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Social Roles, Basic Need Satisfaction, and Psychological Health: The Central Role of Competence

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Abstract

The authors propose that competence need fulfillment within valued role domains (i.e., spouse, parent, worker) will account, in part, for associations between autonomy and relatedness need fulfillment and psychological health. Testing these assertions in cross-sectional and longitudinal surveys of women in two independent community samples, the findings are the first to formally examine whether the satisfaction of competence needs within social roles accounts for associations between other types of need satisfaction and affective outcomes as well as depressive symptomology. Evidence supporting the hypothesis was stronger when examining individuals' affective health as compared to their depressive symptoms. Implications of the findings are discussed with regard to need fulfillment within social roles.

Keywords

roles; competence (self-efficacy); need satisfaction; self-determination theory; affect; depression

In human life, social roles are ubiquitous. Historically, social and personality psychologists sought to understand the relation between social roles and psychological functioning (see, e.g., Barnett & Baruch, 1985; Verbrugge, 1983; Warr & Parry, 1982). Contemporary social and personality psychologists, however, have focused much less attention on understanding the ways in which social roles influence psychological adjustment. Nevertheless, current research on aging and illness provides consonant evidence that social roles play a crucial function in psychological and physical health (e.g., Adelmann, 1994; Kikuzawa, 2006; Plach, 2008; Vandewater & Stewart, 2006; Wickrama, Conger, Lorenz, & Matthews, 1995). Our research (Bettencourt, Molix, Talley, & Sheldon, 2006; Bettencourt & Sheldon, 2001;

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Talley, Molix, Schlegel, & Bettencourt, 2010) argues that social roles are important mechanisms through which basic psychological needs can be satisfied, and as such, fulfilling social roles has the capacity to enhance psychological health.

Our assertions reflect the theorizing of Deci and Ryan (e.g., Deci & Ryan, 1991, 2002), who have identified autonomy, relatedness, and competence as the three basic psychological needs. One of the central tenets of self-determination theory (SDT) is that the satisfaction of these needs is "essential for ongoing psychological growth, integrity, and well-being" (Deci & Ryan, 2000, p. 229) and research has supported this notion (e.g., Hahn & Oishi, 2006; Patrick, Knee, Canevello, & Lonsbary, 2007; Reis, Sheldon, Gable, Roscoe, & Ryan, 2000; Sheldon & Niemiec, 2006). Autonomy concerns people's feelings of volition and the desire for behavior to be "concordant with one's integrated sense of self" (Deci & Ryan, 2000, p. 231). Relatedness involves feeling connected with others and the desire "to love and care, and to be loved and cared for" (Deci & Ryan, 2000, p. 231; Ryan, 1993). Finally, competence is related to people's feelings of efficacy (Deci, 1975; White, 1959).

Critically, SDT suggests that these three needs are equivalent with regard to their importance for psychosocial functioning (Ryan & Deci, 2000). Past research reflects this mutual emphasis such that studies typically combine reports of two or three of these needs into a single index of need satisfaction (NS; e.g., Deci, Ryan, Gagné, et al., 2001; La Guardia, Ryan, Couchman, & Deci, 2000, Studies 1 and 2; Standage, Duda, & Ntoumanis, 2005; Talley et al., 2010; Vansteenkiste et al., 2007). As useful as this research has been for understanding the overall effect of basic psychological NS, investigators have not fully considered potential dynamic interrelations among these needs (cf. Bettencourt & Sheldon, 2001; Patrick et al., 2007). Addressing this latter point, we sought to test whether the association between the satisfaction of autonomy and relatedness needs within particular social roles and psychological health is achieved, at least in part, through the satisfaction of competence needs.

Although few hypotheses have been offered within the SDT literature regarding the ways basic psychological needs may influence one another, Bandura (1989) theorizes that competence (i.e., self-efficacy) functions as the primary "cognitive mediator" in determining motivation and subsequent psychological health. Supporting Bandura's (1989) theorizing, Patrick et al. (2007) found that, of SDT's three psychological needs, competence NS within the relationship domain was the most consistent predictor of romantic partners' well-being (i.e., self-esteem, positive affect, vitality). Our belief that competence need fulfillment is a primary mediator within social role domains is consistent with Bandura's (1989) social cognitive theory. According to Bandura (1997), feelings of personal competence are related to self-perceptions of efficacy regarding one's ability to deal effectively with distinct social domains and are seen as proximal and direct predictors of psychological motivation, affect, and behaviors. Thus, we believe that individuals' feelings of autonomy and relatedness within a given social role may be used as information in determining perceptions of one's competence within that role.

The current work draws on the aforementioned theories to advance a hypothesis regarding a specific mediating relation among basic psychological needs within social role domains.

Although we recognize distinctions between the two theories (see Deci & Ryan, 2000, for a discussion), our primary interest in SDT is its assumption that fulfillment of the three basic psychological needs has the capacity to enhance psychological health. Our primary interest in social cognitive theory is the contention that perceptions of competence within specific domains should function as a proximal mediator of psychological health outcomes.

Role-Related Competence NS as a Mediator

A person's ability to perform a role competently should be a function of how authentic he or she feels in that role. Early research showed that participants assigned to roles that were congruent with self-characteristics were more satisfied with their role performances (Benoit-Smullyan, 1944; Bunker, 1967) as well as more likely to succeed in problem-solving tasks (Borgatta, 1961). Thus, social roles that are congruent with one's authentic self are more likely to foster feelings of competence.

People may also derive feelings of competence from social role fulfillments that engender feelings of relatedness. Social roles that produce feelings of closeness should evoke a greater sense of responsibility in role players and motivate stronger efforts that may translate into more successful role performance. In addition, individuals should receive information from others about their effectiveness in social roles (e.g., McCall & Simmons, 1978; Stryker, 1987). Sociological theories suggest that feelings of competence can arise as a consequence of reflected appraisals (Harter, 1978; Sarbin & Allen, 1969) and support from others associated with the social role who contribute to feelings of relatedness (McCall & Simmons, 1978; Scott & Stumpf, 1984; Stryker, 1987).[1] That is, positive social feedback is thought to contribute to perceived competence within social roles (e.g., Allen & Howe, 1998; Amorose & Horn, 2000; Amorose & Smith, 2003; Hein & Koka, 2007).

A few studies (e.g., Abraido-Lanza, 1997; Bettencourt & Sheldon, 2001; Patrick et al., 2007) also provide initial suggestive evidence that perceptions of competence within roles function as a mediator. For example, Abraido-Lanza (1997) conducted a cross-sectional study, based on the tenets of identity theorists (Pearlin, 1983; Tajfel, 1981), and found that feelings of self-efficacy partially accounted for the association between role identification (i.e., collapsing across social roles: mother, grandmother, wife, worker, homemaker, friend) and affective outcomes. As another example, Bettencourt and Sheldon (2001) found evidence that feelings of autonomy and relatedness were associated with feelings of competence across a number of roles that were self-selected by undergraduate students. Findings also showed that these feelings of competence were related to subsequent improved subjective well-being.

The Current Studies and Hypothesis

We conducted two studies within the domain of social roles that examined the likelihood that competence NS serves as a mediator in the relation between autonomy and relatedness

[1]Scott and Stumpf (1984) posit that a sense of competence develops as a consequence of positive self-evaluated role performances, particularly in roles a person considers central to the self-concept. Empirical support for this assertion is provided by Elliot et al. (2000).

NS and psychological health. In doing so, we adopted a number of methodological strategies that allowed us to advance this area of inquiry. First, unlike previous findings based on samples of undergraduate students (Bettencourt & Sheldon, 2001), both studies in the present article include samples of adult women. Second, given that Krause (2007) questioned the importance of roles that were assessed in prior studies, we focus on three roles that are likely to be central and valued in the lives of adult women. Third, although Study 1 involves a cross-sectional survey, Study 2 includes a five-wave longitudinal survey assessment, providing a powerful means by which to test our hypotheses within each of the three social roles. Finally, whereas a variety of studies examining need fulfillment have used multiple measures of positive psychosocial functioning, such as psychological well-being, relationship functioning, and positive affect (e.g., Hahn & Oishi, 2006; Patrick et al., 2007; Sheldon & Niemiec, 2006), ours considers ratings of depressive symptoms as well as positive affective balance. The inclusion of depressive symptoms allowed us to examine the contribution of basic NS not only to psychological thriving but also to psychological vulnerability.

In Study 1, we examine our hypotheses in a nonclinical community sample of adult women who reported on feelings of NS within three central social roles (i.e., spouse, parent, worker). We expected that feelings of competence across social roles would account for shared variance between reports of autonomy and relatedness NS within these roles and psychological health outcomes (i.e., positive affective balance, depressive symptoms).

In Study 2, we examined our hypotheses within a longitudinal framework using a sample of women who had been diagnosed with breast cancer. We sought to understand whether interrelations among psychological needs were distinct within each of three central social roles and with regard to psychological health. We expected that when considering the satisfaction of all three basic needs in tandem, feelings of competence within roles would function as the most proximal contributor to patients' reports of psychological health. We used structural equation modeling and multilevel modeling to provide evidence for our hypothesis.

Study 1

Method

Participants—One hundred seventeen adult rural women (*M* age = 53.02, *SD* = 10.23) completed a paper-and-pencil survey. Participants who did not report being engaged in at least one central social role were excluded from analyses (final *n* = 107). The larger purpose of this study was to better understand rural women's physical and psychological health as well as health care needs. The majority of participants were White European American (96%). Most participants (77%) reported a household income below $50,000. Most participants (87.2%) reported being a parent to at least one child, and most were in a marital relationship or living with their significant other (73%; single = 9%, divorced = 12%, widowed = 7%).

