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**Individual differences in mixed emotions moderate the negative consequences of
goal conflict on life purpose**

Raul Berrios

Department of Management, Universidad de Santiago de Chile, Chile

Peter Totterdell & Stephen Kellett

Department of Psychology, University of Sheffield, UK

Correspondence. Correspondence concerning this article should be addressed to Raul Berrios, Department of Management, Universidad de Santiago de Chile, Santiago, Chile. Phone number: (+56)27180810. Electronic mail may be sent to raul.berrios@usach.cl

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Abstract

Pursuing two incompatible goals (goal conflict) is commonly viewed as pernicious for individual well-being. Recent research has also shown that sometimes goal conflict instigates the experience of mixed emotions (co-activation of positive and negative emotions), and in turn, mixed emotions has been linked to some beneficial outcomes, including self-control and eudaimonic well-being. In the present study we formulated mixed emotions as an individual difference, and hypothesized that individual differences in mixed emotions can moderate the relationship between goal conflict and life purpose, a dimension of eudaimonic well-being. A sample of 73 individuals participated in an experience sampling study, producing over 2,500 observations. Moderation analysis using multilevel modeling showed that goal conflict was negatively related to life-purpose, but more importantly this effect was qualified by a significant cross-level interaction, such that the negative effect of goal conflict on life purpose was weaker for individuals who commonly experienced greater mixed emotions. Given that conflicting goals are commonplace, experiencing mixed emotions may be beneficial for individuals.

Key words: individual differences; mixed emotions; goal conflict; life-purpose; emotional complexity.

Individual differences in mixed emotions moderate the negative consequences of goal conflict on life purpose

1. Introduction

Accrued evidence has shown that goal conflict impairs well-being (Emmons & King, 1988), increases physical symptomatology and GP visits (King & Emmons, 1991), and can prompt depression and anxiety (Emmons & King, 1988). Theory concerning goal conflict also suggests that it is the inability to resolve goal conflict that crucially explains the negative consequences of goal-conflict on well-being (Emmons, 1996).

Recent research has demonstrated that goal-conflict is sometimes followed by emotional experiences characterized by the co-activation of both positive and negative emotions, which are referred to as mixed emotions (Berrios, Totterdell, Kellett, 2015a). Particularly important in this regard is some theory indicating that mixed emotions are complex emotional experiences that may facilitate the integration of incompatible strands of information in a given moment (Cacioppo, Larsen, Smith, & Bernston, 2004; Oatley & Johnson-Laird, 1996; Zautra, 2003), such as in situations involving personal dilemmas (Schniter, Scheremeta, & Shields, 2015).

Other studies have also shown that mixed emotions can promote well-being (Hershfield, Scheibe, Sims, & Carstensen, 2013), but have yet to specify the context within which mixed emotions may be beneficial. Indeed, some authors (e.g., Hershfield et al., 2013) have acknowledged that the mechanisms that explain how feeling mixed emotions are good for individuals are not well understood; whilst some recent research has produced inconclusive evidence, showing either positive (Brose et al., 2014) or null associations (Grühn, Lumley, Diehl, & Labouvie-Vief, 2013) between mixed emotions and eudaimonic well-being.

Thus, it is unclear how or under which circumstances mixed emotions may favor individual well-being. Drawing on the dynamic model of affect (DMA; Reich, Zautra, & Davis, 2003; Zautra, 2003), in the present research we suggest that the individual tendency to experience greater levels of subjective mixed emotions (referred to herein as SME) during goal-conflict may positively influence life purpose. The rationale behind this mechanism is that positive and negative features of goal-conflict events are accessible and integrated more easily (*cf.* Cacioppo et al., 2004; Oatley & Johnson-Laird, 1996; Zautra, 2003) by individuals who tend to experience greater mixed emotions when goals conflict, offering benefits compared to feeling only positive or negative emotions.

