.65	.73	.69	.63	.38	.37	.72	.64
Openness	.46	.44	.19	.39	.00	.10	.48	.37

*Note.* AUS = Australia; AUT = Austria; CHN = China (Macao); MAL = Malaysia; NZ = New Zealand; PH = the Philippines; PNS = personal need for structure; SC = self-construal.

<sup>a</sup>Three items (5, 6, 9) were omitted in all groups to improve alpha in Malaysia, China and the Philippines.

<sup>b</sup>One item (8) was omitted in all samples to improve alpha in China and Malaysia.

**Table 4**  
*Model Fit Indices*

Country	TLI	CFI	RMSEA	SRMR	$\chi^2$	$\Delta$ CFI	$\Delta$ RMSEA	$\Delta \chi^2$	$p (\Delta \chi^2)$
Config model									
Australia	.865	.886	.065	.067	296.7				
USA	.863	.885	.075	.068	339.0				
NZ	.870	.890	.067	.070	316.1				
Philippines	.872	.892	.062	.068	294.4				
China	.934	.945	.052	.053	261.1				
Malaysia	.897	.913	.061	.053	367.7				
Austria	.828	.855	.078	.094	245.3				
All Countries									
Config model	.884	.902	.064	.061	2120.2				
Metric model	.883	.894	.065	.072	2294.9	.008	.001	174.6	<.001
Scalar model	.830	.834	.078	.082	2998.3	.060	.013	703.5	<.001
Australia & USA									
Config model	.864	.885	.07	.065					
Metric model	.873	.888	.068	.066		-.003	-.002		
Scalar model	.872	.882	.068	.067		.006	0		
Australia & Austria									
Config model	.853	.876	.069	.072					
Metric model	.859	.876	.067	.074		0	-.002		
Scalar model	.854	.866	.069	.076		.01	.001		

*Note.* All  $\chi^2$  values are significant at  $p < .001$ . CFI = comparative fit index; config = configural invariance; NZ = New Zealand; RMSEA = root-mean-square error of approximation; SRMR = standardized root mean square residual; TLI = Tucker-Lewis index.

four per subscale. In addition to the existence of cross-loadings, measurement invariance tests involving seven countries would be challenging, with seven items per subscale. We performed EFA again, this time for each subscale separately, and selected four items with the highest factor loadings. The final EFA of these 20 items indicated fewer cross-loadings than previous results; Factors 1 to 5 were defined only by Belong, Control, Trust, Understand, and Esteem items, respectively (see Table S2 for factor loadings). We used these 20 items as the SMS subscales for the subsequent validation exercise. The internal consistency of the subscales was acceptable to good, ranging from .57 (Understand in Austria) to .83 (Belong in the United States). Among 35  $\alpha$  coefficients ( $5 \times 7$  countries), five were below .70; nine were .70–.74; 15 were .75–.79; six were .80 and above (see Table 3).

### Measurement Invariance

Multigroup CFA was conducted to test the fit of the five-factor model of core social motives and to establish the equivalency of factor structure (i.e., the configural invariance), factor loadings (i.e., the metric invariance), and mean scores (i.e., the scalar invariance) between the multiple country samples. All analyses were run using Lavaan (Rosseel, 2012) in R, closely following Hirschfeld and von Brachel (2014).

Configural is the lowest level of invariance, and this model is upheld when two conditions are met: (a) the model has a satisfactory fit in each sample, and (b) the same items load onto the same factors across samples. A cut-off of  $<.08$  for root-mean-square error of approximation (RMSEA) and standardized root mean square residual (SRMR), and  $>.9$  for comparative fit index (CFI) and the Tucker-Lewis Index (TLI), are recommended to evaluate the model fit (Putnick & Bornstein, 2016). Based on these criteria, the configural model indicated an acceptable fit in all samples although the levels of CFI and TLI were somewhat lower. The best fit was found in China, and the poorest was in Austria, likely due to the smallest sample. Table 4 displays a summary of model fits.

Invariance at the next level, metric invariance, would suggest that the factor loadings do not differ across groups and a within-group comparison of subscale means would be meaningful. To test metric invariance, we compared the fit indices obtained at this stage to those of the configural model. Commonly used thresholds are  $\Delta$ RMSEA  $<.01$ ,  $\Delta$ CFI  $<.01$ , and  $\Delta$ TLI  $<.01$  (Putnick & Bornstein, 2016). The results supported the metric invariance model in all samples ( $\Delta$ RMSEA  $<.01$ ;  $\Delta$ CFI  $<.01$ ;  $\Delta$ TLI  $<.01$ ). Table 5 shows the standardized factor loadings for the configural model in each country; the last column (under ALL) shows the standardized factor loadings for the metric model.



The next level, scalar invariance, was the highest level we aimed to achieve. When scalar invariance is upheld, the intercepts of all indicators can be considered equivalent, and therefore, scale means can meaningfully be compared across groups. The result did not find evidence for scalar invariance for all countries together ( $\Delta RMSEA = .013$ ,  $\Delta CFI = .060$ ). When pairs of countries were tested, most did not indicate scalar invariance, except for two pairs: Australia and the United States, and Australia and Austria (see Table 4).

Subsequently, we tested for a partial scalar invariance model by relaxing some of the constraints on intercept parameters based on modification indices. The modification indices suggested that the Understand subscale was problematic; several of the most significant modification indices concerned equality constraints on Understand items. We removed this subscale and reanalysed the remaining four subscales together for the partial scalar

invariance model. The model fit was satisfactory only where two items were freed up for each subscale, which was consistent with standard practice (Putnick & Bornstein, 2016; see Table S3 in the Technical Supplement, for summary indices at each step of testing and additional measurement invariance results and protocol). We concluded that all scale means except the Understand motive could be compared across countries with due caution, while the Australia-United States comparisons and Australia-Austria comparisons would be non-problematic for all subscales. Figure 1 presents the final four-factor model of the SMS.<sup>3</sup>

### Intercorrelations among Subscales of the SMS

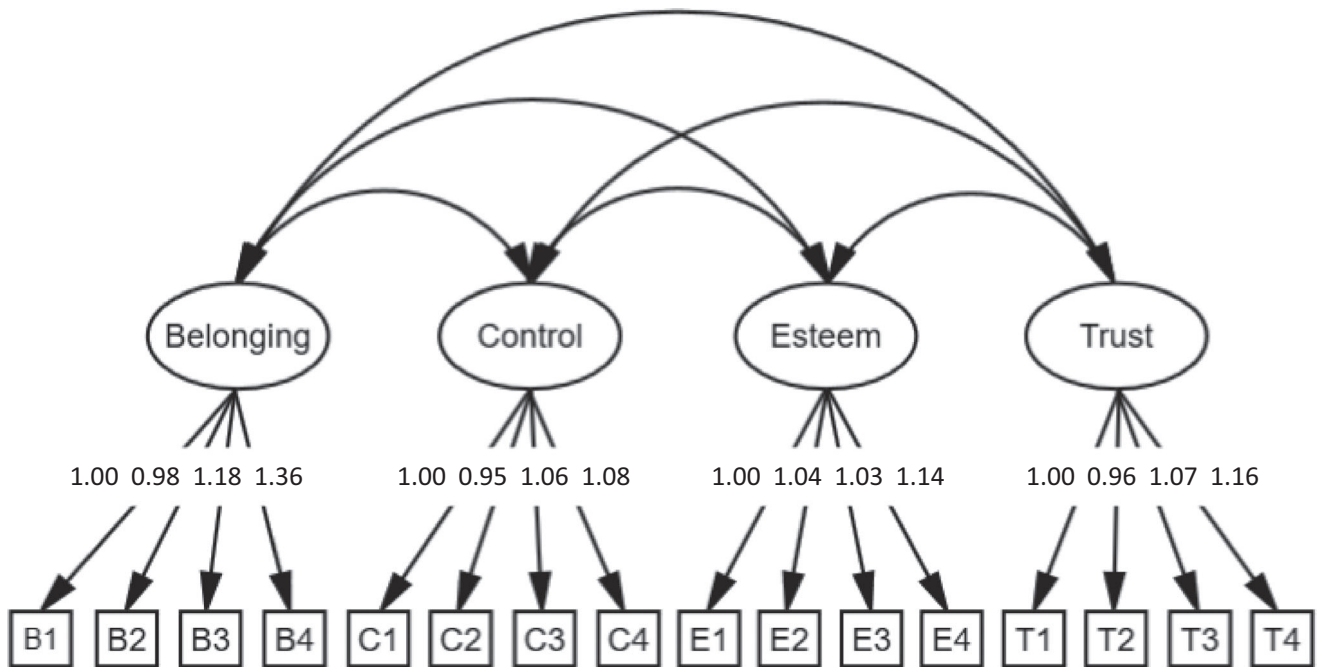
Pearson correlations among the SMS subscales (4 items each) at the level of individuals ( $N = 1,516$ ) ranged

Table 5  
Social Motive Scale (SMS) Items and Standard Factor Loadings for Configural Models across Seven Country Samples

