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Daily Goals and Psychological Well-Being in Midlife and Older Women: Physical Pain Interacts with Goal Conflict

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Abstract

Physical pain is more prevalent with older age and female gender, and pain can interfere with goal pursuit and its psychological benefit. In particular, insofar as pain is associated with fatigue, it may limit resources for goal pursuit and increase goal resource conflict: the competition between goals for time and energy. Therefore, the pursuit of goals with high value and low resource conflict should provide the most psychological benefit, particularly for women who experience physical pain. Women in middle and older age ($N = 200$) completed up to 7 daily diaries ($n = 1,380$), in which they reported and rated their daily goals and assessed their daily pain, distress, fatigue, and cognitive function. Raters also assessed goal conflict. Multilevel models tested the within- and between-person relationships of goal value and goal conflict with daily distress, fatigue, and cognitive function, as well as moderation by pain. Higher goal value was associated with less distress and fatigue and better cognitive function within and between women. Depending on whether or not a woman had physical pain, goal conflict had different relationships with fatigue and cognitive function: for women with no pain, there was a modest positive relationship between goal conflict and both cognitive difficulties and subjective fatigue; for women with pain, there was a negative relationship between goal conflict and both cognitive difficulties and subjective fatigue. Results suggest women without pain may be taxed by their goal conflict, whereas women with pain may regulate their goal conflict in response to their available resources.

One common consequence of aging is the development of physical pain. In a random-digit-dialing survey in the United States, the percent of time adults experienced pain increased from around 20% in young adulthood to over 50% in old-old age. Pain severity also increased with age, particularly among women (Krueger & Stone, 2008). Women have a higher prevalence of many pain conditions, particularly multifocal and musculoskeletal pain (Fillingim, King, Ribeiro-Dasilva, Rahim-Williams, & Riley, 2009; Johannes, Le, Zhou, Johnston, & Dworkin, 2010). The present study examined how physical pain affects the relationship between goal conflict and well-being among older women. Goal conflict can be broadly defined as interference between two goals in their pursuit or accomplishment (Emmons & King, 1988). This interference can take the form of *inherent* conflict, in which “strategies for attaining different goals are incompatible”: for example, the goal to be open

to dating and the goal to avoid rejection. Inherent conflict is less prevalent than *resource* conflict, in which “several goals require more of the same, limited resource [e.g., time or energy] than is available”: for example, the goal to go to more parties and the goal to work more hours (Riediger & Freund, 2004, pp. 1511-1512; Segerstrom & Solberg Nes, 2006). Because pain can limit resources for goal pursuit, resource conflict was the focus of this investigation.

Women’s experience of physical pain in middle and late adulthood provides an important context for their goal pursuit and well-being. Negative effects of pain on goal pursuit have been characterized as “among the most important consequences of chronic pain” (Karoly & Ruehlman, 2007, p. 563). In another random-digit-dialing survey in the United States, people with chronic pain reported that pain interfered with a number of activities, including social activity, household chores, recreation, and physical activity. Interference increased with more severe pain and was partially accounted for by cognitive and behavioral responses, such as guarding (Karoly & Ruehlman, 2007). Guarding, an important part of the fear-avoidance model of chronic pain, refers to intentional reduction in goal-related activity intended to combat pain. In turn, reduction in activity may contribute to worsening psychological health and increasing pain (Crombez, Eccleston, Van Damme, Vlaeyen, & Karoly, 2012). Both between-person differences and within-person changes in pain severity affect goal pursuit. Among women with fibromyalgia, on days when their pain was higher than usual, they reported more interference with social and health goals and less progress toward those goals (Affleck et al., 1998, 2001). Therefore, pain can lead people to reduce their efforts to pursue goals and activities.