Interestingly, mixed emotions have been previously linked to experiencing meaningful endings, such as graduation day (e.g., Ersner-Hershfield, Mikels, Sullivan, & Carstensen, 2008), which permits us to speculate a mechanism linking SME and the specific dimension of life purpose of eudaimonic well-being. We consider that life purpose is an appropriate proxy of eudaimonic well-being in the context of goal conflict because goal conflict is theoretically seen as impairing the sense of meaning in life (Hirsh, 2012). Therefore, individuals who, on average, tend to experience greater SME when conflicting goals occur may tend to simultaneously access the rewarding features and negative consequences of mutually incompatible goals, achieving a more purposeful life.

1.1. Mixed emotions as an individual difference

Mixed emotions can be defined as an individual difference such that some individuals tend to experience greater or more frequent subjective mixed emotions in everyday life (Barford & Smillie, 2016). Rafaeli and colleagues (2007) investigated whether the experience of mixed emotions can be understood as an individual

difference. Individual differences in mixed emotions were inferred from within person correlations between energetic arousal and tense arousal, over and above other personality dimensions of affect (i.e., positive or negative mood). Across five experience sampling studies, they found that the average within person correlation between positive and negative affect was close to zero, nonetheless, this average was qualified by large and stable individual differences identified via the random-effect coefficients in the studies.

These findings were replicated in another study (Wilt, Funkhouser, & Revelle, 2011), which also observed individual differences in mixed emotions for pleasant and unpleasant affect. Furthermore, they determined that individual differences in mixed emotions, for both energetic-tense and pleasant-unpleasant pairs, was predicted by a tendency to flexibly perceive threatening and pleasant situations as occurring together.

In sum, personality differences in the tendency to experience mixed emotions are consistently observed and are well-related to common personality constructs. These findings can be interpreted as suggesting that mixed emotions moderate the negative consequences of difficult or stressful situations (Wilt et al., 2011). This is consistent with theory suggesting that mixed emotions may facilitate the integration of conflicting information in a given moment (Cacioppo et al., 2004; Oatley & Johnson-Laird, 1996; Zautra, 2003). This is also supported by research evidencing that dialectical thinkers (i.e., individuals who integrate both positive and negative aspects during complex situations) tend to experience greater levels of mixed emotions in everyday life, regardless of the type of ongoing life event (i.e., positive or negative events; Hui, Fok, & Bond, 2009).

Contrasting with the aforementioned literature, we conceptualize mixed emotions as a subjective experience, measured using daily self-reports of subjective

mixed emotions experience, which is later used to infer individual differences based on between-subject variations from daily scores. This is in accordance with recent research investigating individual differences in SME (Barford & Smillie, 2016).

1.2. Individual differences in mixed emotions and well-being

The DMA (Reich et al., 2003; Zautra, 2003) has explicitly suggested that individual differences in mixed emotions may favor individual well-being. According to this theory, positive affect and negative affect are complementary experiences during stressful events. Under high stress, information processing is concentrated on immediate demands, and as a consequence, discrimination between positive affect and negative affect is simplified, leading to negative correlations between positive affect and negative affect (Reich et al., 2003).

The DMA also anticipates that individuals who more commonly experience both positive and negative emotions during stressful situations may show positive consequences for well-being (Davis, Zautra, & Smith, 2004), because their coping responses better integrate both the threats and potential rewarding consequences of the difficult personal situations. Thus, for example, some evidence has shown that individual differences in mixed emotions are associated with greater resilience during bereavement (Coifman, Bonanno, & Rafaeli, 2007).

Contrasting with the DMA, our approach understands mixed emotions as a consequence of experiencing conflicting goals. Therefore, it is not necessary to investigate the effects of individual differences in mixed emotions on well-being during stressful situations, exclusively. This may extend the potential impact of individual differences in mixed emotions on well-being to common situations in everyday life, such as goal conflict (Köpetz, Faber, Fishbach, & Kruglanski, 2011).

Thus, we suggest that one potential mechanism that can explain previous research linking mixed emotions and well-being (e.g., Hershfield et al., 2013) is that the individual propensity to experience mixed emotions implies that mixed emotions are more likely to be experienced when goal conflict occurs, which in turn can benefit eudaimonic well-being, as suggested by the DMA (Zautra, 2003). In this context, we hypothesized the following:

H1: Goal conflict is negatively associated with the dimension of life purpose of eudaimonic well-being.