Measures

Role-related autonomy/relatedness NS—To measure the extent to which participants felt their relatedness and autonomy needs were being met through the fulfillment of their spouse, parent, and worker roles,[2] we included a known measure of role-related NS (Bettencourt & Sheldon, 2001). Participants' fulfillment of relatedness and autonomy needs was assessed with two items each, respectively, within each social role. Examples of the spousal-role items are as follows: "When I carry out the role of spouse/partner, I feel free to be myself" and "When I carry out my spouse/partner role, I feel close to my partner" (1 = *strongly disagree*, 6 = *strongly agree*). Correlations between role-related feelings of autonomy and relatedness NS for the spousal, parental and worker roles were .61, .69, and .68, respectively (all *p*s < .001). As has been done in other studies (e.g., Niemiec et al., 2005; Sheldon & Elliot, 1999; Sheldon & Niemiec, 2006; Talley et al., 2010) and to limit the undue influence of multicol-linearity, autonomy and relatedness NS items were combined (spousal A/R α = .80, parental A/R α = .84, worker A/R α = .84) and averaged across roles into a single index (overall A/R α = .77).[3] We refer to this measure as *role-related autonomy/relatedness NS*.

Role-related competence NS—Using the same measure of role-related NS, an index of competence NS within social roles was created by averaging two items within each role (spousal α = .69, parental α = .68, worker α = .64). Feelings of competence NS were then averaged across the three social roles (α = .66). An example of a spousal-role item is "When I carry out the spouse/partner role, I feel competent (skilled)" (1 = *strongly disagree*, 6 = *strongly agree*). We refer to this measure as *role-related competence NS*.

Positive affective balance—The 20-item Positive and Negative Affect Schedule (Watson, Clark, & Tellegen, 1988) was used to measure the extent to which participants felt each type of affect "on average" (1 = *not at all*, 4 = *somewhat*, 7 = *very much*). An index of positive affective balance (Bradburn, 1969; McDowell, 2006; Sheldon, Elliot, Kim, & Kasser, 2001) was created by subtracting the standardized sum of the negative affect index (α = .88) from the standardized sum of the positive affect index (α = .92).

Depressive symptoms—Fifteen items from the Center for Epidemiologic Studies–Depression Scale (CES-D; Radloff, 1977) were averaged to assess depressive symptomology (α = .91).[4] Participants rated the intensity and frequency of depressive symptoms they had experienced in the previous week (0 = *rarely or none of the time*, 3 = *most or all of the time*). Example items included "I felt sad" and "I had crying spells."

[2]We anticipated that some of the older women in our sample might not have a formal worker/employee social role, but would otherwise be engaged in volunteer/service activity that would be analogous in some regard. For women with no formal worker role we determined, through open-ended responses, whether they were engaged in a volunteer role. If the volunteer role seemed analogous to worker roles (e.g., church volunteer, hospital volunteer), these were included in analyses. The number of women who had a formal worker role in Study 1 was 71, and the number of women who had a volunteer role that met the criteria was 18. The number of women who had a formal worker role in Study 2 was 127, and the number of women who had a volunteer role that met the criteria was 40.

[3]This index is similar to approaches in the empirical literature that have combined reports of autonomy, relatedness, and competence into an overall assessment of "need satisfaction" (e.g., La Guardia, Ryan, Couchman, & Deci, 2000).

[4]Because of an unintentional error with the design of the survey, the last five items from the Center for Epidemiologic Studies–Depression Scale were not assessed.

Covariates—Twelve items from a health measure (Sintonen, 2001) were used to assess participants' levels of physical functioning (α = .82), ranging from experiences with mobility to physical pain. On each item, participants chose from five options (1 = *relatively high functioning* to 5 = *poor functioning*). Global self-esteem was assessed with 4 items from Rosenberg's (1965) 10-item scale (α = .74). An example item included "On the whole, I am satisfied with myself" (1 = *strongly disagree*, 7 = *strongly agree*).

Results and Discussion

Descriptive analyses—Eighty-eight participants reported being engaged in the parental role, 91 in the spousal role, and 89 in the worker role. Bivariate associations among the primary variables are reported in Table 1.

Cross-sectional mediation models—A cross-sectional analysis with maximum likelihood estimation was conducted using MPlus 5.2 (Muthén & Muthén, 2007). After controlling for covariates, the direct associations between role-related autonomy/relatedness NS and both positive affective balance and depressive symptoms were significant (see Figure 1). Supporting mediation, when role-related competence NS was added to the models, these direct associations were reduced in magnitude.

PRODCLIN (MacKinnon, Fritz, Williams, & Lockwood, 2007) was employed to provide bias-corrected estimates of the confidence intervals around the indirect effects. These analyses revealed that the indirect influence of role-related autonomy/relatedness NS on positive affective balance via role-related competence NS was significant, αβ = .71, *SE* = . 18, 95% CI [.36, 1.07]. These findings suggest that feelings of competence NS within social roles, which are related to autonomy and relatedness NS, may be most proximally associated with individuals' positive affective balance. Similarly, the indirect effect was found to be significant for depressive symptoms, αβ = −.16, *SE* = .06, 95% CI [−.27, −.05]. An inspection of standardized paths contained in the lower panel of Figure 1 suggests that feelings of autonomy/relatedness NS and competence NS within social roles may independently and equivalently contribute to overall feelings of depression (see also Patrick et al., 2007).[5]

These results provide evidence consistent with the assertion that feelings of competence NS within social roles may mediate, in part, associations between role-related autonomy/ relatedness NS and psychological health. Although the findings of Study 1 provide additional evidence regarding the ways in which feelings of basic NS within valued social roles contribute to psychological health, they were limited by the cross-sectional study design and multicollinearity among ratings of NS.

[5]Alternative models were run that considered role-related auton-omy/relatedness as the mediator of the relation between role-related competence NS and psychological health. The unstandardized indirect effect was significant for positive affective balance, αβ = .55, *SE* = . 20, 95% CI [.17, .94], $p < .05$, though the magnitude of the effect appeared smaller than that of the hypothesized model. By contrast, the magnitude of the indirect effect for the depressive symptoms outcome was equivalent in the alternative, αβ = −.18, *SE* = . 06, 95% CI [−.30, −.05], $p < .05$, and hypothesized models, suggesting all role-related need satisfaction variables were equivalent in their contributions to the experience of depressive symptoms.

Study 2

Women tend to experience poor psychological health during breast cancer treatment and survivorship (e.g., Bardwell et al., 2006; Hagedoorn, Sanderman, Bolks, Tuinstra, & Coyne, 2008; Hoskins et al., 1996; Primo et al., 2000; Schlegel, Talley, Molix, & Bettencourt, in press). Many breast cancer survivors report changes to their social-role functioning and role-related responsibilities during this same period (e.g., Bloom et al., 1991). It is reasonable to suspect that the disruption of social-role functioning may diminish NS, which would otherwise be derived through social-role fulfillment. It has been theorized (Pearlin, 1983) that decreased feelings of competence could explain why disruption in social-role functioning contributes to diminished psychological health.

Between- Versus Within-Person Variation in Need Fulfillment

In Study 2 analyses, we expect to replicate the results of Study 1 and find that individual differences in levels of competence NS will mediate associations between average levels of autonomy/relatedness NS and overall psychological health. We use structural equation modeling to examine between-person relations between need fulfillment within social roles and psychological outcomes across a 2-year period, allowing us to better observe traitlike relations that may not be as evident or powerful with cross-sectional models.

Admittedly, relations among aggregate levels of need fulfillment and psychological health are unable to fully address the within-person, process associations implied in our hypotheses: Individuals' satisfaction of autonomy and relatedness needs will inform feelings regarding their satisfaction of competence needs in social roles, which in turn will contribute to reports of psychological health. Methodologists (Robinson, 1950) have warned that findings obtained at the between-person level of analysis may not necessarily be replicated in within-person analyses. We expect that within-person variability in competence need fulfillment within a given social role will account for associations between within-person variability in autonomy/relatedness NS in that same role and psychological health. We use multilevel modeling to examine whether within-person processes are similar to or different from aggregate, between-person associations.

Differential Associations Based on Social Role

Research has examined the fulfillment of psychological needs within specific role domains, such as close relationships (Deci, La Guardia, Moller, Scheiner, & Ryan, 2006; La Guardia et al., 2000; Milyavskaya et al., 2009; Ryan, La Guardia, Solky-Butzel, Chirkov, & Kim, 2005) and work and school relationships (e.g., Ilardi, Leone, Kasser, & Ryan, 1993; Milyavskaya et al., 2009). Most previous research has focused on only one role domain (e.g., Ilardi et al., 1993; Patrick et al., 2007; Talley et al., 2010) or, as in the current Study 1, averaged across multiple roles (e.g., Bettencourt & Sheldon, 2001; La Guardia et al., 2000, Study 1). One limitation of this approach is that researchers are unable to consider whether feelings of NS, in particular social roles, differentially influence outcomes. Given that some social roles may be more inherently meaningful,[6] NS within particular role domains may be differentially related to psychosocial outcomes (e.g., La Guardia et al., 2000).