Even when the intention to pursue goals is maintained, pain can limit available resources to pursue goals. Subjective fatigue, that is, feeling tired, is a common correlate of pain and reduces the perceived energy available for goal pursuit. Among women with fibromyalgia, fatigue led to more interference with social and health goals and less progress toward those goals, as well as less effort to meet goals (Affleck et al., 2001). In addition, chronic pain can result in self-regulatory fatigue. Self-regulatory ability is the ability to control thoughts, behaviors, and emotions. Decreases in this ability, that is, self-regulatory fatigue, limit the psychological resources that can be devoted to goal pursuit (Solberg Nes, Roach, & Segerstrom, 2009). Women with chronic pain evidenced high self-regulatory fatigue compared with a matched sample without pain (Solberg Nes, Carlson, Crofford, De Leeuw, & Segerstrom, 2010). Self-regulatory fatigue can be experienced with or without subjective fatigue and therefore possibly comprises an independent barrier to goal pursuit (Hagger, Wood, Stiff, & Chatzisarantis, 2010).

Women who experience more pain may thus experience higher resource conflict among their goals (Segerstrom & Solberg Nes, 2006). Competition between goals for these resources is intensified by the limitations imposed by pain. Pain can limit available time for pursuit of non-pain goals insofar as pain itself requires management (e.g., rest). Pain can also limit available energy insofar as it results in subjective and self-regulatory fatigue. Fatigue can lead to higher goal conflict for people who have higher pain than others, as well as during times when pain is higher than at others. For women with fibromyalgia, higher symptom burden resulted in the perception of more resource conflict. In turn, on days with higher

resource conflict (that is, goals competed for more time and energy), evening pain increased, perhaps because time was not devoted to pain management or because energetic resources were taxed (Hardy, Crofford, & Segerstrom, 2011). This finding is consistent with negative psychological and physical sequelae of goal conflict in undergraduate students and working adults, which are thought to arise from the stress of conflict (Emmons, 1986; Emmons & King, 1988; Riediger & Freund, 2004).

However, goal conflict, particularly resource conflict, does not always adversely affect well-being. More goal conflict correlated with higher positive affect and did not correlate with negative affect among lower and middle managers when goal attainment was high (Kehr, 2003). Goal conflict positively correlated with psychological health among undergraduate students when goal conflict was balanced by positive goal expectancies and goal value (Segerstrom & Solberg Nes, 2006). Conflicting goals were associated with more positive and less negative affect when the underlying motivation was intrinsic (i.e., the goal was being pursued for its own sake) than when it was extrinsic (i.e., the goal was being pursued because of external standards or pressures; Gorges, Esdar, & Wild, 2014).

These findings highlight the fact that goal pursuit, even when it results in conflict, can have benefits such as goal attainment and value. Disengaging from goals in order to resolve conflict may compromise an important source of well-being. Goal pursuit provides “structure, meaning, identity, and a sense of purpose” (Segerstrom & Solberg Nes, 2006, p. 675). Progress toward goals increases positive affect and decreases negative affect (Carver & Scheier, 1982, 1990).

Therefore, disengaging from goal pursuit in order to reduce goal conflict could compromise psychological well-being. Disengaging from specific goals can be psychologically adaptive, but only when accompanied by re-engagement with other goals so that goal pursuit is maintained in a global sense; disengagement in the absence of re-engagement is psychologically unhealthy (Wrosch, Scheier, Miller, Schulz, & Carver, 2003). Accommodation of goals to barriers such as pain can maintain global goal pursuit and psychological health, and engagement with goals unrelated to pain may actually decrease the psychological impact of pain (Crombez et al., 2012; Schmitz, Saile, & Nilges, 1996; Schrooten et al., 2012). In sum, if people with pain accommodate individual goals to barriers, goal pursuit can continue and can contribute to well-being. Indeed, one implication of recovery from pain is “a rescheduling of daily life, an adaptation or modification of aspirations, not the least of which will involve a search for new goals to be sought within a pain context” (Crombez et al., 2012, p. 477; Karoly, 2015).

The psychological benefit of pursuing goals therefore arises from goal value and cost considered together. In terms of value, some goals are more important to the individual than others. Pursuing goals that are important to self-definition, psychological needs, or core values confer more psychological benefit than pursuing goals that are less important (Emmons, 1986; Gorges, Esdar, & Wild, 2014; Sheldon & Elliot, 1999). In terms of costs, some goals demand more time and energy than others and therefore contribute more to resource conflict among goals. Therefore, goals that are more important and less costly

should be the most beneficial to well-being, and goals that are less important and more costly should be the least beneficial.