	AUS	USA	NZ	PH	CHN	MAL	AUT	ALL
B1 I try hard not to do things that will make other people avoid or reject me. <sup>a</sup>	.68	.71	.43	.61	.66	.44	.58	.60
B2 I want other people to accept me. <sup>a</sup>	.79	.75	.68	.67	.75	.58	.61	.70
B3 It bothers me a great deal when I am not included in other people's plans. <sup>a</sup>	.58	.74	.75	.68	.71	.67	.60	.67
B4 My feelings are easily hurt when I feel that others do not accept me. <sup>a</sup>	.77	.76	.83	.78	.79	.75	.71	.76
U1 It is reassuring to know that my attitudes are quite similar to those held by other people.	.72	.71	.65	.70	.73	.62	.76	.68
U2 I want to feel that I share the same outlook on the world with other people.	.68	.67	.81	.73	.78	.66	.49	.73
U3 Before interacting with someone, I need to know that chances are good that we would agree about lots of things.	.52	.62	.46	.36	.60	.66	.50	.56
U4 I prefer having people around me who have gone through the same experiences that I have.	.51	.63	.49	.51	.65	.57	.39	.58
C1 I try hard not to lose control of my own life.	.73	.73	.54	.60	.76	.69	.59	.67
C2 I want to feel that all important matters are currently under control.	.53	.59	.62	.61	.82	.63	.76	.66
C3 I often have a strong need for being in charge of my own life.	.78	.82	.80	.76	.68	.65	.73	.74
C4 It bothers me a great deal when I don't have enough control over the direction of my own life.	.74	.76	.76	.72	.64	.74	.83	.73
E1 I want to feel that I have a number of good qualities.	.65	.67	.67	.79	.69	.79	.82	.70
E2 I want to feel I am satisfying others' expectation for me.	.55	.63	.57	.66	.73	.72	.58	.63
E3 I do not like being devalued or undermined by others.	.59	.67	.72	.53	.75	.65	.68	.65
E4 I often have a strong need to feel that I am a person of worth.	.62	.70	.78	.66	.60	.69	.80	.70
T1 I need to feel that other people are basically trustworthy.	.74	.70	.74	.50	.71	.65	.59	.68
T2 I want to believe that most people value cooperation over competition.	.40	.56	.54	.52	.57	.71	.57	.57
T3 I don't like to feel that people around me don't care about each other.	.59	.64	.49	.62	.72	.64	.71	.63
T4 I often have a strong need to feel trust between people.	.62	.67	.80	.79	.68	.70	.61	.70

Note. AUS = Australia; AUT = Austria; B = Belong; C = Control; CHN = China (Macao); E = Esteem, MAL = Malaysia; NZ = New Zealand; PH = the Philippines; T = Trust; U = Understand.

<sup>a</sup>Item adopted from "Construct Validity of the Need to Belong Scale: Mapping the Nomological Network," by M. R. Leary, K. M. Kelly, C. A. Cottrell, and L. S. Schreindorfer, 2013, *Journal of Personality Assessment*, 95(6), 610–624 (<https://doi.org/10.1080/00223891.2013.819511>). Copyright 2013 by Taylor & Francis.



	B1	B2	B3	B4	C1	C2	C3	C4	E1	E2	E3	E4	T1	T2	T3	T4
Australia	4.9	5.5	4.6	4.7	5.5	5.8	5.7	5.6	5.8	5.1	5.7	5.4	5.2	5.1	5.2	5.1
Austria	4.4	5.8	4.6	4.7	5.2	5.8	5.5	5.6	6.0	5.1	5.7	5.4	5.4	5.1	5.7	5.1
China	4.8	5.2	4.6	4.7	5.7	5.8	5.7	5.6	5.5	5.6	5.7	5.4	5.1	5.1	5.4	5.1
Malaysia	5.4	5.5	4.6	4.7	5.7	5.8	5.7	5.6	5.6	5.4	5.7	5.4	5.1	5.1	5.2	5.1
New Zealand	5.1	5.6	4.6	4.7	5.6	5.8	5.8	5.6	5.7	5.2	5.7	5.4	5.3	5.1	5.2	5.1
Philippines	4.9	5.6	4.6	4.7	5.8	5.8	5.7	5.6	5.6	5.4	5.7	5.4	5.4	5.1	5.1	5.1
United States	4.9	5.4	4.6	4.7	5.7	5.8	5.8	5.6	5.9	5.3	5.7	5.4	5.0	5.1	5.1	5.1

Figure 1 Partial scalar invariance model. The intercepts are constrained to be equal across countries for B3, B4, C2, C4, E3, E4, T2, T4. See Table 4 for the contents of these items.

from .28 (Understand-Control) to .55 (Belong-Esteem; see the lower triangle of the correlation matrix in Table 6). As these *r* coefficients confound the strength of associations at the individual level and the sample level, we also computed multi-level correlations that account for the data structure. The size of the multi-level correlations (see the upper triangle of the matrix) remained similar to the individual-level correlations, ranging from .26 (Understand-Control) to .57 (Belong-Esteem). Although we anticipated that Belong, Understand, and Control might form one cluster, with Belong, Trust, and Esteem forming another cluster, the emerging pattern differed slightly from our anticipation. For instance, Control correlated with Esteem more strongly than with Belong or Understand. Indeed, Esteem correlated relatively strongly with all other

subscales in the whole sample (.41–.57) as well as in separate cultural samples, suggesting the Esteem motive’s high centrality among the five social motives in the present data.

**Correlations of the SMS Subscales and the Individual Difference Variables**

Next, we examined the nomological network based on the SMS subscales and the individual difference variables. As above, we computed both the individual-level correlations and the multi-level correlations. These results were highly consistent (all  $\Delta r < .08$ ). We report the individual-level correlations ( $r_{total}$ ) in the text and the multi-level correlations ( $r_{ml}$ ) in Table 5, identifying where the difference is notable ( $\Delta r > .04$ ). Because of

Table 6  
Correlations among the Social Motive Scale (SMS) Subscales (Based on 4 Items) and between the SMS and Personality Variables

	Belong	Understand	Control	Esteem	Trust
Belong	1	.47***	.30***	.57***	.37***
Understand	.47***	1	.26***	.41***	.33***
Control	.31***	.28***	1	.51***	.32***
Esteem	.55***	.39***	.54***	1	.45***
Trust	.39***	.33***	.34***	.48***	1
Interdependent SC	.50***	.36***	.21***	.45***	.35***
Independent SC	-.09	.01	.24***	.08	.10*
Generalized Trust	.10*	.15***	-.00	.12**	.24***
Need for Structure (PNS)	.19***	.23***	.33***	.27***	.07
Attachment Anxiety	.35***	.26***	.16***	.28***	.19***
Attachment Avoidance	-.06	-.07	-.11**	-.15***	-.16***
Global Self-Esteem	-.18***	-.06	.00	-.02	.06

Note. In the upper part of the table ( $N = 1516$ ) the lower triangle of the correlation matrix shows Pearson correlation at the level of individuals, and the higher triangle shows multi-level correlations. The lower part of the table ( $N = 1269$ ) shows multi-level correlations between the SMS and personality variables which may differ from  $r_{\text{total}}$  reported in the text. PNS = personal need for structure; SC = self-construal.

\*  $p < .05$ ; \*\*  $p < .01$ , \*\*\*  $p < .001$ .

the large sample size, all  $r_{\text{total}}$  larger than .09 are significant ( $p < .001$ ). We use this criterion for interpreting evidence. Hereafter, \* indicates a significant correlation ( $r_{\text{total}}$ ) at  $p < .05$ ; \*\* indicates  $p < .01$ , and \*\*\* indicates  $p < .001$ .<sup>4</sup> Some cultural variations in the pattern of correlations were found; we report those concerning the essential relationships that were expected. For complete correlational results, see Table S4 in the Technical Supplement.

**Belong.** As predicted, the Belong motive correlated positively with interdependent SC ( $H_{1a}$ ) in all seven countries ( $r_{\text{total}} = .51^{***}$ ), from the lowest of .42\*\*\* in the Philippines to the highest of .62\*\*\* in the United States, and also, positively with attachment anxiety ( $H_{6a}$ ) in all countries ( $r_{\text{total}} = .36^{***}$ ), from the lowest of .28\*\*\* in Australia to the highest of .43\*\*\* in the Philippines and Austria. Also, Belong correlated positively with PNS ( $H_{3b}$ ) in four samples ( $r_{\text{total}} = .19^{***}$ , from .15\* to .24\*\* in New Zealand, Australia, China, and Malaysia), and with generalized trust ( $H_{4b}$ ), which was new evidence, though the correlations were small ( $r_{\text{total}} = .10^{**}$ ) and significant only in the United States (.17\*), New Zealand (.19\*\*) and China (.27\*\*\*). As expected, Belong correlated negatively with global self-esteem ( $H_{5a}$ ) overall ( $r_{\text{total}} = -.20^{***}$ ) though significant only in the United States (-.15\*) and New Zealand (-.19\*\*). These correlations supported convergent validity. In contrast, there was no correlation between Belong and independent SC ( $r_{\text{total}} = -.05$ ) or attachment avoidance ( $r_{\text{total}} = -.02$ ), demonstrating discriminant validity.

**Understand.** The Understand motive correlated positively with interdependent SC in all countries as predicted ( $H_{1b}$ ;  $r_{\text{total}} = .35^{***}$ , from .20\*\* in China to .51\*\*\* in the United States). The anticipated correlation with PNS ( $H_{3a}$ ) was also significant in the whole sample ( $r_{\text{total}} = .25^{***}$ ) and in all countries (from .16\* to .36\*\*\*) excepting Malaysia and Austria. As predicted ( $H_{6b}$ ), Understand also correlated positively with attachment anxiety in all countries ( $r_{\text{total}} = .30^{***}$ , from .18\*\* in Australia to .39\*\*\* in Malaysia), and with generalized trust ( $H_{4c}$ ;  $r_{\text{total}} = .13^{**}$ ) but was significant only in the three English-speaking countries and China (from .14\* to .18\*\*). These correlations supported convergent validity.<sup>5</sup> As expected, Understand was uncorrelated with independent SC ( $r_{\text{total}} = .01$ ) and attachment avoidance ( $r_{\text{total}} = .01$ ), supporting discriminant validity.