H2: Mixed emotions moderate the relationship between goal conflict and the dimension of life purpose of eudaimonic well-being.

2. Method

2.1. Participants

Seventy-three undergraduate and postgraduate students of an English university (58 female, $M_{age} = 20.5$ years; $SD = 3.6$ years) participated in this experience sampling study. Participants were recruited in exchange for £10 in cash or course credits.

Participants were informed that the study concerned how people manage personal goals, and how these influence their emotions and daily activities. Data collected in the present study were previously used for a different study that aimed to understand whether mixed emotions mediated the relationship between goal conflict and efforts to resist temptations¹.

¹ Further details are available from the first author upon request.

2.2. Measures

2.2.1. Baseline questionnaire

Participants completed the *psychological well-being scale* (PWB; Ryff, 1989) to provide convergent validity for the brief measure of eudaimonic well-being used in the experience sampling period. The PWB operationalizes psychological well-being along six dimensions. Each dimension was assessed using 9-items and then averaged to create a single measure of PWB ($M = 4.39$; $SD = 0.55$; $\alpha = 0.93$). All of the items were measured on a 6-point Likert-format scale ranging from strongly disagree (1) to strongly agree (6).

2.2.2. Experience sampling measures

Conflicting goals scale. This scale was based on Emmons and King's (1988) instrumentality matrix. The scale comprises three items which evaluated the extent to which recent activity/activities had been in conflict with an important goal (“*[this/these activity/ies)] had harmful effects over a goal you've been trying to achieve*”; “*[this/these activity/ies)] have been in conflict with a goal important for you*”; $M = 2.22$; $SD = 1.08$; $\omega = 0.83$). All of the items were measured on a 5-point Likert-format scale ranging from *not at all* (1) to *very much* (5).

Subjective measure of mixed emotions (SME). On each occasion participants completed a subjective measure of mixed emotions (Berrios et al., 2015a). This measure includes four items measuring the extent to which participants had experienced mixed emotions over the last 30-minutes (e.g., “*I experienced contrasting emotions (positive and negative emotions)*”; “*I've been feeling positive or negative emotions not both*” [reverse coded item]; $M = 2.59$; $SD = 0.98$; $\omega = 0.81$). All of the items were measured on a 5-point Likert-format scale ranging from *not at all* (1) to *very much* (5). This scale

has been shown to be consistent with other measures of mixed emotions (Berrios, Totterdell, & Kellett, 2015b) and with research investigating individual differences in mixed emotions (Barford & Smillie, 2016).

Life purpose. Finally, participants completed a short measure of life purpose with 2 items taken from the PWB scale (Ryff, 1989), in order to keep the measure short for experience sampling purposes. Participants reported the extent to which they experienced their current activities as relevant and meaningful (i.e., “*active in carrying out the plans I set for myself*”; “*the activities that I’ve done are trivial and unimportant*” – reverse coded, $M = 3.99$; $SD = 1.01$; $\omega = 0.71$) using a scale ranging from *strongly disagree* (1) to *strongly agree* (6).

Affect. Finally, participants completed a short measure of state positive and negative affect (Larsen & Diener, 1985). Participants reported the extent to which they were experiencing four positive affect adjectives (PA: *happy, joyful, pleased, enjoyment*; $M = 2.76$; $SD = 1.15$; $\omega = 0.87$) and five negative affect adjectives (NA; *depressed, unhappy, frustrated, angry, and worried*; $M = 1.77$; $SD = .89$; $\omega = 0.79$). All of the items were measured on a 6-point Likert-format scale ranging from *not at all* (1) to *extremely* (6).

2.3. Procedure

Participants used their own cell phones during the experience sampling period (10 consecutive days). Every day, they received four text messages during a time interval of ten waking hours. The time interval was divided into four blocks, with the added criterion that there had to be at least 1 hour in-between texts. Using an online application (Mighty Text), we set text messages to be delivered at a random time within four 150 minute intervals starting at 10 a.m., with the added criterion that there had to

be at least 1 hour in-between texts. Each text message contained a web-link which took participants to an online questionnaire. Participants were instructed to complete the questionnaire at every occasion based on their experiences during the 30 minutes before receiving the message.