We tested this hypothesis in a sample of midlife and older women (aged 50 to 75), examining value and resource conflict in daily goal sets as related to individual differences in physical pain and daily outcomes including distress, subjective fatigue, and well-being. We tested the following primary hypotheses in daily diary data:

1. Within women, days characterized by pursuit of goals with higher importance and commitment (value) and lower resource conflict (cost) will be associated with better psychological health, including lower distress, subjective fatigue, and cognitive difficulties.
2. Individual differences in pain will moderate the effect of goals on psychological health. Specifically, there will be a larger effect of resource conflict on psychological health among women who experienced more pain.

We also tested a secondary hypothesis to replicate a previous finding that pain increases the amount of perceived resource conflict among goals (Hardy et al., 2011):

3. Pain will create greater discrepancy between objective and subjective resource conflict. Specifically, women who experienced more pain will rate goals as more conflicting – relative to objective resource conflict derived from independent ratings – than will women who experienced less pain.

Method

Participants

Participants were 200 women with a mean age of 62 years ($SD = 6.4$), ranging from 50 to 75 years. The sample was 99% Caucasian and 1% African-American. Mean years of education was 16.7 years ($SD = 2.3$), ranging from 12 to 22 years.

Procedure

Data came from the Daily Activity and Health in the Lives of Adult Women (DAHLiA) study, which is an investigation of the effects of physical pain on well-being in midlife and older women. DAHLiA participants were recruited from the Kentucky Women's Health Registry, a research registry of women of all ages. Because the effects of pain on well-being was a primary focus of the study, women who reported pain in the registry survey were oversampled. There were 109 women who reported 0 pain sites in their most recent registry survey (54%), 54 women who reported 1 pain site (27%), and 37 women who reported more than one pain site (19%).

Registry participants aged 50-75 and living in a 7-county area in Central Kentucky were sent an email invitation to participate in DAHLiA. Respondents were further screened for study exclusion criteria: BMI > 40; pacemaker; serious heart conditions (e.g., recent heart attack, angina, severe arrhythmia, blood pressure over 200/100); serious medical conditions (e.g., autoimmune disease); serious mental disorders; oral, inhaled, or injected corticosteroids (e.g., prednisone) in the 3 months prior to enrollment. As DAHLiA included fitness testing,

participants were also required to be able to exercise on a treadmill (i.e., they had no physical conditions that limited their mobility). Eligible women attended a single outpatient visit for physical assessment and then took saliva samples and completed online diaries daily at home for 7 days. Interviewers collected saliva samples and administered some additional questionnaires at the end of the assessment week. The daily assessment is repeated every 3 months. Women received \$50 for the clinic assessment, \$25 for completion of each daily diary wave, and a \$25 bonus at each wave for completing all 7 diaries between 8 pm and 2 am on each day. The present study focuses on diary data from the first assessment wave, which has been completed by all women in the study. All procedures were approved by the Institutional Review Board at the University of Kentucky.

At Wave 1, 1,380 diaries were submitted out of 1,400 possible diaries (98.6%); 1,361 had complete data for all diary variables (97.2%). Most of the submitted diaries were completed within the target window (92.8%). Multilevel analyses (see **Data Analysis**) used all available data without listwise deletion.

Measures

Demographics—Participants provided information on their age, sex, race/ethnicity, education, and income.

Goal value and conflict—Daily goals were assessed via a free-response list participants generated in their daily diary. Participants could list up to 9 goals on each day. Each goal was rated for importance (e.g., *How important is this goal to you in your life?*), commitment (e.g., *How committed are you to this goal?*), and resource conflict (e.g., *How much does this goal compete for the same resources (e.g., time and energy) as your other goals?*). Goal commitment and importance were highly correlated between ($r = .90$) and within ($r = .75$) women, and so these two ratings were combined into a single goal value variable.