Some studies have found evidence for differential associations between need fulfillment and psychological outcomes within specific role domains. For example, Patrick et al. (2007) found that within romantic relationships, competence need fulfillment was most consistently and independently associated with personal well-being outcomes (i.e., selfesteem, positive affect, vitality, low negative affect), but all types of need fulfillment were positively and equivalently associated with relationship outcomes (e.g., satisfaction, responses to conflict). In Study 2, we use a longitudinal design to test our hypotheses separately within each social role, allowing for a more optimal understanding of dynamic psychological processes that may occur between and within persons during survivorship.

Method

Participants—Participants were 211 female breast cancer patients (*M* age = 59, *SD* = 12) who were part of a larger study (*N* = 244); participants from the sample who did not report being engaged in at least one central social role (*n* = 33) were excluded from analyses. Participants' average income was between $45,000 and $55,000 (range = less than $15,000 to $115,000 or more). At baseline, 175 participants fulfilled the partner or spousal role, 170 the parental role, and 167 the worker role. Eighteen percent of participants were diagnosed with Stage 0 cancer, 45% Stage I, 21% Stage II, 15% Stage III, and 1% Stage IV (*n* = 4 missing).

Procedure

Participants were part of a larger study examining psychosocial outcomes of breast cancer survivorship. A nurse provided the baseline survey (Wave 1) to a convenience sample of eligible patients during their 1st week of radiation therapy. Of those patients who received a packet from a nurse, approximately 59% returned the survey. For patients who refused to participate, no data on reasons for refusal or demographics were available. Subsequent surveys were mailed by the research staff 12, 24, 56, and 104 weeks, respectively, after the start of radiation treatment. Participants were paid $25 for each survey. Over five waves, 211 patients responded to the Wave 1 survey, 195 (93%) to Wave 2, 190 (91%) to Wave 3, 176 (83%) to Wave 4, and 128 (73%) to Wave 5.[7] Comparisons between participants who completed all waves and those who were missing at least one revealed that they did not differ on any disease or illness variables (stage of cancer, physical symptoms), demographics (age, number of cohabitating children, income), or psychological functioning indicators (depression, positive affective balance) at baseline. Surveys included other measures not discussed in this current report.

[6]An assessment of the importance of social roles was only included at Wave 3 in Study 2, approximately 3 months after patients' initial radiation treatment. Female participants rated their worker role (*M* = 2.96, *SD* = 1.02) as being less important than either their parent (*M* = 3.84, *SD* = 0.54) or spouse (*M* = 3.72, *SD* = 0.72) roles, $F(1, 76) = 52.10$, $p < .001$.

[7]Notably, the original design of the study included only four assessments (Waves 1 to 4). An opportunity for additional data collection was acquired toward the end of the study. Ninety-four percent of participants who completed a Wave 4 survey agreed to receive more information about future studies. Of those who agreed and were sent a Wave 5 survey, 73% responded to the final survey (*n* = 128).

Measures

Role-related autonomy NS—We included the measure of NS used in Study 1. Autonomy items for each respective role were combined into a single index (average spouse α = .84, parent α = .84, worker α = .85, respectively).

Role-related relatedness NS—Items assessing relatedness NS within each respective role type were combined into a single index (average spouse α = .77, parent α = .64, worker α = .63, respectively).

Role-related competence NS—Patients' competence NS within each role was measured with four items, which were found to be internally reliable (average spouse α = .82, parent α = .83, worker α = .82, respectively).

Positive affective balance—The Profile of Mood States (POMS; McNair, Lorr, & Droppelman, 1981) was used to create a measure of affective balance. The POMS is commonly used as a measure of affect in cancer patient samples (e.g., Baker, Denniston, Zabora, Polland, & Dudley, 2002; Stanton et al., 2002). It includes five subscales (i.e., Vigor, Depression, Tension, Fatigue, Anger). Participants rated the degree to which they were feeling each mood since their diagnosis or the previous wave of data collection, depending on the assessment (0 = *not at all*, 4 = *extremely*). A measure of affective balance was calculated by subtracting the mean of the four negative subscales from the mean of the Vigor subscale (average α = .85).

Depressive symptoms—The 20-item CES-D (Radloff, 1977) was used; participants rated depressive symptoms they had experienced during the previous week (average α = .91).

Covariate—Although no assessment of self-esteem was included in any Study 2 survey, physical symptoms were assessed at each wave with 18 items derived from several reports based on their appropriateness for the sample (Andersen & Tewfik, 1985; Ganz, Dau, Ware, Redman, & Fisher, 1995). Symptoms included nausea, breast pain, hair loss, weight gain, hot flashes, itchiness or discomfort of the skin, decreased arm mobility, and swelling of the arm (average α = .81). A 7-point response scale was used (1 = *not at all*, 7 = *severe*).

Results and Discussion

Descriptive statistics—Table 2 presents correlations among autonomy NS, relatedness NS, and competence NS within each social role at each wave, as well as bivariate associations among positive affective balance and depressive symptoms.

Structural Equation Models

Model description—The proposed, between-person mediation models were tested using MPlus 5.2. Missing data were handled through full-information maximum likelihood estimation (FIML; Collins, Schafer, & Kam, 2001). We used state-trait models (Eid, Notz, Steyer, & Schwenkmezger, 1994) to test the magnitude of aggregate longitudinal effects within each of the three central roles. These models were used to test associations between

individual differences in need fulfillment and aggregate psychological health outcomes during cancer survivorship. We expected that, considering all three psychological needs, average levels of role-related competence NS would most strongly relate to increased positive affective balance and decreased depressive symptoms, respectively.

State-trait models specified five latent variables for each social role: trait of feelings of autonomy, relatedness, and competence NS; the tendency to experience positive affect relative to negative affect; and the tendency to experience depressive symptoms. As shown in Figures 2–4, model fit was good to adequate across all models.[8] Wave 1 assessments, corresponding to patients' period of active radiation treatment, exhibited consistently lower factor loadings.

Model outcomes—Similar to Study 1, aggregate reports of relatedness and autonomy NS were highly correlated within all role domains. Nevertheless, we modeled them as separate latent factors to understand the contribution of each type of NS. Figure 2 shows the path coefficients for the primary mediation model within the spousal role. As expected, patients who reported higher average levels of relatedness NS within the spousal role were also likely to report higher average levels of competence NS. Patients who endorsed higher feelings of autonomy within the spousal role also reported marginally higher average levels of competence NS. As shown in the upper panel of Figure 2, patients' trait-level feelings of competence NS within the spousal role were, in turn, related to higher levels of positive affective balance throughout survivorship. By contrast, as shown in the lower panel of Figure 2, patients who generally reported higher levels of autonomy NS in the spousal role were those who endorsed lower levels of depressive symptoms on average, whereas average levels of competence NS and relatedness NS were unrelated to reports of depressive symptoms.

PRODCLIN (MacKinnon, Fritz, et al., 2007) was used to provide estimates of the confidence intervals around indirect effects. Estimates of indirect effects provided evidence that the relation between aggregate levels of relatedness NS and positive affective balance was explained via average levels of competence NS in the spousal role, $\alpha\beta = .18$, $SE = .09$, 95% CI [.04, .38], $p < .05$. Notably, when simultaneously considering aggregate levels of relatedness NS and competence NS in the spousal role, neither the direct association between autonomy NS and positive affective balance nor the indirect effect via competence NS, was significant, $\alpha\beta = .10$, $SE = .07$, 95% CI [−.02, .26], *ns*. Unexpectedly, average levels of competence NS in the spousal role did not appear to mediate the relation between trait-level satisfaction of other basic needs and tendencies for depression.

A test of alternative models in which average levels of relatedness NS and autonomy NS were considered, respectively, as the primary mediator would fit the data equally well (Tomarken & Waller, 2003). Indeed, direct effects in the alternative models would be the same as those depicted in Figures 2 to 4. Estimations of indirect effects for alternative models are contained in Table 3. For the spousal role, findings suggested that trait-level

[8]As per Hu and Bentler's (1999) recommendation, two goodness-of-fit indexes were used in assessing model fit: the comparative fit index (CFI; Bentler, 1988) and the standardized root mean square residual (SRMR; Bentler, 1995). Adequate fit is indicated by a CFI near .95 (Hu & Bentler, 1999). A reasonable SRMR is indicated by a value close to.08 (Hu & Bentler, 1999).

competence NS could best account for the shared association between mean-level feelings of relatedness NS and tendencies toward affective balance. By contrast, results showed that trait-level perceptions of autonomy NS in the spousal role, as opposed to competence NS, seemed most important in terms of accounting for the shared association between individual differences in feelings of relatedness NS and lessened depression, on average, during survivorship.

As predicted and shown in Figure 3, patients who reported higher average levels of autonomy NS and relatedness NS within the parental role were more likely to report higher average levels of role-related competence NS. Shown in the upper panel, patients who felt higher levels of competence NS, on average, within the parental role were likely to report higher overall levels of positive affective balance. By contrast and as depicted in the lower panel, patients who reported elevated trait-level feelings of relatedness NS within the parental role were those who reported lower levels of depression throughout the first 2 years of cancer survivorship, whereas patients' trait levels of competence and autonomy NS in this role were unrelated to overall levels of depression during this time.

Indirect effects provided evidence that the relation between trait-level feelings of relatedness NS and positive affective balance, $\alpha\beta = .35$, $SE = .18$, 95% CI [.06, .75], $p < .05$, as well as autonomy NS and positive affective balance, $\alpha\beta = .39$, $SE = .19$, 95% CI [.07, .82], $p < .05$, could both be explained through average levels of competence NS in the parental role. By contrast, individual differences in perceptions of relatedness NS in the parental role seemed most important in terms of accounting for associations between average feelings of autonomy and competence NS and the tendency to report lessened depression.