On average, participants completed 90% of the questionnaires embedded in the text messages sent every day. The remaining 10% of the questionnaires were either not responded to at all or remained uncompleted. Responses were coded as valid when the participant completed the majority of the questionnaire within the corresponding time block, and when the next questionnaire response was separated from the current one by 1 hour. Overall, participants provided a total of 2,619 observations.

3. Results

3.1. The association between goal conflict and life purpose

To determine whether individual differences in mixed emotions moderated the relationship between goal conflict and life purpose, we first evaluated whether goal conflict was associated with life-purpose. Thus, we specified a multilevel model incorporating the raw data on goal conflict as a predictor of life-purpose (Model-1 in *Table 1*). We also specified random intercepts for each individual, and serial autocorrelations between residuals were accounted for using the first-order autoregressive covariance structure. The estimator used was maximum likelihood in all the models tested.

Results indicated that goal conflict negatively predicted life-purpose across occasions, $t(67) = -8.80$, $95\%CI [-0.33 / -0.21]$. This provided initial support for **Hypothesis 1**, according to which conflicting goals are negatively associated with life purpose. Importantly, there was significant variance in the slope of life-purpose, $\sigma^2 = 0.04$, $Wald-z = 3.79$, $p < 0.01$, which suggested that variables at the between-level may

account for this association. The proportion of variance was small, $R^2_{(S\&B)} = 0.14$, although the deviance showed that Model-1 fitted the data significantly better than the model without predictors (see *Table 1*). The inclusion of gender and age did not modify the main effect of goal conflict on life-purpose.

3.2. Subjective mixed emotions as an individual difference

Prior to estimating a new model, we analyzed an empty model including raw scores of mixed emotions as a dependent variable to determine the amount of between-subject variance in the sample, as a proxy of the presence of significant individual differences in subjective mixed emotions. The results from this model revealed that a significant amount of variance was due to individual differences in subjective mixed emotions, $\sigma^2 = 0.26$, $Wald-z = 5.46$, $p < 0.01$ 95%CI [0.18 / 0.37]. Thus, there was evidence that variability in SME at level-2 was in part explained by differences between individuals.

3.3. The moderating effect of individual differences in mixed emotions

In a second step, we estimated a new model by adding a between-person centered version of subjective mixed emotions and an interaction term combining goal conflict and the between-person centered SME variable (Model-2 in *Table 1*). The additional interactive term incorporated a new parameter at level-2, which estimated the slope of goal conflict on life-purpose from variations in between-subject scores of SME.

Individual differences in subjective mixed emotions did not predict fluctuations in life-purpose (see *Table 1*). However, we found a significant cross-level interaction between goal conflict (level-1) and between-person SME scores (level-2). The effect of fluctuations in the levels of goal conflict on life-purpose depended on individual differences in SME, $t(2,239) = 3.20$, 95%CI [0.04 / 0.18]. The inclusion of gender and age did not modify the conditional effect of goal conflict on life-purpose as a function

of individual differences in mixed emotions. These results support **Hypothesis 2**, that the negative effect of goal conflict on life purpose is moderated by between-subject variations in SME.

Figure 1 (created using computational procedures suggested in Preacher, Curran, & Bauer, 2006) depicts the multilevel regression fitted lines for the association between life-purpose and goal conflict as a function of the SME scores (-1 SD below and 1 SD above the mean). As SME increases, the negative association between goal conflict and life purpose becomes weaker. For goal conflict, the simple slope is -.32 at -1 SD of SME, $z = -12.27$, $p < .01$, and -.19 at +1 SD of SME, $z = -8.29$, $p < .01$. For SME, the simple slope is -.14 at -1 SD of goal conflict, $z = -1.12$, $p = .26$, and .17 at +1 SD of goal conflict, $z = 1.33$, $p = .18$.