Three independent raters rated each goal with regard to its resource conflict with other goals in the set for that day, where 0 was no conflict, 1 was possible conflict, 2 was slight conflict, 3 was probable conflict, and 4 was definite conflict. Raters were instructed to rate the degree to which each goal competed for the same resources (i.e., time, energy) with other goals on the same day. Therefore, days characterized by many goals with high resource demands would yield higher resource conflict than days characterized by few goals, low resource demands, or both. Goal conflict has previously been rated with regard to each pair of goals in a set and operationalized as the sum across all pairwise comparisons (Segerstrom & Solberg Nes, 2006; Hardy et al., 2011). Using data from Hardy and colleagues (2011), goal conflict using the method in the present study (sum of individual goals rated with regard to the set) and that in Hardy and colleagues (2011; sum of each pairwise conflict rating), the correlation between the two methods ($r = .78$) suggested that little information was lost by using the present method, which is more efficient in terms of rating large numbers of goals. Alpha reliability for the raters across all 4,688 goals was .82, and the mean of the three ratings was taken as the objective goal conflict for that goal.

Pain—Pain was assessed using pain intensity and interference items from the Patient-Reported Outcomes Measurement Information System (PROMIS; Cella et al., 2007).

Participants rated their pain on a Likert scale from 0 (*No pain*) to 10 (*Worst imaginable pain*). They rated 6 questions assessing how pain interfered with their daily activities (e.g., How much did pain interfere with your day to day activities?) on a scale from 1 (*Not at all*) to 5 (*Very much*). The Pain Interference module has demonstrated good internal reliability ($r=.80$ or greater) as well as good convergent validity with pain intensity scores and other measures of pain (e.g., Brief Pain Inventory; Cella et al., 2010). A pain composite was created by equally weighting pain severity and mean pain interference (after converting mean interference to a range of 0-10 to match the range of severity). This composite was positively skewed; therefore, analyses employed a natural log transformation.

Outcomes—Outcomes were measured using the PROMIS short-form measures of distress (e.g., *I felt depressed, My worries overwhelmed me*; 7 items), subjective fatigue (e.g., *I had trouble starting things because I was tired*; 4 items), and cognitive function (e.g., *I was able to keep track of what I was doing, even if I was interrupted*, 4 items). PROMIS measures have been reported to have good internal reliability and convergent validity (Cella et al., 2010). Items were rated on a 5-point Likert scale from 1 (*Never*) to 5 (*Always*). Because we tested both between-person differences and within-person change, reliabilities for both were calculated (Cranford et al., 2006). In the present study, scale reliabilities between people were good for the same fixed day (distress, $R_{1F}=.88$; subjective fatigue, $R_{1F}=.88$; cognitive function, $R_{1F}=.95$), for stable individual differences across seven fixed days (distress, $R_{7F}=.98$; subjective fatigue, $R_{7F}=.98$; cognitive function, $R_{7F}=.99$), and for within-person change (distress, $R_C=.80$; subjective fatigue, $R_C=.89$; cognitive function, $R_C=.97$).

Mean subjective fatigue and distress across all days were substantially correlated with each other ($r=.51$), but less highly correlated with cognitive function ($r=-.26$ and $-.29$, respectively). Correlations between changes (daily deviations from each person's mean) suggested greater dissociation between the three outcomes at the level of within-person change. As was true for the between-person correlations, the highest correlation was for subjective fatigue and distress ($r=.22$), with lower correlations between them and cognitive function ($r=-.20$ and $-.09$, respectively). Because the outcomes were moderately independent of each other between people and largely independent of each other within people, they were analyzed separately.

Data Analysis

The data had a multilevel structure with days at Level 1 and women at Level 2, so the data were analyzed using multi-level models (SAS 9.4 PROC MIXED) with REML estimation. To separate between- and within-person variance in the predictors, each person's predictor (e.g., goal value) was separated into a mean across all days (Level 2; stable individual differences) and a deviation from that mean on each day (Level 1; within-person variation) (Enders & Tofighi, 2007).