**Control.** The Control motive correlated positively with PNS in all countries as predicted ( $H_{3c}$ ;  $r_{\text{total}} = .32^{***}$ , from .23\*\* in Austria to .44\*\*\* in the United States) and also with independent SC in all countries ( $H_{2a}$ ;  $r_{\text{total}} = .17^{***}$ , between .17\* in New Zealand and .36\*\*\* in Malaysia). Control also correlated positively, but somewhat weakly, with interdependent SC ( $r_{\text{total}} = .14^{***}$ ) in all countries (.14\* in New Zealand to .37\*\*\* in Malaysia) except Australia ( $H_{1c}$ ). These supported convergent validity. Also consistent with our exploratory hypotheses, Control correlated positively with attachment anxiety ( $H_{6c}$ ;  $r_{\text{total}} = .15^{***}$ ) in four countries (from .21\*\* in the United States to .43\*\*\* Austria). Attachment avoidance, however, was inversely associated with

Control, contrary to our expectations ( $H_{6f}$ ), though the association was weak ( $r_{\text{total}} = -.12^{***}$ ) and significant only in the United States ( $-.27^{***}$ ). Thus, the pattern of correlations corroborated with our conceptual analysis; however, there were some cultural variabilities. There was no correlation between the Control motive and generalized trust, consistent with our prior expectation, therefore indicating discriminant validity.

**Esteem.** As predicted, the Esteem motive correlated positively with interdependent SC ( $H_{1b}$ ) and all countries ( $r_{\text{total}} = .37^{***}$ ), and at least moderately in all samples. Esteem also correlated in all countries with PNS ( $H_{3d}$ ;  $r_{\text{total}} = .26^{***}$ ) and attachment anxiety ( $H_{6d}$ ;  $r_{\text{total}} = .28^{***}$ ), but more moderately. These results supported convergent validity. Unexpectedly, the Esteem motive also correlated negatively with attachment avoidance ( $r_{\text{total}} = -.15^{***}$ ), but nevertheless, the correlation was significant in the United States alone ( $-.15^*$ ). Notably, Esteem correlated with neither global self-esteem ( $r_{\text{total}} = -.03$ ) nor independent SC ( $r_{\text{total}} = -.05$ ), demonstrating discriminant validity. The Esteem motive was associated more with interdependent SC than independent SC, which had stronger ties with self-esteem and self-enhancement (Kitayama *et al.*, 1997).

**Trust.** The Trust motive correlated positively, consistently in all countries, with generalized trust ( $H_{4a}$ ;  $r_{\text{total}} = .24^{***}$ , from  $.15^*$  in New Zealand to  $.34^{***}$  in the United States) and with interdependent SC ( $H_{1b}$ ;  $r_{\text{total}} = .36^{***}$ , from  $.18^{**}$  in the Philippines to  $.49^{***}$  in the United States), as expected. Our conceptual analysis suggested Trust should correlate with independent SC ( $H_{2b}$ ), and this expectation was supported ( $r_{\text{total}} = .09^{**}$ ), though significant only in the United States ( $.23^{***}$ ), China ( $.15^*$ ), and Malaysia ( $.38^{***}$ ). Also consistent with our conceptual analysis, Trust correlated positively with attachment anxiety ( $H_{6c}$ ;  $r_{\text{total}} = .22^{***}$ ) in all countries except China and the Philippines, and negatively with attachment avoidance ( $H_{6g}$ ;  $r_{\text{total}} = -.14^{**}$ ), although significant only in Australia ( $-.19^{**}$ ) and the United States ( $-.33^{***}$ ). In contrast, Trust barely correlated with PNS ( $r_{\text{total}} = .07^*$ ; significant only in New Zealand,  $.19^{**}$ ) and global self-esteem ( $r_{\text{total}} = .02$ ; significant only in Australia,  $.15^*$ ). Results supported both convergent and discriminant validity. In sum, evidence for the SMS's construct validity as well as reliability was strong.

### Analysis of the Social Motive Profile

We now turn to the profile of core social motives. As multigroup CFA suggested partial scalar invariance for four of the SMS subscales and metric invariance for Understand, exercising caution is prudent when

comparing country means.<sup>6</sup> The observed mean social motive scores are presented in Figure 2 (a, b, and c): Figure 2a shows the whole sample, Figure 2b presents data for males, and Figure 2c for females. A considerable degree of similarity in the pattern of the means is found across cultures and between genders: Control (5.44), Esteem (5.36), and Trust (5.19) were consistently higher than Belong (4.83), which in turn was higher than Understand (4.22). To test cultural and gender differences, we performed a 4 (Motive Type)  $\times$  7 (Country)  $\times$  2 (Gender) mixed-design ANOVA, excluding the Understand motive, which was unsuitable for mean comparison. Motive type was a within-subject factor, and the latter two were between-subject factors. We used the multivariate approach due to the violation of the sphericity assumption.

The ANOVA showed a large, significant main effect of motive type,  $F(3, 1500) = 112.52$ ,  $p < .001$ ,  $\eta_p^2 = .18$ . The Control motive was stronger than the Esteem motive ( $p < .05$ ), which was stronger than Trust ( $p < .001$ ), which in turn was stronger than Belong ( $p < .001$ ). Also, a significant main effect of country emerged,  $F(6, 1502) = 7.38$ ,  $p < .001$ ,  $\eta_p^2 = .03$ . Post hoc comparison with Bonferroni adjustment indicated that the average of the four motives was significantly higher in the Philippines compared to the remaining six countries ( $p < .05$ ). The result was not consistent with the expectation that social motives are generally stronger in the East than the West ( $H_{7a}$ ). There was also a significant and large main effect of gender,  $F(1, 1502) = 44.69$ ,  $p < .001$ ,  $\eta_p^2 = .03$ , indicating that women tend to report stronger social motives overall than men, which was consistent with our expectation ( $H_{8a}$ ). Country and gender did not interact,  $F = 1.31$ ,  $p = .25$ . However, motive type interacted with culture ( $F[18, 4243] = 7.37$ ,  $p < .001$ ,  $\eta_p^2 = .03$ ) and gender ( $F[3, 1500] = 4.63$ ,  $p = .003$ ,  $\eta_p^2 = .01$ ), and further resulted in a small Country  $\times$  Gender  $\times$  Motive Type three-way interaction ( $F[18, 4243] = 3.13$ ,  $p = .004$ ,  $\eta_p^2 = .01$ ).

We probed the pattern of each two-way interaction effect. As for gender interaction, social motives were consistently higher for women than men (all  $ps \leq .001$ ), but gender gap was larger for the Belong (0.36,  $\eta_p^2 = .023$ ), Esteem (0.38,  $\eta_p^2 = .036$ ), and Trust (0.36,  $\eta_p^2 = .028$ ) motives than the Control motive (0.17,  $\eta_p^2 = .007$ ). Also, the levels of the four motives were more similar for women (5.02–5.55) than for men (4.63–5.35). As for countries, the level of motives generally declined from Control to Esteem, Trust, and then Belong as mentioned earlier; however, in New Zealand and China, Trust was the highest. Cultural differences were the largest in the Trust motive ( $\eta_p^2 = .053$ ), followed by Esteem (.034) and Belong (.033), and then Control (.030).

