

## **IRRATIONAL BELIEFS ARE ASSOCIATED WITH THE EXPERIENCE OF NEGATIVE FEELINGS IN POSITIVE SITUATIONS. THE ROLE OF BIASED POSITIVE APPRAISALS IN MIXED FEELINGS**

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### **Abstract**

Appraisals are important processes involved in both healthy and pathological emotional experiences. Realistic appraisals are required for healthy positive and negative emotions. Instead, biased appraisals are involved in cognitive vulnerability to emotional disorders. We examined a specific type of biased appraisal, irrational beliefs, and their relationships with the experience of negative and neutral feelings, along with positive feelings in positive situations. 115 participants imagined eight positive situations and endorsed their ratings and appraisals of the situations and feelings they would experience in each situation. Correlation and mediation analyses were conducted to examine the relationship between biased appraisals and negative, neutral, and mixed feelings in response to positive situations. Results showed that participants who react to positive situations by endorsing high levels of biased appraisals reported experiencing more mixed feelings in positive situations. We also observed that mixed feelings are inversely related to functional positive feelings in positive situations. This research is the first to evidence irrational beliefs as a specific type of biased appraisal process involved in the experience of mixed feelings. Suggestions for the processes involved in well-being, the negative effects of positive fantasies, and mixed emotions are made.

**Keywords:** irrational beliefs, biased appraisals, mixed emotions, neutral feelings, positive emotions, positive fantasies.

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Windy Dryden (W.D.):

Now imagine that you still have the same absolute belief that you must have a minimum of 11 dollars at all times, and this time you find that you have 12 dollars in your purse. Now, how will you feel? Karen: Relieved. W.D.: Right, or pleased. But holding that same belief that you absolutely must have a minimum of 11 dollars at all times, you think something that leads you to become anxious again. What do you think that thought would be? Karen: That I might lose 2 dollars? W.D.: Right, or you spend 2 dollars or get robbed. Now the point of this example is that all humans, male or female, rich or poor, black or white, now and in the future, will make themselves emotionally disturbed when they don't get what they believe they must get. And they will also make themselves miserable when they do get it, because of their musts—because even when they must have, they could always lose it. (Dryden & DiGiuseppe, 1990, p 66)

In this example from a seminal training book in the oldest form of cognitive behavior therapy, Rational Emotive and Behavior Therapy (REBT; Dryden & DiGiuseppe, 1990), the authors have suggested that biased appraisals in the form of primary irrational beliefs (Ellis, 1962) such as rigidly appraising getting important things as a necessity (demandingness) result in a particular type of dysfunctionality of positive experiences: negative feelings in positive situations or when our desires are met. However, based on the REBT model of positive emotion (Ellis, 1994) an opposite suggestion was made: demandingness results in rather more intense dysfunctional positive feelings when goals that individuals demand to attain are met (Ellis, 1994). Based on this proposal, we have the following scenario: You don't have \$12, and you consider that you always need to have \$12 in your pocket. It is a necessity. As a last try, you check your pocket again, and you find that, in fact, you have \$12 in it. You will feel excited and euphoric, not just happy. Recent research supports the ABC model of positive emotions (Ellis, 1994), showing that demandingness and secondary biased positive appraisals are associated with intense and high arousal dysfunctional positive feelings in response to positive situations (Tiba et al., 2023a) and a predisposition to hypo/mania (Tiba et al., 2023b). Based on these findings, the proposal that irrational beliefs may result in negative emotions when goals are met seems to be in contradiction with theoretical and empirical support for the effect of irrational beliefs on positive feelings. Although they appear contradictory, theories and findings from the field of mixed emotions suggested that it may not be at all a contradiction to experience both positive and negative feelings in the same positive situation (Berrios et al., 2015a; Larsen et al., 2001). Thus, it is more likely that individuals who have negative feelings in positive situations will experience positive feelings as well. Most often, we encounter multifaceted situations that activate sometimes conflicting goals. For instance, we are happy about starting to study at a new university, but at the same time, we feel sad about letting

go of our close friends. Moreover, other forms of altered emotionality in positive situations have been proposed: neutral feelings (Gasper, 2018). Thus, in positive situations, we may have several types of biased feelings according to the positive-negative valence axis: (1) dysfunctional positive feelings, (2) negative feelings, (3) neutral feelings, and (4) mixed emotions. Given the domain of mixed emotions, the theory and practice of REBT (Dryden & DiGiuseppe, 1990) suggested a complex process for dysfunctional mixed emotions in positive situations: considering a desired situation as a necessity may activate avoidance goals of losing the desired situation when we encounter a positive situation.