For the parental role, a comparison of alternative models suggested that the hypothesized model was preferred when considering affective balance. By contrast, average reports of relatedness NS in the parental role seemed to most proximally relate to a lower likelihood for depressive symptoms during survivorship.

As predicted and shown in Figure 4, patients who endorsed higher average levels of autonomy NS and relatedness NS within the worker role were more likely to report higher average levels of competence NS. Patients who endorsed higher levels of competence NS, on average, within the worker role were likely to report higher trait-like levels of positive affective balance and lower trait-like levels of depression during survivorship.

An examination of indirect effects provided evidence that the mean-level associations between autonomy NS and positive affective balance, $\alpha\beta = .35$, $SE = .20$, 95% CI [.004, .78], $p < .05$, as well as depression, $\alpha\beta = -.15$, $SE = .07$, 95% CI [−.30, −.02], $p < .05$, could be explained through their relation to individual differences in feelings of competence NS in the worker role, respectively. Similarly, the average relations between relatedness NS and positive affective balance, $\alpha\beta = .15$, $SE = .10$, 95% CI [.003, .38], $p < .05$, as well as depression, $\alpha\beta = -.06$, $SE = .04$, 95% CI [−.15, −.01], $p < .05$, could be explained via associations with trait-like feelings of competence NS in this role. A comparison of alternative models suggested that among the three psychological needs, competence NS

within the worker role was the most consistent, proximal associate of higher tendencies for psychological health during survivorship.

The results of state-trait models revealed individual difference associations that were consistent with hypotheses, largely with regard to average levels of positive affective balance. Comparing standardized effects across social roles, findings showed that patients who reported higher trait-like feelings of relatedness NS during survivorship were those who were likely to feel higher competence NS with regard to their spousal role, and this was likely to relate to higher average levels of positive affect relative to negative affect. Patients who reported higher trait-like feelings of relatedness NS and autonomy NS in the parental role during survivorship were more likely to feel more competent in this role, on average. These individual differences in feelings of competence NS were likely to contribute to greater feelings of positive affect relative to negative affect throughout survivorship. Finally, average levels of autonomy and relatedness NS within the worker role were uniquely related to higher average levels of competence NS that were, in turn, related to higher trait-like levels of positive affective balance and lower trait-like levels of depression.

Similar to Study 1, evidence for our hypotheses was stronger when examining positive affective balance, suggesting that trait-like feelings of competence within social roles may be most proximally related to individuals' levels of affective health (see also Patrick et al., 2007). With regard to the tendency to report depression, model findings were less consistent with expectations. Indeed, only trait-like levels of competence NS within the worker role were found to explain aggregate relations between the other psychological needs and depressive symptoms.

Multilevel Analyses

Model description—We conducted a series of hierarchical linear models (Raudenbush & Bryk, 2002) to examine within-person associations of interest. Multilevel modeling is a suitable technique for testing our process-oriented hypothesis because it has the capacity to model each participant's own regression line, which may or may not differ from the average regression line.

Two-level models were constructed using HLM2 version 6.04 (Raudenbush, Bryk, Cheong, Congdon, & du Toit, 2004), with five waves (Level 1) nested within 208 individuals (3 patients in the full sample were missing Level 2 covariates and were eliminated from analyses). Three models examined whether role-related autonomy NS and relatedness NS were independently associated with role-related competence NS within each social role. Six models tested whether role-related autonomy NS and relatedness NS were independently associated with positive affective balance and depressive symptoms within each social role. Finally, six models examined whether the inclusion of role-related competence NS altered these associations. As before, FIML was used to obtain estimates.

All models followed the same structure. Predictors of positive affective balance and depressive symptoms were represented through separate two-level models in which within-person, time-varying variables (role-related autonomy NS, relatedness NS, and competence NS) were entered at Level 1. Between-person covariates were entered at Level 2 and

included the average level of self-reported physical symptoms across all measurement occasions and the mean-level counterpart of the time-varying predictors[9] (i.e., average level of role-related autonomy, relatedness, and competence NS within social roles across time). The main effects of positive affective balance and depressive symptoms were modeled as random variables. Level 1 variables were person-mean centered. Level 2 variables were grand-mean centered.

Model outcomes—All HLM model results are provided in Table 4. As expected, findings showed that a patient's ratings of autonomy NS and relatedness NS were positively related to her own reports of competence NS in the spousal role. Within-person results showed that a patient in a spousal role who reported greater levels of autonomy NS than were typical for her would also be likely to report levels of positive affective balance that were elevated above her average. This outcome was only marginally likely for a patient who might report greater levels of relatedness NS than were typical for her. By contrast, a patient who reported greater levels of relatedness NS than were typical for her in the spousal role would be likely to report lower levels of depressive symptoms. Her perceptions of autonomy NS within the spousal role were marginally related her own lowered endorsement of depressive symptoms.

Results supported hypotheses that feelings of competence NS in the spousal role could partially account for within-person associations between autonomy NS and relatedness NS and psychological outcomes. The mediation model in which feelings of autonomy NS, relatedness NS, and competence NS in the spousal role were simultaneously considered revealed that a patient who reported feelings of competence NS that were elevated above her average on any given measurement occasion was more likely to report a higher level of affective balance and a lower level of depressive symptoms than was typical for her. At the same time, associations between her feelings of autonomy NS and relatedness NS and her reports of affective balance, on any given occasion, were found to become unreliable. By contrast, the association between her feelings of relatedness NS and her reports of depressive symptoms only became relatively less reliable when competence NS was considered.

Despite the result that within-person analyses found that feelings of competence NS and relatedness NS both maintained independent associations with lowered levels of depression, competence NS in the spousal role was, in fact, the psychological need most strongly associated with heightened positive affective balance and lowered depression during cancer survivorship. These results were consistent with our hypotheses. Between-person findings were consistent with these within-person results, except with regard to depressive symptoms. In between-person analyses, patients who reported higher trait levels of autonomy NS within the spousal role were likely to report lower average levels of depression, whereas in within-person analyses, a patient's feelings of autonomy NS at a given assessment were unrelated to her own reports of depressive symptoms.

[9]Including a mean-level, aggregate version of time-varying variables has been strongly recommended (Raudenbush & Bryk, 2002; Snijders & Bosker, 1999) because these effects often differ quite substantially from their time-varying, within-person counterparts. Unless these between-person differences are taken into account, mean-level differences between individuals on aggregate values of time-varying predictors might bias the estimation of Level 1 coefficients.

With regard to the parental role, findings again showed that a patient's ratings of autonomy NS and relatedness NS were positively related to her own reports of competence NS. A patient who reported greater levels of autonomy NS and relatedness NS in the parental role than were typical for her would also be likely to report levels of positive affective balance that were elevated. Also in line with hypotheses, a patient who endorsed greater levels of autonomy NS and relatedness NS in the parental role than were typical for her would report lower levels of depressive symptoms.

The model in which autonomy NS, relatedness NS, and competence NS were simultaneously considered revealed that a patient who reported perceptions of competence NS within the parental role that were elevated above her average would also be likely to endorse elevated levels of positive affective balance and lowered levels of depressive symptoms. Consistent with mediation, associations between her feelings of autonomy NS and relatedness NS and reports of positive affective balance were found to be less reliable when accounting for competence NS. These findings also suggested that feelings of competence NS and relatedness NS within the parental role were both uniquely important in contributing to her reports of positive affective balance during survivorship. Although associations between a patient's feelings of autonomy NS and relatedness NS and her own reports of depressive symptoms became relatively less reliable when competence NS within the parental role was considered, endorsements of autonomy NS that were above her own average remained a unique predictor of her experiencing lower levels of depressive symptoms.

Within-person analyses showed that a patient's feelings of competence NS and relatedness NS in the parental role were both independently associated with her own heightened levels of positive affective balance at any given assessment. By contrast, between-person analyses more strongly supported our hypothesis that patients' feelings of competence NS in this role would be most proximally related to tendencies for heightened affective balance. With regard to depression, within-person analyses showed that a patient's feelings of autonomy NS and competence NS in the parental role were independently and inversely associated with her own reports of depressive symptoms at any given assessment. Between-person analyses showed, however, that patients who reported higher trait levels of relatedness NS within the parental role would be those who would tend to report lowered levels of depression.

Within the worker role, a patient's feelings of autonomy NS and relatedness NS that were higher than her average were positively related to contemporaneous reports of competence NS. As expected, a patient who reported greater levels of autonomy NS and relatedness NS in the worker role than were typical for her was also likely to endorse higher levels of positive mood relative to negative mood. Similarly, a patient's reports of autonomy NS and relatedness NS in the worker role were inversely associated with her endorsements of depressive symptoms during survivorship.

The model in which autonomy NS, relatedness NS, and competence NS in the worker role were simultaneously considered revealed that a patient's feelings of competence NS that were higher than her average were reliably associated with her own increased levels of

affective balance and decreased levels of depressive symptoms. At the same time, associations between her reports of autonomy NS and relatedness NS within the worker role and endorsements of affective balance became unreliable. Similarly, when accounting for her feelings of competence NS within the worker role, the inverse associations between a patient's reports of autonomy NS and relatedness NS and her experiences with depressive symptoms became unreliable. Thus, results were consistent with hypotheses.

With regard to the worker role, both between- and within-person analyses supported our mediation hypothesis that among the three basic psychological needs, trait-level and assessment-specific feelings of competence NS in this role would consistently be the most proximal contributor to greater endorsements of positive affective balance and fewer endorsements of depressive symptoms during cancer survivorship.