3.4. Does the moderation remain after including relevant covariates?

To confirm that the results can be attributed to mixed emotions (Model-3), we added the following control variables to the previous Model-2: between-person levels of positive affect (PA) and negative affect (NA), and between-person levels of psychological well-being (PWB). We also included the corresponding interactions between affect variables and goal conflict to account for the specific contribution of SME in the model. The main effect of goal conflict on life-purpose as well as the interaction between goal conflict and between-person SME scores remained statistically significant (see *Table 1*). Thus, individual differences in SME moderated the association between goal conflict and life-purpose, over and above average levels of psychological well-being and PA and NA at level-2.

In addition, we found that NA at level-2 interacted with goal conflict, and this interactive term was negatively associated with life-purpose, $t(2,494) = -2.05$, 95%CI [-0.14/ -0.01]. PA at level-2 was positively associated with life-purpose, $t(179) = 2.57$,

95%CI [0.05 / 0.36], and individual differences in psychological well-being (PWB) significantly predicted within-day experiences of life-purpose, $t(158) = 2.07$, 95%CI [0.01 / 0.55], providing evidence of the convergence between everyday experiences of life-purpose and general eudaimonic well-being.

Further analyses (not reported in *Table 1*), included within-person centered variables for NA and PA predicting life-purpose. Results from this model showed that higher PA at level-1 predicted greater life-purpose, $\beta = 0.29$, $t(2,494) = 6.69$, $p < 0.01$ 95%CI [0.21/ 0.38], which confirmed the known benefits of experiencing positive emotions in everyday life for psychological well-being. The main effects of goal conflict on life purpose and the interaction between goal conflict and mixed emotions at level-2, were however preserved, $\beta = -0.46$, $p < 0.01$, and $\beta_{interaction} = 0.09$, $p < 0.01$.

4. Discussion

In this research we examined whether individual differences in SME interact with people's momentary experiences of conflicting goals to moderate the negative consequences of goal conflict on life-purpose (a dimension of eudaimonic well-being). Our findings firstly showed that occasions when people experienced higher goal conflict were associated with lower levels of life-purpose. In accordance with a body of empirical evidence (see Kelly, Mansell, & Wood, 2015), our findings also showed that occasions when people experienced goal conflict interacted with the propensity to experience SME, and this interaction moderated the negative consequences of goal-conflict on life-purpose. Thus, in the context of events that produces conflicting goals, individual differences in SME moderate the negative effects on life purpose such that there is a weaker negative effect for individuals who subjectively experience greater mixed emotions.

Consistent with previous research on individual differences in mixed emotions (Rafaeli et al., 2007; Wilt et al., 2011), we found that a significant portion of the variance in the experience of SME was attributable to differences between individuals, which is interpreted as the individual propensity to experience SME in the context of conflicting goals. The results also showed that the moderating effect of the interaction between conflicting goals and individual differences in SME on life purpose was significant over and above trait levels of positive or negative affect, and also controlling for trait levels of psychological well-being. Finally, the moderating effect remained statistically significant after the inclusion of state-positive and state-negative affect.

Our evidence is in accordance with the DMA (Reich et al., 2003; Zautra. 2003). The DMA sustains that individual differences in the experience of positive and negative affect in times of stress can ameliorate the negative consequences of stress on health-related issues. Our findings accord with and extend the implications of the DMA to more common life events, specifically conflicting goals. Those individuals who tend to more commonly experience mixed emotions when experiencing conflicting goals may produce better responses that attenuate the negative impact that goal conflict exerts on life purpose. The DMA asserts that the independence of PA and NA during stressful situations permit greater flexibility to respond to personal difficult situations.

Our present findings are also consistent with research on the related phenomenon of ambivalence. Kelly, Mansell, and Wood (2011) demonstrated that feelings of ambivalence predicted depression only when experienced in the absence of conflict, whereas feelings of ambivalence interacted with goal conflict to predict lower levels of depression. Although the concept of ambivalence is different from the concept of mixed emotions considered here, it is consistent that the interaction between goal conflict and ambivalence predicted lower levels of depression.