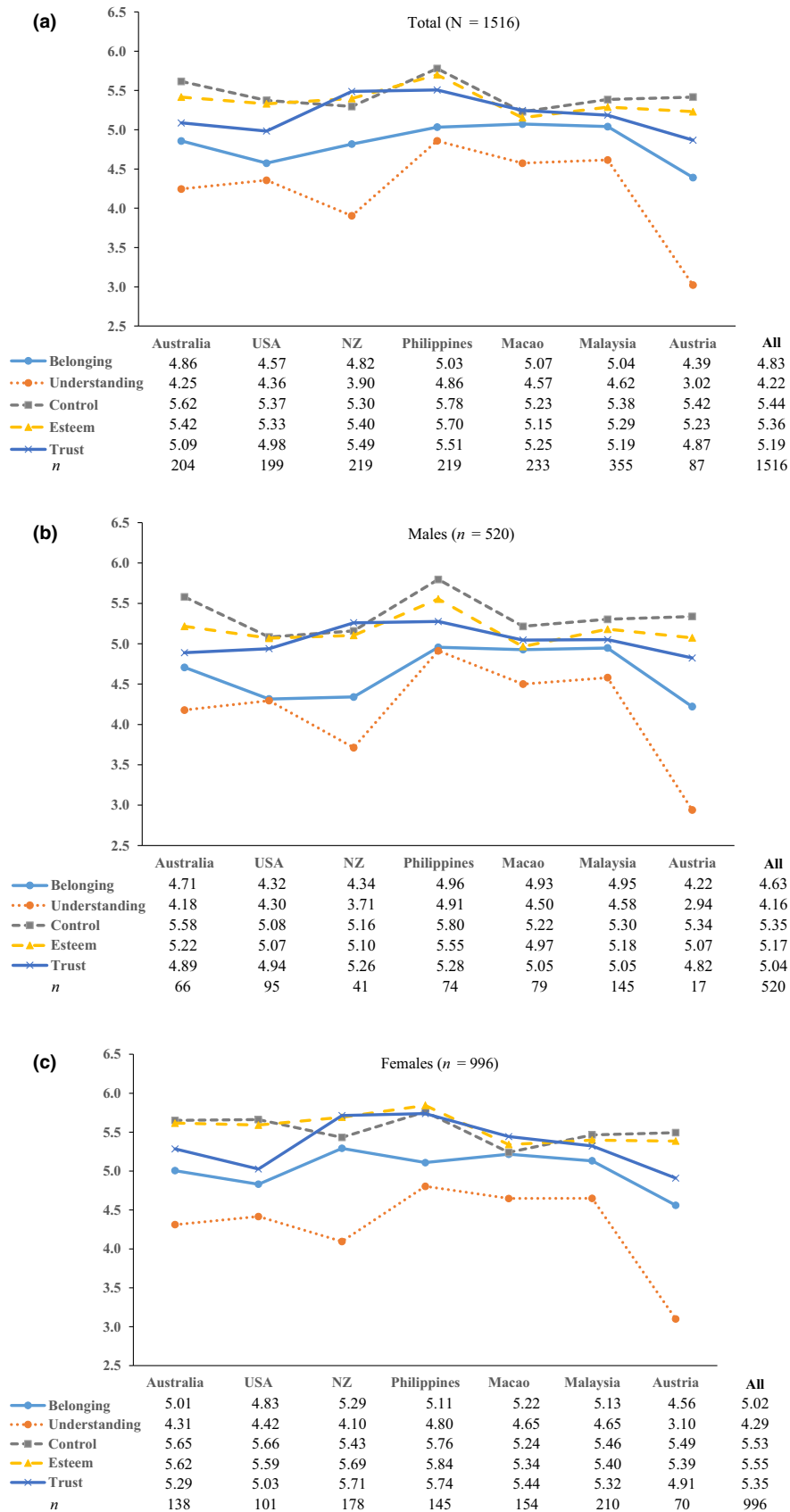


Figure 2 Means for the Belong, Understand, Control, Esteem, and Trust motives. (a) Data for all participants (N = 1516). (b) Data for males only (n = 520). (c) Data for females only (n = 996).

To make sense of the three-way interaction, we test our hypotheses about gender and cultural differences in the strengths of Belong and Control motives by conducting 2 (East vs. West)  $\times$  2 (Men vs. Women) ANOVAs. The result showed that the Belong motive was stronger in women than men ( $F[1, 1512] = 42.51, p < .001, \eta_p^2 = .027$ ), supporting  $H_{8b}$ , and that it was also stronger in the East than the West ( $F[1, 1512] = 29.36, p < .001, \eta_p^2 = .019$ ), supporting  $H_{7b}$ . However, their interaction was also significant,  $F[1, 1512] = 9.55, p = .002, \eta_p^2 = .006$ . The interaction indicated that the gender difference was stronger in the West ( $p < .001, \eta_p^2 = .027$ ) than in the East ( $p = .01, \eta_p^2 = .004$ ); cultural differences were larger among men ( $p < .001, \eta_p^2 = .018$ ) than among women ( $p < .05, \eta_p^2 = .003$ ). Next, the ANOVA indicated no East-West difference in the strength of the Control motive ( $F[1, 1512] < 1, p = .52$ ), contrary to  $H_{7c}$ . As mentioned earlier, the Control motive was stronger among women than men ( $F[1, 1512] = 11.81, p < .01, \eta_p^2 = .008$ ), rejecting  $H_{8c}$ . However, there was also a two-way interaction,  $F(1, 1512) = 3.84, p < .05, \eta_p^2 = .003$ , indicating that women had a stronger Control motive than men in the Western countries ( $p < .001, \eta_p^2 = .009$ ) but not in the Eastern countries ( $p = .27, \eta_p^2 = .009$ ).<sup>7</sup>

## Discussion

We developed the multi-factorial SMS based on the BUCET framework and tested the scale's construct validity in seven culturally distinct samples from seven countries. A series of multigroup CFAs indicated acceptable model fit in all samples. Despite the linguistic translation of the materials in China, Malaysia, and Austria, the model fit was the best in the Chinese sample. Moreover, full cross-cultural scalar invariance was demonstrated between the Australian and Austrian samples (as well as the Australian and United States samples—an English-speaking pair). Although the full scalar invariance was not upheld in other pairs of cultural samples, removing Understand and freeing the parameters for two items from each of the remaining factors provided support for partial scalar invariance, granting a degree of confidence to proceed with the four-factor SMS. This outcome was remarkable, given the high degree of statistical constraints imposed by the model involving seven groups and four latent constructs, each involving four indicators.

We then tested the nomological networks of the SMS subscales by examining their correlations to seven individual difference variables. The pattern of correlations was broadly consistent with our expectations, providing additional evidence of the SMS's construct validity. As expected, the Belong motive was positively associated with interdependent SC and attachment anxiety in all countries, with PNS in four countries, and generalized

trust in three countries. The Belong motive also correlated negatively with global self-esteem, although only in two English-speaking countries. The Belong–interdependent SC link was the strongest of all correlations, followed by Belong–attachment anxiety. Both links were consistent with previous research (e.g., Chang *et al.*, 2015, for interdependent SC; Leary *et al.*, 2013, for attachment anxiety), and so were the Belong–PNS link (Van Yperen *et al.*, 2014) and the Belong–global self-esteem link (e.g., Pillow *et al.*, 2015). The finding for the Belong–generalized trust link was new.

Like the Belong motive, the Understand motive also correlated positively with interdependent SC and attachment anxiety in all countries, but with PNS and generalized trust in fewer countries. Again, the Understand–interdependent SC link was the strongest, followed by Understand–attachment anxiety. The PNS's link with Understand was stronger than the one with Belong, consistent with the notion that the Understand motive reflects social epistemic needs. The link of generalized trust with Understand was also stronger than the one with Belong, which is a novel finding suggesting that generalized trust was associated with the desire for shared understanding.

In turn, the Control motive was positively associated with PNS and independent SC in all countries and with interdependent SC but more moderately and in six countries. The Control–PNS link was the strongest, followed by Control–independent SC. The latter link especially highlighted the autonomous/agentive nature of the Control motive. Consistent with our exploratory hypotheses based on conceptual analyses, Control was positively correlated with attachment anxiety in four countries and, unexpectedly, negatively correlated with attachment avoidance, although only in the United States.

The Esteem motive was positively associated with interdependent SC, attachment anxiety, and PNS, consistently in all countries. The pattern was similar to the Belong motive; however, unlike Belong, Esteem did not correlate with global self-esteem. Esteem was also uncorrelated with independent SC. The results were consistent with the conceptual definition of Esteem as linked to social acceptance and self-acceptance, thus more social and interdependent (Leary *et al.*, 1995).

Finally, the Trust motive was positively associated with interdependent SC and generalized trust in all countries. The latter link between Trust and generalized trust was the strongest across five motives. Trust also correlated positively with attachment anxiety in five countries and negatively with attachment avoidance, although only in the United States and Australia. The results were consistent with attachment theory and our conceptualization of the motive to trust as distinct from dyadic trust (Collisson *et al.*, 2018). There was also a weak link between Trust

and independent SC, as expected, though only in three countries, namely, the United States, China, and Malaysia, which was consistent with Takemura et al. (2016), who found a positive link between independent SC and generalized trust in China.

In sum, 11 of the 22 relationships gained support across all seven samples, and an additional six relationships gained support in four or more samples. In contrast, unanticipated correlations were rare, small in size, and culturally variable. Outcomes of attachment avoidance lacked consistency.

Additional findings of interest demonstrated the usefulness of the SMS for understanding each social motive and its relationships with individual difference variables. First, our general assumption that the Belong motive might be the most fundamental (because group life is the context in which core social motives serve their functions for survival) gained little support. In terms of correlations among motives, the Esteem motive correlated more strongly with other core motives. In terms of the mean level, the Control motive was the strongest, followed by the Esteem motive. Across countries, the Belong motive was relatively much weaker. Also, the pattern of correlations did not support the prediction of two clusters among core motives, such as agency motives (Belong, Understand, Control) and communal motives (Belong, Esteem, Trust).

Second, it merits a special note that the Esteem motive and global self-esteem were uncorrelated. The Esteem motive involves the desire to feel worthy and valued within the context of relationships. In contrast, as measured by Rosenberg's (1965) Self-Esteem Scale, global self-esteem reflects the self-perceived level of success, self-respect, and social comparison of competence. Consistent with the prior research, global self-esteem negatively correlated with the Belong motive (e.g., Leary et al., 2013), but it was uncorrelated with other motives. In contrast, the Esteem motive correlated positively with all other motives as well as interdependent SC.

Third, our data clarified that the Trust motive is distinct from interpersonal trust. Prior studies have reported a negative correlation between dyadic trust and both attachment anxiety and avoidance (e.g., Collisson et al., 2018); however, the Trust motive correlated positively with attachment anxiety but negatively with attachment avoidance, consistent with attachment theory (Mikulincer & Shaver, 2003). Further, data indicated some cultural variability in correlations involving attachment avoidance. The correlation with the Trust motive was negative but significant only in the United States and Australia, the two most individualistic cultures according to Hofstede (2001); correlations with the Control and Esteem motives were also negative but significant only in the United States. Thus, potentially, an avoidant

disposition may weaken social motives in individualist cultures. By comparison, correlations involving attachment anxiety were more consistent across cultural samples and all positive, although correlation with the Trust motive was absent in China and the Philippines, and one with the control motive was absent in China and Malaysia.