Analyses examining within-person fixed, indirect effects (not shown) conducted in PRODCLIN (MacKinnon, Fritz, et al., 2007) confirmed that endorsements of competence NS accounted for significant within-person variation between reports of autonomy NS and relatedness NS and psychological health outcomes in examined social roles. This evidence was supported by 95% asymmetric confidence intervals that did not include zero although, consistent with between-person results, support for our assertion that competence NS in the parental role would be the most proximal contributor to contemporaneous reports of depressive symptoms was tenuous.

Within-person analyses confirmed that at any given assessment, a person's perceptions of autonomy and relatedness NS within each of the three social roles were equally likely to inform her feelings of competence NS. These analyses also showed that patients' feelings of competence NS within each of three social roles was consistently found to be either the strongest or an independent shared associate of psychological health in all within-person models. That is, results supported that a person's own feelings of competence NS within a given role could serve to mediate, at least in part, significant relations between her feelings of autonomy and relatedness NS within roles and contemporaneous reports of psychological health. Notably and consistent with our between-person analyses, the mediation hypothesis was most often supported in models examining positive affective balance. These findings suggest that competence NS within social roles may be most proximally related to positive individual psychological outcomes, as opposed to negative individual psychological outcomes (e.g., depression).

General Discussion

Guiding human functioning and interactions, social roles are important for our daily lives (e.g., Kikuzawa, 2006; Vandewater & Stewart, 2006). Research (e.g., Bettencourt & Sheldon, 2001; La Guardia et al., 2000; Talley et al., 2010) has supported the assertion that social roles are functional mechanisms for meeting basic psychological needs, and as such, fulfilling social roles has the capacity to enhance psychological health. Although the three basic psychological needs identified by SDT have been viewed as equally important with regard to psychosocial functioning (Ryan & Deci, 2000), work within social role domains has found evidence that certain need fulfillments may contribute differentially to functioning

(e.g., Patrick et al., 2007). Borrowing from the tenets of social cognitive theory (Bandura, 1989), we proposed that when considering NS within role domains, competence NS would be the most proximal contributor to individual psychological health and would mediate, in part, associations between autonomy and relatedness NS and these same outcomes.

The current research is the first to provide formal tests of our hypotheses, showing that the satisfaction of competence needs within social roles may partially explain associations between the satisfaction of needs for autonomy and relatedness in these roles and psychological health. Study 1 provided initial support for our hypothesis across three social roles with a sample of healthy rural women. With five waves of data, Study 2 further supported our hypothesis with state-trait analyses that investigated between-person associations as well as multilevel analyses that examined within-person associations among breast cancer survivors. Extending the literature on psychological need fulfillment, we compared results for two separate indicators of psychological health, namely, affective balance and depression. Importantly, our mediation hypothesis was more strongly supported for affective balance than for depressive symptoms. This outcome seems congruent with Patrick et al.'s (2007) findings that show that of the three needs, competence was the most consistent predictor of positive well-being (i.e., positive affect, vitality) but not of negative affective outcomes.

The analytic approach in Study 2 allowed us to examine each of the three roles separately for the distinct contributions of autonomy and relatedness NS to competence NS. Between-person findings suggested that over time, feeling connected with one's spouse during survivorship is more strongly associated with overall feelings of competency within the spousal role. By contrast, feelings of autonomy are likely to contribute to greater feelings of competency in the worker role during survivorship. Within-person analyses that examined interrelations among types of need fulfillment showed that at any given assessment, a person's perceptions of autonomy and relatedness NS influenced feelings of competence NS within each of the three social roles.

Study 2 offered the unique opportunity to compare results across three valued social roles at the aggregate level and within person. For affective balance, findings were more similar than different across the three social roles in both between-and within-person analyses. Average levels of competence need fulfillment were largely found to account for relations between aggregate levels of autonomy and relatedness need fulfillment and affective balance within all three roles. Within-person findings showed that with regard to both spousal and worker roles, reports of competence need fulfillment that were elevated above one's average on a given assessment occasion were found to explain associations between elevated feelings of autonomy and relatedness need fulfillment and levels of affective balance that were higher than expected.

With the exception of robust findings within the worker role, evidence for our hypothesis was often more tenuous when depressive symptoms were the outcome. It is possible that the formal, public appraisal of performance in the worker role, as well as the risk of losing the role and related benefits in instances where social role functioning is found to be substantially lacking, may explain the more consistent link between perceptions of

competency NS in this role and overall depression. Individual differences in feelings of relatedness in the parental role seemed most important for alleviating depression during survivorship, whereas individual differences in feelings of autonomy appeared most important in the spousal role. Although within-person analyses suggested that a respondent's satisfaction of autonomy and competence needs within the parental role were equally likely to influence depressive symptoms at any given time, satisfaction of relatedness and competence needs within the spousal role were equally important for this same outcome. It may be that depression is more independently and equally determined by relatedness, autonomy, and competence need fulfillment (i.e., as they are currently measured) within the parental and spousal roles, and thus, support for a consistent mediator was not found. In line with the latter argument, Patrick et al. (2007) found that all three needs were equivalently related to reports of negative affect in close relationships.

Theoretical Implications

The current studies are the first to formally test whether respondents' feelings of competence within social roles mediate, in part, associations between feelings of autonomy and relatedness in these roles and psychological health. Importantly, the findings provided evidence for our hypothesis as well as for Bandura's (1989) theorizing that competence (i.e., self-efficacy) is a "cognitive mediator" of human motivation. The findings support our assertion that the satisfaction of needs for competence explain why the fulfillment of autonomy and relatedness needs in social roles contributes to psychological health, even in times of great duress. Also, it appears that feelings of autonomy and relatedness, acquired through the fulfillment of social roles, serve as important sources of information for feelings of competency.

Consistent with other SDT research (Patrick et al., 2007; Véronneau, Koestner, & Abela, 2005), we found evidence for conflation among the basic needs within each domain. Existing sources of methodological overlap in these constructs clearly present a problem for assertions that each is conceptually unique and meaningfully related to important psychological outcomes. Multicollinearity may reflect the inability of persons to disambiguate the sources of NS differentiated by the SDT framework. Indeed, the consistent need for clarification of the meaning of these constructs among academics (e.g., Carver & Scheier, 2000; Deci & Ryan, 2000) raises the larger question of whether most laypersons have access to distinctions between these aspects of need fulfillment. As such, methodological innovations may be required to better distinguish the three basic needs from each other. In addition to improving issues with multicol-linearity among constructs, refining measurement of SDT constructs would also advance our understanding of the ways in which distinct sources of need fulfillment influence, in unique or similar ways, both positive and negative indicators of psychological health. Critically, participants' inability to distinguish between sources of need fulfillment may have contributed to our equivocal pattern of findings with regard to depressive symptoms. Although some alternative models did not support that competence NS was a consistent, proximal determinant of depression, we expect that improved measures of NS would provide robust support for our theoretical assertions that competency within social role domains is a primary "cognitive mediator" of psychological health. Additional research is necessary to shed light on whether

methodological innovations or theoretical refinements or both are necessary to advance SDT.

Limitations

There are several imitations of these studies that should be considered. First, all participants were adult women fulfilling valued social roles (e.g., Abraido-Lanza, 1997). Although an advance over exclusively college-aged samples (Bettencourt & Sheldon, 2001; La Guardia et al., 2000; Patrick et al., 2007), it is unclear whether our findings are generalizable to adult men or individuals fulfilling less valued social roles. A few studies of the psychological benefits of role fulfillment have found differential associations, depending on gender (e.g., Marcussen & Piatt, 2005) and social role domains (e.g., La Guardia et al., 2000).

Next, although the findings revealed that competence NS seems to, at least in part, explain meaningful variation between psychological health and autonomy and relatedness NS, we have yet to explore a broader range of potential explanatory mechanisms and outcomes. For example, feelings of autonomy and relatedness provided by social-role fulfillment may also be related to persons' perceptions of meaning in life (e.g., Steger, Kawabata, Shimai, & Otake, 2008). Future research may seek to examine additional explanatory mechanisms of relations between need fulfillment and psychological health.

As discussed previously, that ratings of NS within each social role were often highly correlated is another limitation. Consistent with our findings, Patrick et al. (2007) assessed basic psychological needs in romantic relationship domains and found correlations above . 80 between ratings of autonomy and relatedness as well as between ratings of relatedness and competence across multiple samples (see also Véronneau et al., 2005). It is plausible that these correlations are a result of semantic overlap within the items or assessing the constructs within the same time point. Items assessing NS all began with the phrase "When I carry out my role as …" This common method variance mostly likely contributed to inflation between scores. Additional research is necessary to determine how best to address this issue to allow for appropriate advancements in SDT.

The current work sought to examine the relation between role-related autonomy and relatedness NS as *predictors* of competence NS in social roles and, in turn, competence NS as a more proximal *predictor* of psychological health. Although the explicit modeling of directed effects of role-related psychological NS on psychological health that used multiple measurements to estimate between- and within-person relations between these constructs results is a better test of mediational hypotheses than cross-sectional data, because these data are correlational, conclusions must be based on strong theoretical ground (Cheong et al., 2003). It must be noted that the causal structure assumed by the proposed models may be fit equivalently by an infinite number of alternative models (MacKinnon, Fairchild, & Fritz, 2007; Tomarken & Waller, 2003). Despite these interpretational limitations, findings are bolstered by examinations of alternative models and arguments drawn from the literature documenting that feelings of competence should, theoretically, function as a mediator (Bandura, 1989; Bunker, 1967; McCall & Simmons, 1978; Stryker, 1987; Scott & Stumpf, 1984).