Descriptive statistics—Average sample qualities (e.g., goal conflict) were characterized by the intercept from null multilevel models with days at Level 1 and women at Level 2. This intercept more accurately models the sample average than a raw mean across all women and days (Snijders & Bosker, 1999). Correlations between people (e.g., Table 1)

were performed on the mean (Level 2) variables, with inferential statistics performed; correlations within people were performed on the deviations, without inferential statistics performed because of the nested structure of the data. Note that these correlations are provided for illustration of effect sizes and not for hypothesis testing.

Substantive models—Substantive multilevel models predicted the three outcomes from main effects of goal qualities and then from interactions with pain. In terms of the time structure of the data, a compound-symmetric time structure (corresponding to a model with only a random intercept) had lower -2 log likelihood compared with autoregressive time structure for all outcomes, suggesting that it was not necessary to explicitly include diary day as a component of the model, that is, the covariance between days was not dependent on the proximity of days to each other. Effects of between- and within-person predictors were tested using Kenward-Roger standard errors and degrees of freedom, which account for sample size and estimation bias. In each model, the presence of a random slope for within-person predictors (e.g., allowing the relationship between changes in goal value and changes in distress to vary between people) was tested using likelihood ratio tests with a chi-square mixture distribution on models with and without the random slope. Random slopes that were significant in the likelihood ratio test at $p = .05$ were included in the final model. Models testing interactions also included all relevant main effects. For statistically significant interactions, the moderator was centered at multiple values so that the predictor main effects in the models could be interpreted as the simple slopes of the predictor at the centering values (Aiken & West, 1991).

Power for substantive models—The study was powered *a priori* to detect small effect sizes ($r = .10-.15$). The power of multilevel models can be calculated from the “ $N_{\text{effective}}$ ”, which considers the number of Level 1 and Level 2 units (in this case, days and women) in light of the intraclass correlation, which indicates how much variance is attributable to each level and therefore whether the $N_{\text{effective}}$ is closer to the number of Level 1 or Level 2 units (Snijders & Bosker, 1999). *Post hoc*, the study was powered to detect effect sizes of $r = .17$ for subjective fatigue, $.18$ for distress, and $.16$ for cognitive function.

Results

Descriptive qualities of goals

Goal qualities were averaged across all goals on each diary day in order to characterize goal sets on each day, the primary level of analysis. With regard to goal conflict, the number of goals in the set was highly associated with objective (rater) goal conflict (operationalized as the sum of each goal's conflict with all other goals in the set; $r = .94$, between; $r = .53$, within) but not with subjective conflict. Raters therefore were apparently more influenced by the instruction to consider conflict with all other goals in the set than were participants. In order to separate the influence of average goal resource demand from number of goals, objective conflict was divided by number of goals to yield mean objective conflict for goals in the set. There therefore were three measures of goal conflict: mean objective conflict, mean subjective conflict, and number of goals. Mean objective conflict and number of goals were largely independent of mean subjective conflict, and all three were largely independent

of goal value (see Table 1). In addition, all goal qualities had substantial variation both between and within people (intraclass correlations ranged from .35 to .58), suggesting the existence of stable individual differences as well as substantial change across days and facilitating multilevel analysis.

Daily goal sets and psychological outcomes

For each of the three outcomes, a model was fit regressing psychological outcomes on the main effects of goal qualities (conflict and value). Table 2 shows the results of these models. The most consistent effects across outcomes was for goal value. Women who had consistently more valuable goals (i.e., a between-person effect) had less distress ($p = .03$) and better cognitive function ($p = .003$) than women with consistently less valuable goals. In addition, on days on which goal sets were more valuable, subjective fatigue was lower ($p = .001$) and cognitive function was higher ($p = .049$). By contrast, there were few main effects of goal conflict regardless of its operationalization. Higher objective resource conflict was associated with better cognitive function ($p = .01$), and a larger goal set was associated with less subjective fatigue ($p < .0001$).