## The Social Motive Profiles

Our analysis of core motives found remarkable consistency in social motive profiles across gender and cultural samples. The Control motive was the strongest, followed by the Esteem and Trust motives and then the Belong motive, with the Understand motive being the weakest. Using ANOVA to analyse four core motives, omitting the Understand motive, we found that women had stronger social motives than men overall. Moreover, the hypothesis that women have a stronger Belong motive than men was supported. In contrast, there was no support for the expectation that men have a higher Control motive than women, as the Control motive was higher among women than among men, as were other motives. A gender-by-culture interaction on the Control motive showed women's stronger Control motive relative to men held true only in Western samples. Previous research has shown women to be more relationally interdependent than men in East Asia, North America, and Australia (Baumeister & Sommer, 1997; Cross et al., 2011; Kashima et al., 1995, 2011). However, the direct evidence that the Belong motive is stronger in women than men is rare. Leary et al. (2013) reported that half of their study samples indicated *men* had a higher need to belong than women, but the other half of the samples showed no pattern. To the best of our knowledge, the present study is the first to find social motives to be generally higher among women than men. Our analysis also found cultural variability in social motives. The Belong motive was, as expected, stronger in the East than in the West, and this cultural difference was larger among men than among women. In contrast, there was little evidence consistent with a prediction that the Control motive was stronger in the West compared to the East.

## Implications and Caveats

Overall, our analyses provided initial evidence to support the validity and reliability of the SMS in several countries from the East and the West. The majority of our predictions concerning the relationships between the SMS subscales and individual-difference variables were supported consistently across cultural groups. Using the SMS, we found evidence that the Belong motive is stronger in the East than the West, consistent with the

implications of prior research (e.g., Kitayama *et al.*, 1997; Markus, 2016; Markus & Kitayama, 1991; Triandis, 1989). The usefulness of the SMS was demonstrated in several ways: for instance, by a novel finding that core social motives generally, but especially the Belong motive, tend to be higher among female than male students. We believe our scale will be instrumental in further investigations of core social motives that underlie behaviours and emotional expressions of people in social contexts and in asking questions such as how different cultural contexts, institutions, and changing environments (e.g., climate, migration, societal threats) may influence people's motivations for social engagement.

Several caveats are due. First, we were unable to establish full scalar invariance of the SMS subscales beyond a few pairs of countries due to the poor fit of the Understand scale. The construct of the desire for shared understanding was perhaps tricky to convey to participants by using short statements and requires improvement. Also, despite our best intention to measure five core motives using items with minimum linguistic and stylistic differences, the wording of items used to assess the Control, Esteem, and Trust factors were more consistent and similar compared to the Belong and Understand items, which may have contributed to the relatively lower means obtained for the latter two motives. Some future adjustments to items are required. From another perspective, however, the present SMS may be considered limited because of its narrow breadth. Because we intended to use the SMS in diverse cultural and linguistic groups, we generated relatively abstract and contextless statements, aiming to reduce differential item functioning. Concrete items and those with specific social contexts are likely to cue culturally distinct associations (e.g., Cheung *et al.*, 2011). It is difficult to say whether the current SMS fully covers the core social motive constructs in all of the cultures we studied. Future research needs to delineate potentially culture-specific aspects of these constructs and supplement the current scale as required.

Concerning analytic methods, the multigroup CFA approach used in our analysis may have been too strict. Some other analytic options are available; for instance, exploratory structural equation modelling (ESEM) combines EFA and CFA approaches and allows for a more precise description of where models differ between groups (e.g., Tóth-Király *et al.*, 2017). We recommend further analyses using alternative methods. Our analysis also used the same samples for conducting both CFA and EFA, and only four of the seven items initially generated were included in these analyses, which are additional limitations. Other issues that require examination in future cross-cultural research are differential item functioning,

which refers to measurement artefacts at item levels (Boer *et al.*, 2018), potential method biases such as culturally-specific scale use (e.g., acquiescence), and the effects of social context (e.g., the reference-group effect). These methodological issues may become even more serious when non-student samples are involved in future research, depending on the investigation context.

Finally, we used cultural samples of convenience. More representative cultural samples are beneficial to use in future cross-cultural investigations. We purposely focused on university students in the current research, who are future leaders of their respective societies. The social motives of these people may help us forecast the future of these societies. The present results are, therefore, not expected to generalize to different age groups. Future research may collect data from a broader spectrum of people from different age groups and socioeconomic statuses to examine variability in results and their generalizability.

## Conclusions

The BUCET conceptual framework guided the development of our new SMS that aimed to capture the five social motives of Belong, Understand, Control, Esteem, and Trust. Our study has provided initial evidence supporting the validity and reliability of the scale in seven countries from Eastern and Western cultures. Moreover, the analysis supported the full scalar invariance of the five-factor model between a few samples of Western countries and partial scalar invariance of four factors except for the Understand motive across all seven countries. The pattern of correlations between the SMS subscales and several individual difference variables was primarily consistent with prior expectations. The mean analysis indicated that the relative strengths of the four social motives were similar across culture and gender. However, people from Eastern cultures reported a stronger Belong motive than their peers from Western cultures, and women reported generally stronger social motives, especially a stronger Belong motive. Although future research needs to further develop the SMS, including the breadth of the constructs, the current work has laid the foundation for further research on core social motives by using our new scale. Future research on core social motives may explore impacts of culture, institutions, and environment on social motives across different age groups to enrich psychological research from a motivational perspective.

## Acknowledgement

We thank Rowan Jacques-Hamilton for his assistance with data analysis.



## Conflict of Interest

The authors declare there are no conflicts of interest.

## Author Contributions

ESK and STF contributed to the scale development. ESK, GN, DO, HD, JK, GC, SWG, SNY, SLW, and TQ developed the online questionnaire. HD, JK, GC, SWG, SNY, and SLW contributed to the translation and back-translation of the questionnaire. ESK, NP, DO, HD, JK, SWG, and GN contributed to data analysis. ESK wrote the initial draft; NP assisted with tables and figures. All authors commented on drafts; NP assisted with revisions.

## Ethical Approval

This project was reviewed and approved by the institutional review boards for human subjects at Princeton University, La Trobe University, University of the Philippines Diliman, University of Macau, University of Salzburg, University of Malaysia Sabah, Universiti Putra Malaysia, and Victoria University of Wellington, and conducted accordingly.

## Data Availability Statement

The data that support the findings of this study are available from the corresponding author on request.

- 1 Furthermore, the relationships between social motives and other variables, including individual differences, are not necessarily independent of each other; for instance, certain cultural practices may strengthen gender differences in the experience of a particular social motive and in cultural groups where they are practiced compared to those where they are not, potentially leading to differences in the extent of gender differences. Thus, culture may moderate the correlations between social motives and other variables.
- 2 The Belong motive subscale items, B1, B2, B3, and B4 (see Table 4), were identical to Leary et al.'s (2013) Item 2, 5, 9, and 10, respectively.
- 3 Determining the minimum sample size for structural equation models including CFA is complex (e.g., Kline, 2015). A common and straightforward approach focuses on the parameter to participant ratio (also referred to as N:q ratio) of the groups. Minimum recommendations for this ratio range from 5:1 (Bentler & Chou, 1987) through 10:1 (Schreiber et al., 2006) to 20:1 (Kline, 2015). All subsamples exceeded all of the N:q ratios except the Austrian one, in which this ratio was 17.3:1. Thus, the Austrian sample size is around the suggested minimum, potentially compromising the Austrian results' trustworthiness. However, in addition

to N:q rules of thumb, larger samples are required when factors have few (i.e., less than three) indicators, indicators covary highly with multiple factors, and when covariances between factors are low (Kline, 2015), none of which is true for the model used here, which should increase our trust in the results of the Austrian subsample despite its marginal size.

- 4 Due to administrative error, 247 Malaysian participants from Kuala Lumpur did not fill out the individual difference measures, reducing the sample size to 108 in Malaysia and 1216 for the whole sample.
- 5 Somewhat unexpectedly, the Understand motive also correlated negatively with self-esteem ( $r_{\text{total}} = -.11^{***}$ ,  $r_{\text{ml}} = -.06$ , n.s.), but was significant only in New Zealand and Malaysia ( $-.16$  to  $-.17$ ).
- 6 Before examining cultural and gender patterns, potential subsample differences were examined for the Australian sample (involving two subsamples with different recruitment procedures) and the Malaysian sample (involving the Kuala Lumpur and Sabah subsamples). We conducted a 5 (Motive Type)  $\times$  2 (Group) mixed ANOVA, with motive type as within factor and group as between factor, for data from Australia and Malaysia, separately. We found no significant group effect nor Motive Type  $\times$  Group interaction effect,  $F_s < 1$ , in Australia. In Malaysia, the group effect was nonsignificant  $F(1, 353) = 1.65$ ,  $p = .20$ , but Motive Type  $\times$  Group interaction was significant,  $F(4, 1412) = 3.01$ ,  $p < .05$ ,  $\eta_p^2 = .01$ . As the latter effect was small, and the sample size was quite large, we combined the subsamples in Malaysia and Australia. Exercising due caution is required, however, in interpreting the Malaysian results.
- 7 For completeness, ANOVA was also run for the Esteem and Trust motives. Results showed only a gender main effect,  $F(1, 1512) = 58.65$  and  $45.57$ , for Esteem and Trust, respectively,  $ps < .001$ ,  $\eta_p^2 = .037$  and  $.029$ .