Conclusions

Social roles allow individuals to feel that they are acting on personal values and goals and, at the same time, are sharing unique aspects of themselves with others. As a result of these feelings, individuals seem to endorse that they are more effective in their roles and subsequently may experience improved affect and motivation. Individuals who do not experience feelings of need fulfillment within their held social roles are likely to be those most vulnerable to the experience of poor psychological health. The current findings suggest that interventions and therapies (e.g., cognitive-behavioral therapy; A. T. Beck, 1979; J. S. Beck, 1995) that appreciate the importance of social roles as well as successfully bolster feelings of efficacy through role enactment may provide the most direct and powerful means of improving psychological health, especially when stressful life experiences disrupt social-role functioning.

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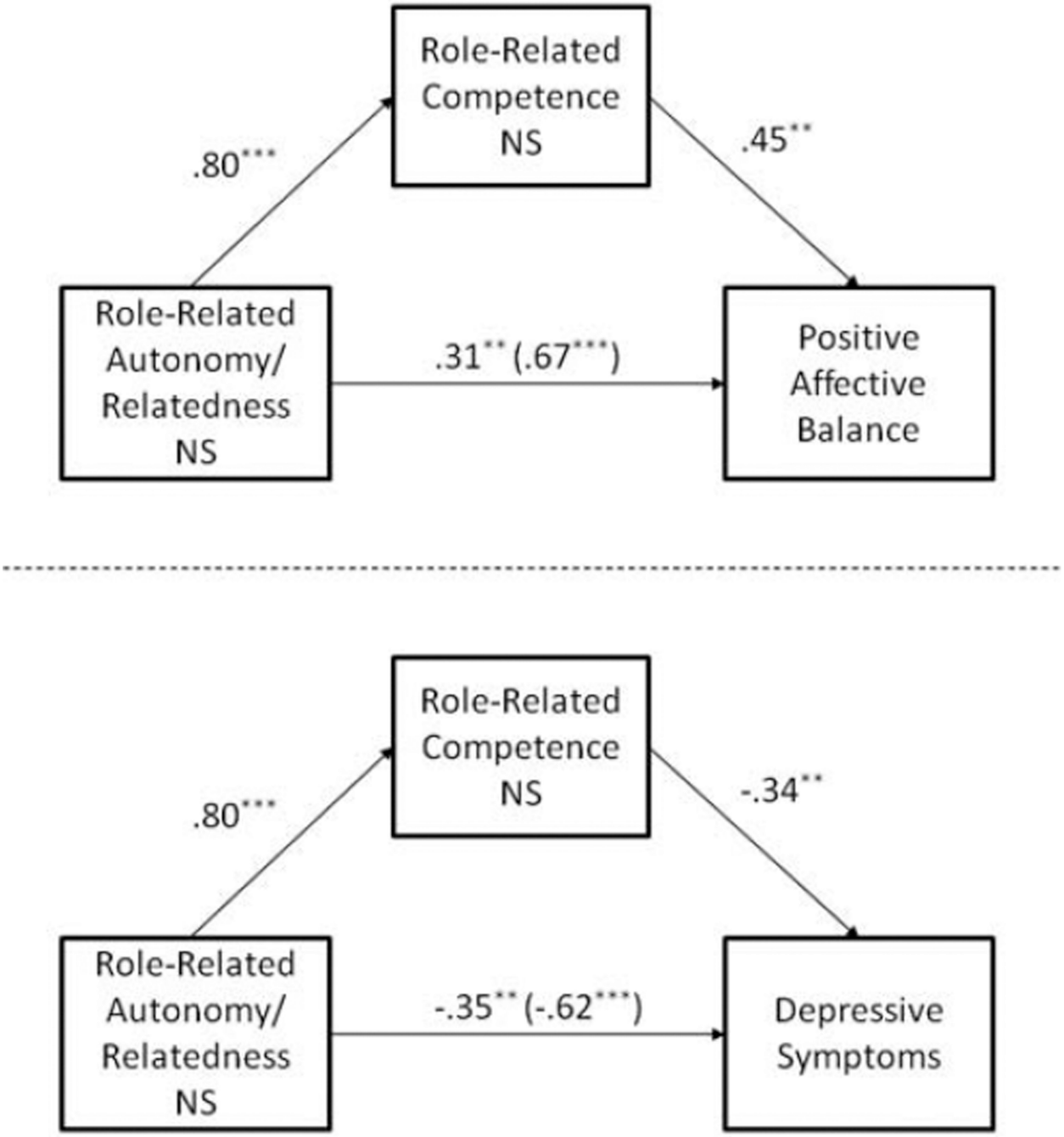

Figure 1. Study 1 primary mediation model

NS = need satisfaction. Standardized coefficients are provided. Numbers in parentheses are direct path coefficients (without role-related competence NS included in the model). In these models, self-reported physical (dys) function was negatively related to role-related autonomy/relatedness NS (β = −.22*), competence NS (β = −.12, *ns*), and positive affective balance (β = −.43***) and positively related to depressive symptoms (β = .44*). Self-esteem was positively related to role-related autonomy/relatedness NS (β = .56***), competence NS

(β = .28***), and positive affective balance (β = .25***) and negatively related to depressive symptoms (β = −.29***). *$p < .05$. **$p < .01$. ***$p < .001$.

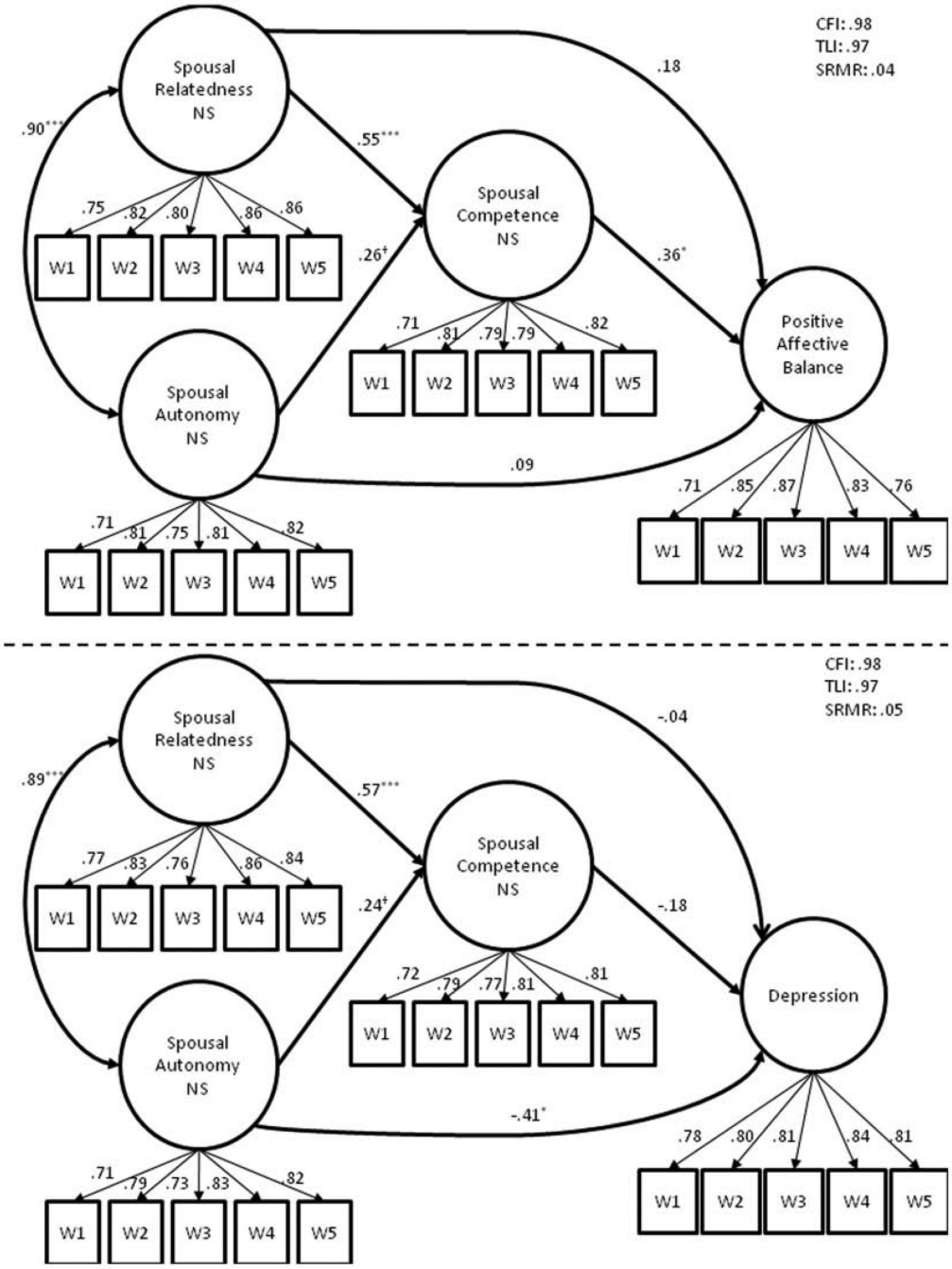

Figure 2. Study 2 state-trait mediation models for need satisfaction within the spousal role

NS = need satisfaction; W = wave; CFI = comparative fit index; TLI = Tucker–Lewis index; SRMR = standardized root mean square residual. Standardized coefficients are provided. Not depicted are within-time correlations between all manifest variables assessed at the same time point. Self-reported physical symptoms were negatively related to role-related autonomy NS (β = −.28**), relatedness NS (β = −.31**), and competence NS (β = −.25**) in models predicting positive affective balance (β = −.28*). Self-reported physical symptoms were negatively related to role-related autonomy NS (β = −.27**), relat-edness NS (β = −.