Pain, daily goal sets, and psychological outcomes

The next set of models tested the interactions between average pain and between- and within-person effects of the three operationalizations of goal conflict as they affected each of the three outcomes. Despite oversampling women reporting one or more pain sites, the overall pain intensity and interference reported in the sample was low for the majority of the sample when assessed daily. As the untransformed mean across all days, average pain was low ($M = 1.10$, $SD = 1.23$, range = 0 – 6.65, on a scale of 0-10). However, average pain affected the influence of goal conflict, particularly the objective measures. For women with higher average pain, there was a stronger relationship between daily changes in objective goal conflict and lower subjective fatigue (interaction estimate = -0.15 , $SE = 0.07$, $p = .035$), but this interaction was not statistically significant for distress or cognition. For interpretability, Figure 1 (A) illustrates the estimated slopes from this model at four levels of untransformed average pain roughly corresponding to the range of average pain in the sample. The simple slopes at these four levels of pain were: At average pain of 0, slope = 0.10 , $SE = 0.06$, $p = .10$; at 2, slope = -0.07 , $SE = 0.05$, $p = .16$; at 4, slope = -0.14 , $SE = .08$, $p = .059$; at 6, slope = -0.19 , $SE = 0.10$, $p = .047$.

The same interaction was found when daily change in number of goals was tested instead of objective goal conflict (interaction estimate = -0.06 , $SE = 0.03$, $p = .031$). The simple slopes at the same four levels of pain were: At average pain of 0, slope = -0.01 , $SE = 0.02$, $p = .78$; at 2, slope = -0.07 , $SE = 0.02$, $p = .0003$; at 4, slope = -0.10 , $SE = .03$, $p = .0011$; at 6, slope = -0.12 , $SE = 0.04$, $p = .0021$. There was also a statistically significant daily relationship between more goals and better cognition (interaction estimate = 0.13 , $SE = 0.04$, $p = .002$). Figure 1 (B) illustrates the estimated slopes from this model. The simple slopes for the four levels of pain were: At average pain of 0, slope = -0.08 , $SE = 0.03$, $p = .014$; at 2, slope = 0.06 , $SE = 0.03$, $p = .028$; at 4, slope = 0.13 , $SE = 0.05$, $p = .0049$; at 6, slope = 0.17 , $SE = 0.06$, $p = .0031$. There was not a statistically significant interaction between number of goals

and average pain predicting distress. Subjective conflict had no statistically significant interactions with average pain for any outcome.

Finally, because value was the strongest correlate of outcomes, the interaction between pain and value was explored. However, there were no statistically significant interactions between value and pain (all $p > .29$).

Subjective and objective goal conflict

Models testing the third hypothesis regressed subjective goal conflict on objective goal conflict (such that the outcome became residualized subjective conflict vis a vis objective conflict) and between- and within-person differences in pain. There was a statistically significant relationship between objective and subjective conflict (estimate = 0.12, SE = 0.06, $p = .027$), but neither average (between-person) pain (estimate = -0.01, SE = 0.13, $p = .924$) nor within-person changes in pain (estimate = 0.07, SE = 0.09, $p = .421$) were associated with the residualized outcome. Therefore, in the present study, whether or not a woman had higher or lower average pain or changes in pain did not systematically affect the discrepancy between her perception of goal conflict and that of the raters.

Discussion

Pain comprises an important context for goal pursuit, particularly as people age and particularly for women. The present study tested three hypotheses using daily diaries: that goal value and resource conflict would contribute to daily psychological well-being; that the effect of resource conflict would be stronger in women who typically experienced more pain; and that the discrepancy between objective and subjective resource conflict would be larger among women who experienced more pain.

With regard to the main effects, only goal value was associated with well-being: Women who assigned more importance and commitment to their goals reported less distress and better cognitive function, and on days characterized by pursuit of goals with higher importance and commitment, women also reported less subjective fatigue and better cognitive function. Higher goal value and importance have been associated with higher subjective well-being (Emmons, 1986). The valuable goals in the present study may have something in common with self-integrated goals, which emanate from the individual's interest and values. Self-integration correlates positively with goal commitment, and pursuing self-integrated goals correlates positively with both simultaneous and future well-being (Gorges et al., 2014; Sheldon & Eliot, 1998, 1999).