## References

- Adler, A. (1930). Individual psychology. In C. Murchison (Ed.), *Psychologies of 1930* (pp. 395–405). Clark University Press. <https://doi.org/10.1037/11017-021>
- Algoe, S. B., & Jolink, T. A. (2021). Social bonds: A new book at an old topic. In P. A. M. Van Lange, E. T. Higgins, & A. W. Kruglanski (Eds.), *Social psychology handbook of basic principles* (3rd ed., pp. 140–162). Guilford Press.
- Allport, G. W. (1955). *Becoming: Basic considerations for a psychology of personality*. Yale University Press
- Angyal, A. (1951). A Theoretical Model for Personality Studies. *Journal of Personality*, *20*(1), 131–142. <https://doi.org/10.1111/j.1467-6494.1951.tb01517.x>
- Bakan, D. (1966). *The duality of human existence: An essay on psychology and religion*. Rand McNally.

- Balliet, D., Wu, J., & Van Lange, P. A. M. (2021). Indirect reciprocity, gossip, and reputation-based cooperation. In P. A. M. Van Lange, E. T. Higgins, & A. W. Kruglanski (Eds.), *Social psychology handbook of basic principles* (3rd ed., pp. 265–287). Guilford Press.
- Barnes, C. D., Carvallo, M., Brown, R. P., & Osterman, L. (2010). Forgiveness and the need to belong. *Personality and Social Psychology Bulletin*, 36(9), 1148–1160. <https://doi.org/10.1177/0146167210378852>
- Bartholomew, K., & Horowitz, L. M. (1991). Attachment styles among young adults: A test of a four-category model. *Journal of Personality and Social Psychology*, 61, 226–244. <https://doi.org/10.1037/0022-3514.61.2.226>
- Bartlett, F. C. (1932). *Remembering*. Cambridge University Press.
- Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin*, 117(3), 497–529. <https://doi.org/10.4324/9781351153683-3>
- Baumeister, R. F., & Newman, L. S. (1994). How stories make sense of personal experiences: Motives that shape autobiographical narratives. *Personality and Social Psychology Bulletin*, 20(6), 676–690. <https://doi.org/10.1177/0146167294206006>
- Baumeister, R. F., Smart, L., & Boden, J. M. (1996). Relation of threatened egotism to violence and aggression: The dark side of high self-esteem. *Psychological Review*, 103(1), 5–33. <https://doi.org/10.1037/0033-295x.103.1.5>
- Baumeister, R. F., & Sommer, K. L. (1997). What do men want? Gender differences and two spheres of belongingness: Comment on Cross and Madson (1997). *Psychological Bulletin*, 122(1), 38–44. <https://doi.org/10.1037/0033-2909.122.1.38>
- Bentler, P. M., & Chou, C. P. (1987). Practical issues in structural modeling. *Sociological Methods & Research*, 16(1), 78–117. <https://doi.org/10.1177/0049124187016001004>
- Boer, D., Hanke, K., & He, J. (2018). On detecting systematic measurement error in cross-cultural research: A review and critical reflection on equivalence and invariance tests. *Journal of Cross-Cultural Psychology*, 49(5), 713–734. <https://doi.org/10.1177/0022022117749042>
- Bowlby, J. (1969). *Attachment and loss. Vol. I: Attachment*. Penguin Books.
- Bowlby, J. (1973). *Attachment and loss. Vol. II. Separation: Anxiety and anger*. Penguin Books.
- Brehm, J. H. (1966). *A theory of psychological reactance*. Academic Press.
- Brennan, K. A., Clark, C. L., & Shaver, P. R. (1998). Self-report measurement of adult attachment: An integrative overview. In J. A. Simpson, & W. S. Rholes (Eds.), *Attachment theory and close relationships* (pp. 46–76). Guilford Press.
- Burger, J. M. (1995). Need for control and self-esteem. In M. H. Kernis (Ed.), *Efficacy, agency, and self-esteem* (pp. 217–233). Springer.
- Campbell, L., & Stanton, S. C. (2019). Adult attachment and trust in romantic relationships. *Current Opinion in Psychology*, 25, 148–151. <https://doi.org/10.1016/j.copsyc.2018.08.004>
- Campbell, W. K., & Sedikides, C. (1999). Self-threat magnifies the self-serving bias: A meta-analytic integration. *Review of General Psychology*, 3(1), 23–43. <https://doi.org/10.1037/1089-2680.3.1.23>
- Caporael, L. R., & Brewer, M. B. (1991). Reviving evolutionary psychology: Biology meets society. *Journal of Social Issues*, 47(3), 187–195. <https://doi.org/10.1111/j.1540-4560.1991.tb01830.x>
- Chang, E. C., Kahle, E. R., & Hirsch, J. K. (2015). Understanding how domestic abuse is associated with greater depressive symptoms in a community sample of female primary care patients. *Violence against Women*, 21(6), 700–711. <https://doi.org/10.1177/1077801215576580>
- Cheung, C. M. K., Chiu, P.-Y., & Lee, M. K. O. (2011). Online social networks: Why do students use facebook? *Computers in Human Behavior*, 27(4), 1337–1343. <https://doi.org/10.1016/j.chb.2010.07.028>
- Collisson, B., Browne, B. L., McCutcheon, L. E., Britt, R., & Browne, A. M. (2018). The interpersonal beginnings of fandom: The relation between attachment style, trust, and the admiration of celebrities. *Interpersonal: An International Journal on Personal Relationships*, 12(1), 23–33. <https://doi.org/10.5964/ijpr.v12i1.282>
- Cross, S. E., Hardin, E. E., & Gercek-Swing, B. (2010). The what, how, why, and where of self-construal. *Personality and Social Psychology Review*, 15(2), 142–179. <https://doi.org/10.1177/1088868310373752>
- De Cremer, D., & Leonardelli, G. J. (2003). Cooperation in social dilemmas and the need to belong: The moderating effect of group size. *Group Dynamics: Theory, Research, and Practice*, 7, 168–174. <https://doi.org/10.1037/1089-2699.7.2.168>
- DeWall, C. N., & Chester, D. S. (2021). Aggression, violence, and revenge. In P. A. M. Van Lange, E. T. Higgins, & A. W. Kruglanski (Eds.), *Social psychology handbook of basic principles* (3rd ed., pp. 288–317). Guilford Press.
- Dodgson, P. G., & Wood, J. V. (1998). Self-esteem and the cognitive accessibility of strengths and weaknesses after failure. *Journal of Personality and Social Psychology*, 75(1), 178–197. <https://doi.org/10.1037/0022-3514.75.1.178>
- Dogan, U. (2015). Student engagement, academic self-efficacy, and academic motivation as predictors of academic performance. *The Anthropologist*, 20(3), 553–561. <https://doi.org/10.1080/09720073.2015.11891759>
- Eagly, A. H., & Wood, W. (1999). The origins of sex differences in human behavior: Evolved dispositions versus social roles. *American Psychologist*, 54(6), 408–423. <https://doi.org/10.1037/0003-066X.54.6.408>
- Echterhoff, G., & Higgins, E. T. (2021). Shared reality: Motivated connection and motivated cognition. In P. A. M. Van Lange, E. T. Higgins, & A. W. Kruglanski (Eds.), *Social psychology handbook of basic principles* (3rd ed., pp. 85–105). Guilford Press.
- Epley, N., & Kardas, M. (2021). Understanding the minds of others: Activation, application, and accuracy of mind perception. In P. A. M. Van Lange, E. T. Higgins, & A. W. Kruglanski (Eds.), *Social psychology handbook of basic principles* (3rd ed., pp. 163–180). Guilford Press.
- Epstein, S. (1991). Cognitive-experiential self-theory: An integrative theory of personality. In R. C. Curtis (Ed.), *The relational self: Theoretical convergences in psychoanalysis and social psychology* (pp. 111–137). .
- Festinger, L. (1958). The motivating effect of cognitive dissonance. In G. Lindzey (Ed.), *Assessment of human motives* (pp. 65–86). .
- Fiedler, K., & McCaughey, L. (2021). Judgement and decision making: Basic principles of adaptive behavior. In P. A. M. Van Lange, E. T. Higgins, & A. W. Kruglanski (Eds.), *Social psychology handbook of basic principles* (3rd ed., pp. 43–66). Guilford Press.
- Finkel, E. J., & Fitzsimons, G. M. (2021). Goal transactivity. In P. A. M. Van Lange, E. T. Higgins, & A. W. Kruglanski (Eds.), *Social*