29**), and competence NS (β = −.26**) in models predicting depressive symptoms (β = .37***). †$p < .10$. *$p < .05$. **$p < .01$. ***$p < .001$.

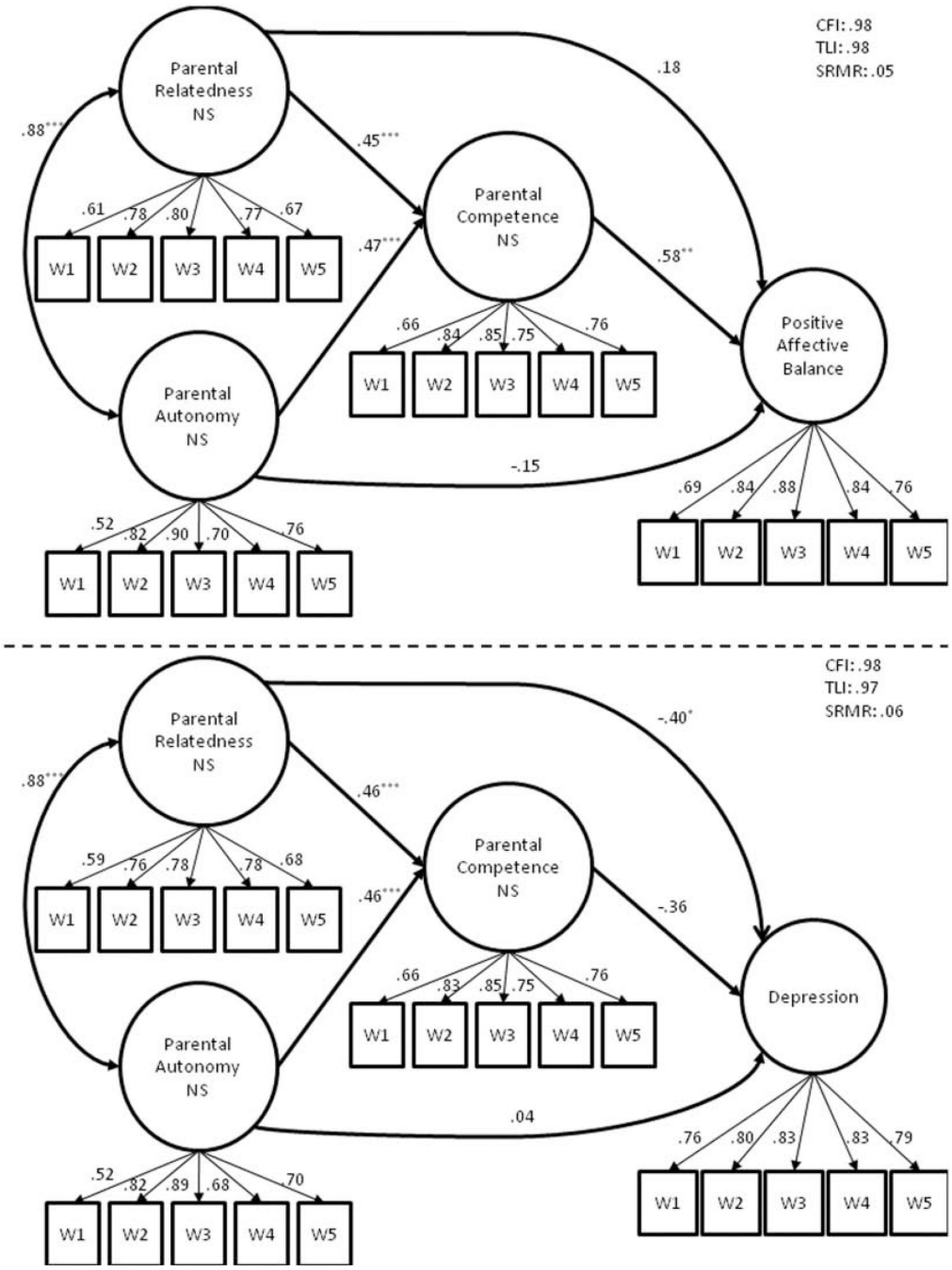

Figure 3. Study 2 state-trait mediation models for need satisfaction within the parental role

NS = need satisfaction; W = wave; CFI = comparative fit index; TLI = Tucker–Lewis index; SRMR = standardized root mean square residual. Standardized coefficients are provided. Not depicted are within-time correlations between all manifest variables assessed at the same time point. Self-reported physical symptoms were negatively related to role-related autonomy NS (β = −.23*), relatedness NS (β = −.35***), and competence NS (β = −.14*) in models predicting positive affective balance (β = −.28***). Self-reported physical symptoms were negatively related to role-related autonomy NS (β = −.21*), relatedness NS (β = −.

35***), and competence NS (β = −.14*) in models predicting depressive symptoms (β = .32***). *$p < .05$. **$p < .01$. ***$p < .001$.

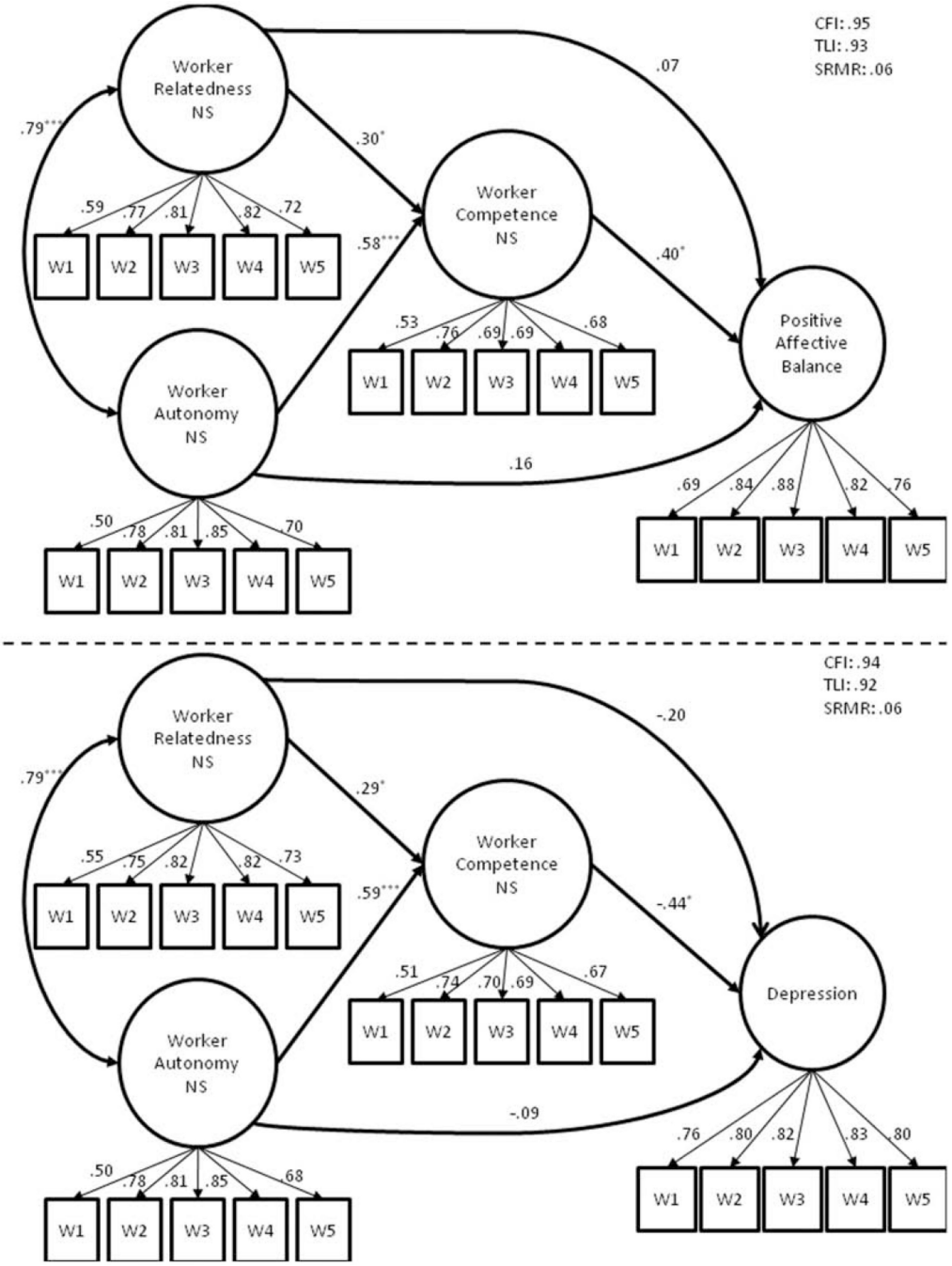

Figure 4. Study 2 state-trait mediation models for need satisfaction within the worker role

NS = need satisfaction; W = wave; CFI = comparative fit index; TLI = Tucker–Lewis index; SRMR = standardized root mean square residual. Standardized coefficients are provided. Not depicted are within-time correlations between all manifest variables assessed at the same time point. Self-reported physical symptoms were negatively related to role-related autonomy NS (β = −.24), relatedness NS (β = −.40**), and competence NS (β = −.21*) in models predicting positive affective balance (β = −.29*). Self-reported physical symptoms were negatively related to role-related autonomy NS (β = −.20), relatedness NS (β = −.