Contrary to our hypothesis, resource conflict among goals had no main effect on well-being. Although main effects of goal conflict on well-being have been found in some cases (Boudreaux & Ozer, 2013; Emmons, 1986; Emmons & King, 1988; Riediger & Freund, 2004), in others, they have not (Segerstrom & Solberg Nes, 2006). Likewise, in the present study, subjective resource conflict among goals was unrelated to distress, subjective fatigue, and cognitive function. One possibility is that goal conflict affects well-being differently when occurring at different levels of construal (Carver & Scheier, 1982; Trope & Liberman, 2010). In the present study, daily goals tended to be focused on specific activities (e.g., "help

a friend clean”, “walk at lunchtime”, “do yardwork”). In contrast, studies of longer-term goals generated higher-level goals (e.g., “spend more time with family”, “get a second job”, “be more personable”; Segerstrom & Solberg Nes, 2006). If lower-level goals are perceived as easily postponed or replaced, or if they are not strongly connected to higher-order goals, then conflict among them might not be detrimental to well-being (Carver & Scheier, 1998). Another possibility is that goal conflict affects different people or goals differently; these differences might include goal ambivalence (Kelly, Mansell, & Wood, 2011), goal progress (Kehr, 2003), goal self-integration (Gorges et al., 2014), or positive goal expectancies (Segerstrom & Solberg Nes, 2006). It should be noted that the present study focused on effects of resource conflict because it is the most common source of goal conflict and because pain can affect resources for goal pursuit; the effects of inherent conflict may be different (Emmons & King, 1988).

Consistent with our hypothesis, goal resource conflict had different relationships with well-being for women who experienced higher average pain than women who did not experience pain. As shown in Figure 1 (A), for women without pain (i.e., 0 on a 0-10 scale), on days when their goal sets had higher objective conflict, they tended to report slightly more subjective fatigue. However, for women with substantial pain (i.e., between 4 and 6 on a 0-10 scale), on days when their goal sets had higher objective conflict, they also reported less subjective fatigue. As shown in Figure 1 (B), for women without pain, on days when they pursued more goals, they also reported poorer cognitive function. For women with pain (i.e., between 2 and 6 on a 0-10 scale), on days when they pursued more goals, they reported better cognitive function.

One interpretation of these results pertains to differences in causal direction. Although these results do reflect within-person change, they do not imply causality. Women without pain may be reporting consequences of their goal conflict for psychological well-being: high goal conflict may lead them to experience more subjective fatigue as well as difficulty with cognition. However, women with pain may be reporting consequences of their cognitive function and subjective fatigue on goal pursuit: increases in cognitive difficulties and subjective fatigue may lead them to downregulate the number and resource demand of their goals (cf., Affleck et al., 2001), thereby avoiding both goal conflict and exhaustion (Crombez et al., 2012). Studies with multiple daily assessments could test this interpretation. For example, among women with fibromyalgia, women with higher average objective (relative to subjective) goal resource conflict also had higher average morning subjective fatigue (Hardy et al., 2011). Pain did not affect the relationship between goal value and psychological well-being, suggesting that although women with pain might have downregulated the demand of their goal sets on days when their cognitive difficulties and subjective fatigue were higher than usual, the value of their goals was unchanged.

Physical pain may not be the only individual difference that associates with regulation of daily goal demand. Fatigue and cognitive complaints can result from medical conditions and treatments (e.g., for breast cancer survivors; Bower et al., 2000; Ganz et al., 2013). In addition, social conditions may also limit the resources that can be brought to bear on goal pursuit (e.g., poverty; Spears, 2011). Choosing to pursue fewer but more valuable goals is one mechanism by which people with resource limitations may preserve psychological well-

being (Wrosch et al., 2003). Teaching people who have fatigue, from whatever source, to set important goals to which they are highly committed while adjusting goal demand to resources is a possible target for psychological interventions.