- psychology handbook of basic principles (3rd ed., pp. 202–221). Guilford Press.
- Fiske, S. T. (2002). Five core social motives, plus or minus five. In S. J. Spencer, S. Fein, M. P. Zanna, & J. Olson (Eds.), *Motivated social perception: The Ontario Symposium* (Vol. 9, pp. 233–246). Erlbaum.
- Fiske, S. T. (2004). *Social beings: A core motives approach to social psychology*. Wiley.
- Fiske, S. T., Nicolas, G., & Bai, X. (2021). The stereotype content model: How we make sense of individuals and groups. In P. A. M. Van Lange, E. T. Higgins, & A. W. Kruglanski (Eds.), *Social psychology handbook of basic principles* (3rd ed., pp. 392–410). Guilford Press.
- Freud, S. (1963). Instincts and their vicissitudes. In P. Rieff (Ed.), *Sigmund Freud: General psychological principles: Papers on metapsychology* (pp. 83–103). Collier Books. (Original work published in 1915)
- Fromm, E. (1947). *Man for himself*. Holt Rinehart Winston.
- Fromm, E. (1955). *The sane society*. Rinehart.
- Greenberg, J., Pyszczynski, T., & Solomon, S. (1986). The causes and consequences of a need for self-esteem: A terror management theory. In R. F. Baumeister (Ed.), *Public self and private self* (pp. 189–212). Springer.
- Gurtman, M. B. (1992). Construct validity of interpersonal personality measures: The interpersonal circumplex as a nomological net. *Journal of Personality and Social Psychology*, 63(1), 105–118. <https://doi.org/10.1037/0022-3514.63.1.105>
- Hales, A. H., & Williams, K. D. (2021). Social ostracism: Theoretical foundations and basic principles. In P. A. M. Van Lange, E. T. Higgins, & A. W. Kruglanski (Eds.), *Social psychology handbook of basic principles* (3rd ed., pp. 337–349). Guilford Press.
- Hamedani, M. G., Markus, H. R., & Fu, A. S. (2013). In the land of the free, interdependent action undermines motivation. *Psychological Science*, 24(2), 189–196. <https://doi.org/10.1177/0956797612452864>
- Harris, P. R., Griffin, D. W., Napper, L. E., Bond, R., Schütz, B., Stride, C., & Brearley, I. (2019). Individual differences in self-affirmation: Distinguishing self-affirmation from positive self-regard. *Self and Identity*, 18(6), 589–630. <https://doi.org/10.1080/15298868.2018.1504819>
- Hart, J., Shaver, P. R., & Goldenberg, J. L. (2005). Attachment, self-esteem, worldviews, and terror management: Evidence for a tripartite security system. *Journal of Personality and Social Psychology*, 88(6), 999. <https://doi.org/10.1037/e633982013-091>
- Hawkey, L. C., & Cacioppo, J. T. (2010). Loneliness matters: A theoretical and empirical review of consequences and mechanisms. *Annals of Behavioral Medicine*, 40(2), 218–227. <https://doi.org/10.1007/s12160-010-9210-8>
- Heatherton, T. F., & Vohs, K. D. (2000). Interpersonal evaluations following threats to self: Role of self-esteem. *Journal of Personality and Social Psychology*, 78(4), 725. <https://doi.org/10.1037/0022-3514.78.4.725>
- Heider, F. (1958). *The psychology of interpersonal relations*. Wiley.
- Heine, S. J., Proulx, T., & Vohs, K. D. (2006). The meaning maintenance model: On the coherence of social motivations. *Personality and Social Psychology Review*, 10(2), 88–110. [https://doi.org/10.1207/s15327957pspr1002\\_1](https://doi.org/10.1207/s15327957pspr1002_1)
- Higgins, E. T. (1992). Social cognition as a social science: How social action creates meaning. In D. N. Ruble, P. R. Costanzo, & M. E. Oliveri (Eds.), *The social psychology of mental health: Basic mechanisms and applications* (pp. 241–278). Guilford Press.
- Higgins, E. T., & Nakkawita, E. (2021). Motives working together: Value, truth, and control in goal selection and pursuit. In P. A. M. Van Lange, E. T. Higgins, & A. W. Kruglanski (Eds.), *Social psychology handbook of basic principles* (3rd ed., pp. 85–105). Guilford Press.
- Hirschfeld, G., & von Brachel, R. (2014). Improving multiple-group confirmatory factor analysis in R—A tutorial in measurement invariance with continuous and ordinal indicators. *Practical Assessment, Research, and Evaluation*, 19(1), 7.
- Hofstede, G. (2001). *Culture's consequences: Comparing values, behaviors, institutions and organizations across nations* (2nd ed.). Sage publications.
- Horney, K. (1945). *Our inner conflicts: A constructive theory of neurosis*.
- Hubbard, A. D., Kalkstein, D. A., Liberman, N., & Trope, Y. (2021). Construal processes. In P. A. M. Van Lange, E. T. Higgins, & A. W. Kruglanski (Eds.), *Social psychology handbook of basic principles* (3rd ed., pp. 67–84). Guilford Press.
- International Testing Commission (2017). ITC Guidelines for translating and adapting tests (Second Edition). *International Journal of Testing*, 18(2), 101–134. <https://doi.org/10.1080/15305058.2017.1398166>
- Iyengar, S. S., & Lepper, M. R. (1999). Rethinking the value of choice: A cultural perspective on intrinsic motivation. *Journal of Personality and Social Psychology*, 76, 349–366. <https://doi.org/10.1037/0022-3514.76.3.349>
- Janoff-Bulman, R. (1992). *Shattered assumptions: Towards a new psychology of trauma*. Free Press.
- Jones, E. E., & Davis, K. E. (1965). From acts to dispositions: The attribution process in person perception. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vo. 1, pp. 219–266). Academic Press.
- Kashima, E. S., Hardie, E. A., Wakimoto, R., & Kashima, Y. (2011). Culture- and gender-specific implications of relational and collective contexts on spontaneous self-descriptions. *Journal of Cross-Cultural Psychology*, 42(5), 740–758. <https://doi.org/10.1177/0022022110362754>
- Kashima, Y., Yamaguchi, S., Kim, U., Choi, S. C., Gelfand, M. J., & Yuki, M. (1995). Culture, gender, and self: A perspective from individualism-collectivism research. *Journal of Personality and Social Psychology*, 69(5), 925–937. <https://doi.org/10.1037/0022-3514.69.5.925>
- Kelley, H. H. (1967). Attribution theory in social psychology. In D. Levine (Ed.), *Nebraska symposium on motivation* (pp. 192–240). University of Nebraska Press.
- Kelly, G. A. (1955). *The psychology of personal constructs*. Norton.
- Kitayama, S., Markus, H. R., Matsumoto, H., & Norasakkunkit, V. (1997). Individual and collective processes in the construction of the self: self-enhancement in the United States and self-criticism in Japan. *Journal of Personality and Social Psychology*, 72(6), 1245–1267. <https://doi.org/10.1037/0022-3514.72.6.1245>
- Kline, R. B. (2015). *Principles and practice of structural equation modeling* (4th ed.). Guilford publications.
- Kurman, J. (2003). Why is self-enhancement low in certain collectivist cultures? An investigation of two competing explanations. *Journal of Cross-Cultural Psychology*, 34(5), 496–510. <https://doi.org/10.1177/0022022103256474>
- Lam, A. G., & Zane, N. W. S. (2004). Ethnic differences in coping with interpersonal stressors. *Journal of Cross-Cultural Psychology*, 35(4), 446–459. <https://doi.org/10.1177/0022022104266108>