4.1.Limitations and future directions

Despite the contributions of our findings, some limitations remain. Firstly, we used self-report measures. It is possible that self-report measures of mixed emotions may be subject to biases derived from memory, desirability or acquiescence. Recent research has demonstrated that mixed emotions can also be measured using physiological measures (e.g., Henderson & Norris, 2013; Kreibig et al., 2013). Future studies should therefore evaluate the correspondence between data based on self-report measures of individual differences in mixed emotions and data obtained from physiological responses, or use techniques such as correlation-based marker variables (Podsakoff, MacKenzie, & Podsakoff, 2012) to prevent method biases derived from using self-report measures.

Secondly, the use of an experience sampling method meant that the measures had to be brief which may have affected their validity. However, for the dependent variable of life purpose, we found that trait levels of psychological well-being and both trait and state positive affect were positively significantly associated with it, indicating that it was most likely a valid measure of eudaimonic well-being. Thirdly, the relationships tested weren't longitudinal so causality can't be assumed. Finally, the sample of participants who took part in this study mainly consisted of university students. Thus, the generalizability of the present findings is an important issue that future studies will need to address by replicating findings in other groups of the population (e.g., middle age people, samples from developing countries).

We have highlighted individual differences in SME as a relevant driver that promotes the restoration of a sense of purpose when multiple goals collide. However, a recent study has shown an association between personality differences in mixed emotions and neuroticism, using a similar measure of individual differences in SME (Badford & Smillie, 2016). Given that neuroticism has been commonly found to be an antecedent of poor well-being (Costa & McCrae, 1980), future studies should investigate how or under which circumstances individual differences in mixed emotions are beneficial or detrimental to well-being. In particular, further research is needed to reconcile conflicting evidence between studies that have shown either a positive association between SME and well-being (e.g., Hershfield et al., 2013), or a negative relationship between SME and indicators of poor well-being such as neuroticism (Bardford & Smillie, 2016), or a moderating effect of SME on well-being (e.g., Zautra, 2003) including the present study.

4.2. Conclusion

Mixed emotions can be characterized as individual differences in the propensity to experience co-activated positive and negative emotions. Drawing on the Dynamic Model of Affect (Zautra, 2003), we proposed that individual differences in subjective mixed emotions (SME) will moderate the negative effect of goal conflict on life purpose. The results of our experience sampling study showed that there was indeed a weaker negative effect of goal conflict on life purpose for individuals who subjectively experienced greater mixed emotions, which highlights the potential value of this individual difference in daily life.

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Table 1. The effect of conflicting goals on life-purpose moderated by individual differences in mixed emotions.

Model Parameters	Model-1			Model-2			Model-3		
	Estimate	SE	p <	Estimate	SE	p <	Estimate	SE	p <
<u>Fixed effects</u>									
Intercept (β_0)	4.59	0.08	0.01	4.56	0.07	0.01	3.34	0.59	0.01
Time effect (β_1)	-0.01	0.01	0.52	-0.01	0.02	0.66	-0.01	0.01	0.40
Goal conflict (β_2)	-0.27	0.03	0.01	-0.26	0.02	0.01	-0.22	0.13	0.01
Mixed emotions _{-between} (β_3)				-0.27	0.20	0.10	-0.14	0.13	0.28
Goal conflict*Mixed emotions _{-PMC} ($\beta_2 * \beta_3$)				0.11	0.03	0.01	0.11	0.03	0.01
PA _{-between} (β_4)							0.21	0.08	0.05
NA _{-between} (β_5)							0.06	0.12	0.60
PWB (β_6)							0.28	0.14	0.05
Goal conflict*PA _{-between} ($\beta_2 * \beta_4$)							0.03	0.02	0.17
Goal conflict*NA _{-between} ($\beta_2 * \beta_5$)							-0.07	0.03	0.05
<u>Variances</u>									
Residual variance	0.61	0.02	0.01	0.60	0.02	0.01	0.60	0.02	0.01
Random intercept variance	0.29	0.05	0.01	0.26	0.05	0.01	0.12	0.03	0.01
ICC	0.32			0.30			0.25		
Deviance $-2\Delta LL(\Delta df)$	200.4 (2)		0.01	202.2 (4)		0.01	239.9 (10)		0.01
$R^2_{(S\&B)}$	0.14			0.18			0.30		

Note: $N = 73$, 10 days, 4 observations per day, 2,619 observations. SE: standard error; *between*: between-person centered variable. ICC: intra-class correlation. Dependent variable is life purpose. $R^2_{(S\&B)}$ based on LaHuis, Hartman, Hakoyama, & Clark (2014).