One limitation of the present research was the specific sample: women in middle and older age, in generally good health (as dictated by the inclusion criteria), and with pain – albeit mild pain – overrepresented. There is reason to believe that the findings might generalize to other populations; however, future research should explicitly test this supposition. Men are less susceptible to age-related increases in pain than women (Krueger & Stone, 2008) and may experience somewhat less goal conflict, broadly defined (Kehr, 2003). However, when gender differences in goal conflict and its effects were examined, men and women were similarly affected (Kehr, 2003; Kumashiro, Rusbult, & Finkel, 2008). The role of age and experience with pain, however, may be important. Older people may have more experience with the consequences of overextending themselves in goal pursuit and use this experience to more efficiently titrate their effort to their resources than younger people. Finally, managing the resource restrictions associated with mild to moderate pain by regulating daily goals may differ from managing the more extensive resource restrictions associated with more severe pain. Further research should compare goal effects on people with mild to moderate pain (as in the present study) versus moderate to severe pain (as in fibromyalgia; Hardy et al., 2011).

Goal pursuit and achievement are means by which people attain psychological well-being, but one potentially detrimental consequence of pursuing multiple goals is goal resource conflict: competition between goals for personal resources such as time and energy. The present study suggests that both the nature and direction of the relationship between goal resource conflict and well-being may be affected by the experience of physical pain. The context in which conflict occurs is important, and the ability to regulate conflict in response to context may determine its effects.

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Figure 1.

Relationship between (A) changes in objective goal conflict (on a 5-point scale) and subjective fatigue (on a 5-point scale) and (B) number of goals (on a 9-point scale) and cognitive function (on a 5-point scale) at different levels of mean pain (on a scale of 0 to 10). The X axis range is approximately the range of -1 SD to +1 SD on the within-person measure of goal conflict change.

*Simple slope is statistically significant at $p < .05$.

Table 1

Averages of and Correlations Among Goal Set Qualities

Goal quality	Scale range	Sample intercept (SE)	Value	Subjective conflict	Objective conflict	Number of goals
Value	1-5	4.41 (0.03)	.35	.09	-.11	-.09
Subjective conflict	1-5	2.99 (0.07)	.12	.53	.07	.02
Objective conflict	0-4	1.39 (0.03)	.02	.05	.40	.24
Number of goals	1-9	3.53 (0.11)	.03	.03	.61*	.58

Note. Averages across all days (i.e., between-person correlations) are below the diagonal, and within-person deviations (i.e., within-person correlations) are above the diagonal. Intraclass correlations (i.e., between-day correlations within women) are on the diagonal.

* $p < .05$

Table 2
Main Effects of Goal Set Qualities on Distress, Subjective Fatigue, and Cognitive Function Between and Within Women

Fixed effect	Distress		Fatigue		Cognitive function	
	Estimate (SE)		Estimate (SE)		Estimate (SE)	
Intercept	0.98 (0.13)		1.81 (0.24)		4.63 (0.31)	
Value (between)	-0.14* (0.06)		-0.13 (0.12)		0.45* (0.15)	
Subjective conflict (between)	0.02 (0.02)		0.06 (0.05)		-0.06 (0.06)	
Objective conflict (between)	0.02 (0.06)		0.05 (0.12)		0.15 (0.15)	
Number of goals (between)	0.005 (0.02)		-0.04 (0.03)		-0.006 (0.04)	
Value (within)	-0.03 (0.02)		-0.17* (0.05)		0.12* (0.06)	
Subjective conflict (within)	0.01 (0.009)		0.007 (0.02)		-0.04 (0.03)	
Objective conflict (within)	-0.02 (0.02)		0.04 (0.04)		0.14* (0.06)	
Number of goals (within)	0.003 (0.009)		-0.06* (0.02)		-0.02 (0.02)	
Random effect						
Intercept variance	0.093 (0.010)		0.313 (0.037)		0.461 (0.059)	
Value slope variance	0.015 (0.008)		0.116 (0.047)		-	
Subjective conflict slope variance	-		0.015 (0.009)		-	
Objective conflict slope variance	0.024 (0.007)		0.067 (0.029)		-	
Number of goals slope variance	0.004 (0.001)		-		-	
Residual variance	0.050 (0.003)		0.311 (0.015)		0.786 (0.033)	

* $p < .05$