- Landau, M. J., Kay, A. C., & Whitson, J. A. (2015). Compensatory control and the appeal of a structured world. *Psychological Bulletin*, *141*(3), 694–722. <https://doi.org/10.1037/a0038703>
- Leary, M. R., Kelly, K. M., Cottrell, C. A., & Schreindorfer, L. S. (2013). Construct validity of the need to belong scale: Mapping the nomological network work. *Journal of Personality Assessment*, *95*(6), 610–624. <https://doi.org/10.1080/00223891.2013.819511>
- Leary, M. R., Tambor, E. S., Terdal, S. K., & Downs, D. L. (1995). Self-esteem as an interpersonal monitor: The sociometer hypothesis. *Journal of Personality and Social Psychology*, *68*, 518–530. <https://doi.org/10.1037/0022-3514.68.3.518>
- Lee, R. M., & Robbins, S. B. (1998). The relationship between social connectedness and anxiety, self-esteem, and social identity. *Journal of Counseling Psychology*, *45*(3), 338–345. <https://doi.org/10.1037/0022-0167.45.3.338>
- Ma, A., Axt, J., & Kay, A. C. (2019). A control-based account of stereotyping. *Journal of Experimental Social Psychology*, *84*, 103819. <https://doi.org/10.1016/j.jesp.2019.103819>
- Markus, H. R. (2016). What moves people to action? Culture and motivation. *Current Opinion in Psychology*, *8*, 161–166. <https://doi.org/10.1016/j.copsyc.2015.10.028>
- Markus, H. R., & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion, and motivation. *Psychological Review*, *98*(2), 224–253. <https://doi.org/10.1037/0033-295x.98.2.224>
- Maslow, A. H. (1955). Deficiency motivation and growth motivation. In M. R. Jones (Ed.), *Nebraska symposium on motivation*, Vol. 3 (vol. 3, pp. 1–30). University of Nebraska Press.
- Maslow, A. H. (1962). Some basic propositions of a growth and self-actualization psychology. In A. W. Combs (Ed.) (Yearbook Committee Chairman), *Perceiving, behaving, becoming: A new focus for education* (pp. 34–49). Yearbook of the Association for Supervision and Curriculum Development.
- McClelland, D. C. (1951). *Personality*. William Sloane.
- McClelland, D. C., Atkinson, J. W., Clark, R. A., & Lowell, E. L. (1953). *The achievement motive*. Appleton Century Crofts.
- Mikulincer, M., & Shaver, P. R. (2003). The attachment behavioral system in adulthood: Activation, psychodynamics, and interpersonal processes. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 35, pp. 53–152). Academic Press.
- Morling, B., & Fiske, S. T. (1999). Defining and measuring harmony control. *Journal of Research in Personality*, *33*(4), 379–414. <https://doi.org/10.1006/jrpe.1999.2254>
- Morry, M. M., & Kito, M. (2009). Relational-interdependent self-construal as a predictor of relationship quality: The mediating roles of one's own behaviors and perceptions of the fulfillment of friendship functions. *The Journal of Social Psychology*, *149*(3), 305–322. <https://doi.org/10.3200/socp.149.3.305-322>
- Murray, H. A. (1954). Toward a classification of interaction. In T. Parsons, & E. A. Shils (Eds.), *Toward a general theory of action* (pp. 434–464). Harvard University Press.
- Murray, H. A. (1959). Preparations for the scaffold of a comprehensive system. In S. Koch (Ed.), *Psychology: A study of a science, Vol. 3. Formulations of the person and the social context* (pp. 7–54). McGraw-Hill.
- Murray, H. A., & Kluckhohn, C. (1959). Outline of a conception of personality. In C. Kluckhohn, H. A. Murray, & D. M. Schneider (Eds.), *Personality in nature, society, and culture* (2nd ed., pp. 3–49). Knopf.
- Neuberg, S. L., & Newsom, J. T. (1993). Personal need for structure: Individual differences in the desire for simpler structure. *Journal of Personality and Social Psychology*, *65*(1), 113. <https://doi.org/10.1037/0022-3514.65.1.113>
- O'Brien, E. J., & Epstein, S. (1973). *MSEI: The multidimensional self-esteem inventory professional manual*. Psychological Assessment Resources.
- Pickett, C. L., Gardner, W. L., & Knowles, M. (2004). Getting a cue: The need to belong and enhanced sensitivity to social cues. *Personality and Social Psychology Bulletin*, *30*(9), 1095–1107. <https://doi.org/10.1177/0146167203262085>
- Pillow, D. R., Malone, G. P., & Hale, W. J. (2015). The need to belong and its association with fully satisfying relationships: A tale of two measures. *Personality and Individual Differences*, *74*, 259–264. <https://doi.org/10.1016/j.paid.2014.10.031>
- Putnick, D. L., & Bornstein, M. H. (2016). Measurement invariance conventions and reporting: The state of the art and future directions for psychological research. *Developmental Review*, *41*, 71–90. <https://doi.org/10.1016/j.dr.2016.06.004>
- Rank, O. (1929). *The trauma of birth*. Harcourt Brace.
- Rank, O. (1945). *Will therapy and truth and reality*. Knopf.
- Reis, H. T. (2021). Relational motives. In P. A. M. Van Lange, E. T. Higgins, & A. W. Kruglanski (Eds.), *Social psychology handbook of basic principles* (3rd ed., pp. 240–262). Guilford Press.
- Rogers, C. R. (1959). A theory of therapy, personality, and interpersonal relationships, as developed in the client-centered framework. In S. Koch (Ed.), *Psychology: A study of a science, Vol. 3. Formulations of the person and the social context* (pp. 184–256). McGraw-Hill.
- Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton University Press.
- Rossee, Y. (2012). lavaan: An R package for structural equation modeling. *Journal of Statistical Software*, *48*(2), 1–36. <https://doi.org/10.18637/jss.v048.i02>
- Rotenberg, K. J. (1994). Loneliness and interpersonal trust. *Journal of Social and Clinical Psychology*, *13*(2), 152–173. <https://doi.org/10.1521/jscp.1994.13.2.152>
- Ryan, R. M., & Deci, E. L. (2021). Human autonomy in social psychology: A self-determination theory perspective. In P. A. M. Van Lange, E. T. Higgins, & A. W. Kruglanski (Eds.), *Social psychology handbook of basic principles third edition* (3rd ed., pp. 106–123). Guilford Press.
- Schönbach, P. (1990). *Account episodes: The management of escalation of conflict*. Cambridge University Press.
- Schreiber, J. B., Nora, A., Stage, F. K., Barlow, E. A., & King, J. (2006). Reporting structural equation modeling and confirmatory factor analysis results: A review. *The Journal of Educational Research*, *99*(6), 323–338. <https://doi.org/10.3200/joer.99.6.323-338>
- Sedikides, C., Gaertner, L., & Cai, H. (2015). On the panculturality of self-enhancement and self-protection motivation: The case for the universality of self-esteem. *Advances in Motivation Science*, *2*, 185–241. <https://doi.org/10.1016/bs.adms.2015.04.002>
- Simpson, J. A., Rholes, W. S., Eller, J., & Paetzold, R. L. (2021). Major principles of attachment theory: Overview, hypotheses, and research ideas. In P. A. M. Van Lange, E. T. Higgins, & A. W. Kruglanski (Eds.), *Social psychology handbook of basic principles third edition* (3rd ed., pp. 222–239). Guilford Press.
- Solomon, S., Greenberg, J., & Pyszczynski, T. (1991). A terror management theory of social behavior: The psychological functions

- of self-esteem and cultural worldviews. *Advances in Experimental Social Psychology*, 24, 93–159. [https://doi.org/10.1016/S0065-2601\(08\)60328-7](https://doi.org/10.1016/S0065-2601(08)60328-7)
- Staub, E. (1989). *The roots of evil: The origins of genocide and other group violence*. Cambridge University Press.
- Stephens, N. M., Fryberg, S. A., Markus, H. R., Johnson, C. S., & Covarrubias, R. (2012). Unseen disadvantage: how American universities' focus on independence undermines the academic performance of first-generation college students. *Journal of Personality and Social Psychology*, 102(6), 1178–1197. <https://doi.org/10.1037/a0027143>
- Stevens, L. E., & Fiske, S. T. (1995). Motivation and cognition in social life: A social survival perspective. *Social Cognition*, 13, 189–214. <https://doi.org/10.1521/soco.1995.13.3.189>
- Sullivan, H. S. (1947). *Conceptions of modern psychiatry*. Norton.
- Takata, T. (1993). Social comparison and formation of self-concept in adolescent: Some findings about Japanese college students. *Japanese Journal of Educational Psychology*, 41, 339–348. (in Japanese with English abstract) [https://doi.org/10.5926/jjep1953.41.3\\_339](https://doi.org/10.5926/jjep1953.41.3_339)
- Takemura, K., Hamamura, T., Guan, Y., & Suzuki, S. (2016). Contextual effect of wealth on independence: An examination through regional differences in China. *Frontiers in Psychology*, 7, 384. <https://doi.org/10.3389/fpsyg.2016.00384>
- Thomsen, L., Sidanius, J., & Fiske, A. P. (2007). Interpersonal leveling, independence, and self-enhancement: a comparison between Denmark and the US, and a relational practice framework for cultural psychology. *European Journal of Social Psychology*, 37(3), 445–469. <https://doi.org/10.1002/ejsp.366>
- Tóth-Király, I., Bőthe, B., Rigó, A., & Orosz, G. (2017). An illustration of the exploratory structural equation modeling (ESEM) framework on the passion scale. *Frontiers in Psychology*, 8, 1968. <https://doi.org/10.3389/fpsyg.2017.01968>
- Triandis, H. C. (1989). The self and social behavior in differing cultural contexts. *Psychological Review*, 96(3), 506–520. <https://doi.org/10.1037/0033-295X.96.3.506>
- van de Vijver, F. J., & Leung, K. (2011). Equivalence and bias: A review of concepts, models, and data analytic procedures. In D. Matsumoto, & F. J. R. van de Vijver (Eds.), *Culture and psychology: Cross-cultural research methods in psychology* (pp. 17–45). Cambridge University Press.
- Van Dyne, L., Vandewalle, D., Kostova, T., Latham, M. E., & Cummings, L. L. (2000). Collectivism, propensity to trust and self-esteem as predictors of organizational citizenship in a non-work setting. *Journal of Organizational Behavior*, 21(1), 3–23.
- van Kleef, G. A. (2021). The social power of emotions: Emerging principles of the social functions and effects of emotional expression. In P. A. M. Van Lange, E. T. Higgins, & A. W. Kruglanski (Eds.), *Social psychology handbook of basic principles* (3rd ed., pp. 350–370). Guilford Press.
- Van Lange, P. A. M., Higgins, E. T., & Kruglanski, A. W. (Eds.). (2021). *Social psychology handbook of basic principles* (3rd ed). Guilford Press.
- Van Yperen, N. W., Rietzschel, E. F., & De Jonge, K. M. (2014). Blended working: For whom it may (not) work. *PLoS One*, 9(7), e102921. <https://doi.org/10.1371/journal.pone.0102921>
- Walsh, S. P., White, K. M., Cox, S., & Young, R. M. (2011). Keeping in constant touch: The predictors of young Australians' mobile phone involvement. *Computers in Human Behavior*, 27(1), 333–342. <https://doi.org/10.1016/j.chb.2010.08.011>
- Wei, M., Russell, D. W., Mallinckrodt, B., & Vogel, D. L. (2007). The experiences in close relationship scale (ECR)-short form: Reliability, validity, and factor structure. *Journal of Personality Assessment*, 88(2), 187–204. <https://doi.org/10.1080/00223890701268041>
- White, R. W. (1959). Motivation reconsidered: The concept of competence. *Psychological Review*, 66(5), 297–333. <https://doi.org/10.1037/h0040934>
- Wiekens, C. J., & Stapel, D. A. (2008). I versus we: The effects of self-construal level on diversity. *Social Cognition*, 26(3), 368–377. <https://doi.org/10.1521/soco.2008.26.3.368>
- Yamagishi, T., & Yamagishi, M. (1994). Trust and commitment in the United States and Japan. *Motivation and Emotion*, 18(2), 129–166. <https://doi.org/10.1007/bf02249397>
- Yamaguchi, S., Gelfand, M., Ohashi, M. M., & Zemba, Y. (2005). The cultural psychology of control: Illusions of personal versus collective control in the United States and Japan. *Journal of Cross-Cultural Psychology*, 36(6), 750–761. <https://doi.org/10.1177/0022022105280513>

## Supporting Information

Additional Supporting Information may be found in the online version of this article at the publisher's website.