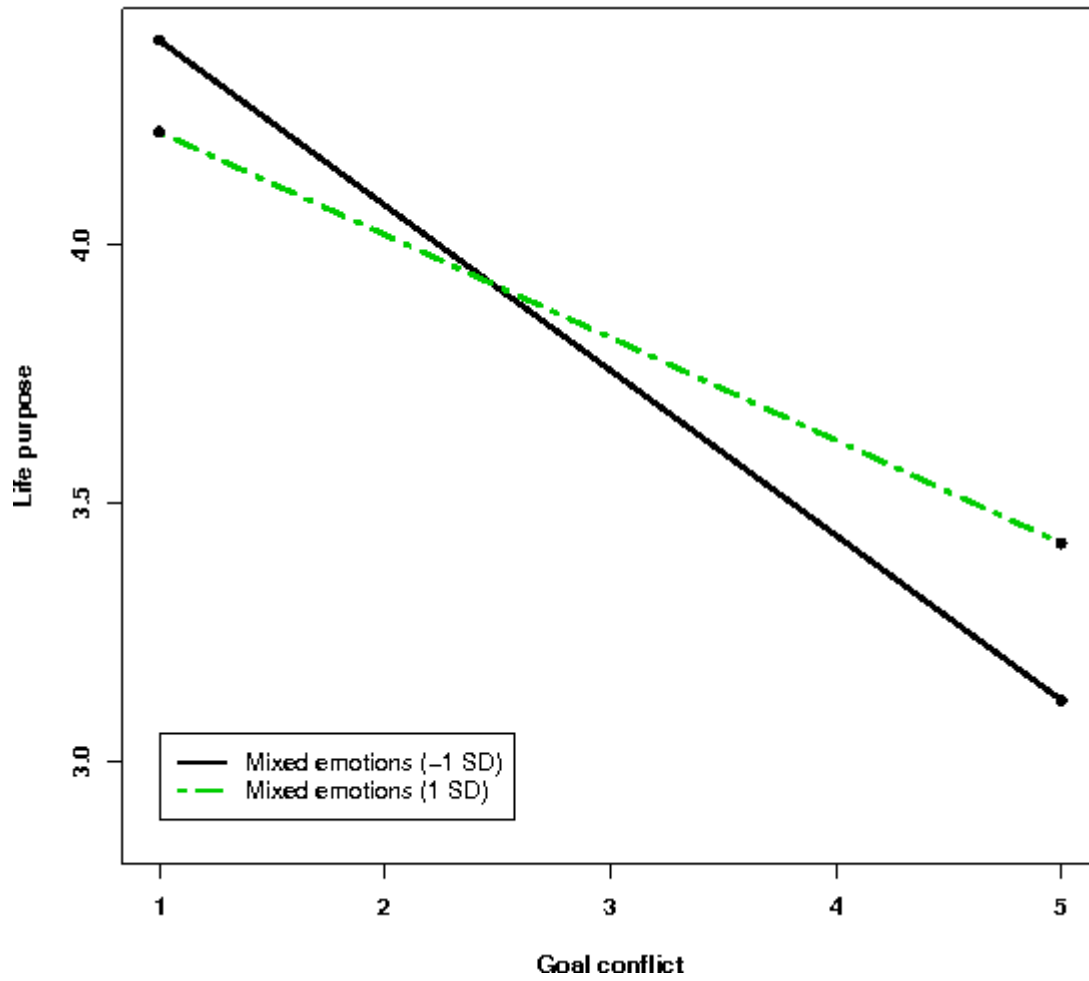


Figure 1. Multilevel model of a two-way interaction between goal conflict (level-1) and mixed emotions using a person mean centered variable (Level-2).