37***), and competence NS (β = −.21**) in models predicting depressive symptoms (β = .31***). *$p < .05$. **$p < .01$. ***$p < .001$.

Table 1

Study 1 Descriptive Statistics and Total Score Correlations for Primary Study Measures

Measure	*M*	*SD*	α	1	2	3	4
1. Role-related autonomy/relatedness NS	5.54	1.07	.77	—			
2. Role-related competence NS	5.86	0.97	.66	.79	—		
3. Positive affective balance	1.78	2.14	.92/.88[a]	.66	.69	—	
4. Depressive symptoms	1.76	0.63	.91	−.61	−.61	−.83	—

NS = need satisfaction. Regression analyses controlled for global self-esteem and self-reported physical functioning. All correlations significant at $p < .001$.

[a]Reliability for positive affect subscale/negative affect subscale.

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Table 2

Study 2 Descriptive Statistics and Total Score Correlations for Primary Study Measures

	Wave 1					Wave 2					Wave 3					Wave 4					Wave 5				
	Aut	**Rel**	**Com**	**Aff**	**Dep**	**Aut**	**Rel**	**Com**	**Aff**	**Dep**	**Aut**	**Rel**	**Com**	**Aff**	**Dep**	**Aut**	**Rel**	**Com**	**Aff**	**Dep**	**Aut**	**Rel**	**Com**	**Aff**	**Dep**
Spousal	role																								
Rel	.68	—				.74	—				.73	—				.72	—				.76	—			
Com	.59	.65	—			.66	.72	—			.68	.69	—			.72	.66	—			.71	.75	—		
Aff	.34	.40	.48	—		.39	.42	.46	—		.47	.48	.55	—		.50	.49	.62	—		.47	.52	.46	—	
Dep	−.40	−.45	−.43	−.67	—	−.41	−.49	−.50	−.72	—	−.49	−.51	−.56	−.81	—	−.52	−.46	−.57	−.81	—	−.49	−.49	−.48	−.76	—
M	5.44	5.53	5.25	0.37	1.60	5.41	5.52	5.44	0.92	1.53	5.43	5.57	5.49	1.20	1.50	5.43	5.45	5.40	1.18	1.53	5.37	5.34	5.49	0.89	1.52
SD	1.39	1.44	1.34	1.38	0.47	1.44	1.56	1.32	1.41	0.51	1.53	1.43	1.33	1.49	0.47	1.47	1.49	1.39	1.50	0.52	1.51	1.70	1.27	1.43	0.46
n	175	175	175	209	211	162	162	162	192	192	160	160	160	188	191	149	149	149	182	182	132	132	133	148	149
Parental	role																								
Rel	.48	—				.72	—				.70	—				.74	—				.47	—			
Com	.51	.57	—			.75	.71	—			.75	.66	—			.72	.76	—			.58	.54	—		
Aff	.28	.33	.40	—		.42	.45	.51	—		.53	.50	.53	—		.36	.46	.54	—		.37	.29	.32	—	
Dep	−.42	−.43	−.46	−.67	—	−.56	−.54	−.60	−.72	—	−.59	−.56	−.57	−.81	—	−.36	−.47	−.55	−.81	—	−.41	−.37	−.45	−.76	—
M	5.73	6.10	5.83	0.37	1.60	5.79	6.12	5.85	0.92	1.53	5.84	6.14	5.95	1.20	1.50	5.82	6.18	5.96	1.18	1.53	5.81	6.12	5.97	0.89	1.52
SD	1.23	I.I 1	1.14	1.38	0.47	1.22	1.14	1.18	1.41	0.51	1.26	1.13	1.15	1.49	0.47	1.12	0.96	1.07	1.50	0.52	1.06	1.00	1.03	1.43	0.46
n	170	169	170	209	211	148	148	149	192	192	143	143	142	188	191	133	133	133	182	182	126	126	128	148	149
Worker	role																								
Rel	.57	—				.65	—				.75	—				.73	—				.72	—			
Com	.50	.69	—			.59	.67	—			.65	.61	—			.75	.60	—			.58	.50	—		
Aff	.31	.41	.46	—		.48	.48	.47	—		.54	.47	.44	—		.53	.49	.51	—		.23	.23	.34	—	
Dep	−.42	−.50	−.53	−.67	—	−.53	−.56	−.58	−.72	—	−.50	−.48	−.48	−.81	—	−.52	−.49	−.51	−.81	—	−.39	−.32	−.42	−.76	—
M	5.51	5.59	5.70	0.37	1.60	5.61	5.58	6.00	0.92	1.53	5.49	5.52	5.92	1.20	1.50	5.59	5.68	6.00	1.18	1.53	5.66	5.71	6.16	0.89	1.52
SD	1.27	1.35	1.23	1.38	0.47	1.32	1.40	1.02	1.41	0.51	1.33	1.41	1.09	1.49	0.47	1.26	1.22	1.00	1.50	0.52	1.30	1.22	0.96	1.43	0.46
n	166	166	167	209	211	140	140	140	192	192	144	144	144	188	191	143	143	143	182	182	129	129	129	148	149

Aut = autonomy need satisfaction (NS); Rel = relatedness NS; Com = competence NS; Aff = positive affective balance; Dep = depressive symptoms. All correlations are significant at $p < .05$.

Table 3

Study 2 Indirect Effects From Primary and Alternative State-Trait Mediation Models for Positive Affective Balance and Depressive Symptoms

	Positive affective balance						Depressive symptoms					
	Via competence NS[a]		Via autonomy NS		Via relatedness NS		Via competence NS		Via autonomy NS		Via relatedness NS	
	αβ	*SE*	αβ	*SE*	αβ	*SE*	αβ	*SE*	αβ	*SE*	αβ	*SE*
Spousal role												
Competence NS	—	—	.02	.04	.06	.07	—	—	−.03	.02	−.00	.03
Autonomy NS	.10	.07	—	—	.11	.13	−.02	.01	—	—	−.01	.05
Relatedness NS	**.18***	**.09**	.06	.14	—	—	−.04	.03	**−.11***	**.05**	—	—
Parental role												
Competence NS	—	—	−.09	.14	.11	.14	—	—	.01	.05	**−.09***	**.06**
Autonomy NS	**.39***	**.19**	—	—	.11	.15	−.09	.06	—	—	**−.09***	**.06**
Relatedness NS	**.35***	**.18**	−.09	.13	—	—	−.09	.06	.01	.04	—	—
Worker role												
Competence NS	—	—	.16	.17	.05	.10	—	—	−.03	.06	−.05	.04
Autonomy NS	**.35***	**.20**	—	—	.04	.08	**−.15***	**.07**	—	—	−.04	.03
Relatedness NS	**.15***	**.10**	.06	.06	—	—	**−.06***	**.04**	−.01	.02	—	—

NS = need satisfaction. Unstandardized indirect coefficients (αβ) are presented. Bolded values are statistically significant, using PRODCLIN to determine which estimates were contained in asymmetric confidence intervals not including 0.

[a]"Via" indicates the need satisfaction variable that was considered as the mediator in the corresponding column analyses.

*$p < .05$.

Table 4

Study 2 Multilevel Model Coefficients

	Role-related competence NS			Positive affective balance						Depressive symptoms					
	β	(*SE*)	*t* value	β	(*SE*)	*t* value	β	(*SE*)	*t* value	β	(*SE*)	*t* value	β	(*SE*)	*t* value
Spousal role															
Autonomy NS	.38	(.03)	11.44***	.11	(.03)	4.26***	.05	(.05)	1.90	−.03	(.01)	−1.67	.02	(.01)	0.36
Relatedness NS	.28	(.03)	8.99***	.05	(.05)	1.92	.01	(.05)	0.15	−.10	(.01)	−4.34***	−.06	(.01)	−2.62**
Competence NS	—		—	—		—	.15	(.05)	5.44***	—		—	−.12	(.02)	−5.02***
Parental role															
Autonomy NS	.33	(.03)	9.38***	.06	(.06)	2.25*	.03	(.06)	1.18	−.09	(.02)	−3.71***	−.07	(.02)	−2.81**
Relatedness NS	.26	(.03)	7.55***	.10	(.06)	3.69***	.08	(.06)	2.81**	−.05	(.02)	−2.07*	−.04	(.02)	−1.42
Competence NS	—		—	—		—	.08	(.07)	2.82**	—		—	−.05	(.02)	−2.05*
Worker role															
Autonomy NS	.22	(.04)	5.71***	.06	(.05)	2.03*	.03	(.05)	1.04	−.08	(.02)	−2.77**	−.05	(.02)	−1.93
Relatedness NS	.31	(.04)	7.92***	.09	(.06)	3.13**	.05	(.06)	1.68	−.05	(.02)	−2.05*	−.02	(.02)	−0.88
Competence NS	—		—	—		—	.13	(.06)	4.58***	—		—	−.08	(.02)	−3.71**

NS = need satisfaction. Estimated coefficients are standardized. Coefficients for covariates in analyses predicting positive affective balance (physical symptoms: average β = −.35, *SE* = .11, $p < .001$; aggregate NS: average β = .39, *SE* = .08, $p < .001$) and depressive symptoms (physical symptoms: average β = .31, *SE* = .03, $p < .001$; aggregate NS: average β = −.51, *SE* = .02, $p < .001$) were similar across all three roles.

* $p < .01$.

** $p < .01$.

*** $p < .001$.