Starting from early proposals from the practice of REBT (Dryden & DiGiuseppe, 1990) and the field of mixed and neutral feelings, we examined whether biased appraisals in the form of positive irrational beliefs (Ellis, 1994) are related to: (1) negative feelings; (2) neutral feelings; and (3) mixed feelings in response to imagined positive events. This research has the potential to point to new clinically relevant mechanisms of mixed emotions and expand the REBT theory of well-being and mental health.

Albert Ellis (1957) proposed that responding with biased appraisals to adversity (negative irrational beliefs) determines dysfunctional negative feelings. Ellis (1962) suggested that there are four types of biased appraisals, or irrational beliefs: (1) demandingness or considering attaining goals and desires as a necessity in response to adversity; (2) catastrophizing (adversity is awful and 100% bad); (3) frustration intolerance (intolerance of the adversity); and (4) depreciation beliefs (self, life, and future are worthless). Demandingness is considered a primary form of irrational beliefs, while catastrophizing, frustration intolerance, and depreciation beliefs are considered secondary irrational beliefs (Ellis, 1962). Additionally, Ellis (1962) suggested that primary irrational beliefs are distal to dysfunctional emotions and that their effect on emotions is mediated by secondary irrational beliefs, which are proximal determinants of emotion (Ellis, 1962). Each of these irrational beliefs has a positive counterpart (positive irrational beliefs): (1) demandingness in response to positive situations; (2) wonderfulizing (positive events are wonderful and 100% good); (3) positive emotion intolerance (positive emotions are so intense that they are unbearable); and (3) extreme appreciation beliefs (self, life, and future are extremely positive) (Tiba et al., 2023a).

Previous research has shown that irrational beliefs are types of appraisals (David et al., 2002; David et al., 2019), that can have multiple types of representational formats in our cognitive system (Szentagotai et al., 2015; Tiba, 2010; Tiba & Manea, 2018). Substantial research has shown that negative rational and irrational beliefs have a large impact on psychopathology (Bridges & Harnish, 2010; Vișlă et al., 2016) and well-being (Oltean et al., 2017; Oltean et al., 2019).

For instance, studies have shown significant relationships between negative irrational beliefs and depression (De Castella et al., 2013; Taghavi et al., 2006), anxiety disorders (Himle et al., 1989), obsessive-compulsive disorders (Hamidi &

Motlagh, 2010), personality disorders (Westphal et al., 2016), stress-related disorders (Hyland et al., 2014), loneliness (Oltean et al., 2024), and parenting stress (Tiba et al., 2012), among other relevant conditions (Vîslă et al., 2016). On the other hand, studies that investigated the relationship of negative rational and irrational beliefs and well-being showed that negative rational beliefs foster positive emotions and happiness (Oltean et al., 2019), while negative irrational beliefs are detrimental to well-being, fostering lower levels of positive emotions and high levels of dysfunctional negative emotions (Oltean et al., 2017; Oltean et al., 2019). Recently, it has been evidenced a new pathway by which positive irrational beliefs affect mental health: by promoting dysfunctional positive emotions and the risk of mania as well (Tiba et al., 2023a). Examining the relationships between irrational beliefs, negative, neutral, and mixed feelings in positive situations may point to new ways in which irrational beliefs may be involved in well-being: they may promote negative, neutral, and mixed emotions in response to positive situations.

### *Mixed emotions*

Mixed emotions are feelings that include experiencing two or more emotions that have the same or opposite valence (Larsen et al., 2001). Ocejja and Carrera (2009) proposed four types of mixed emotions: (1) sequential emotions (two emotions, one following the other—primary and secondary emotions with opposed valence); (2) prevalence emotions (reactions to the same event of two opposing emotions, but one more intense than the other), (3) inverse emotions (two emotions with an opposed dynamic, such as an increase in one results in decreases in the other), and (3) highly simultaneous emotions (both emotions have an overlapping dynamics, *happy-sad*, *nostalgia*). As there are a multitude of varieties of both positive and negative emotions, mixed emotions appear in a multitude of varieties.

Although the first experimental evidence for mixed emotions dates back more than a century (Kellogg, 1915), over time, scientific tests have proven it to be a robust phenomenon (Berrios et al., 2015b). There is a large consensus that conflicting goals are a common mechanism underlying mixed emotions. Thus, a situation may activate different goals, which in turn result in both positive and negative feelings (Berrios et al., 2015a; Berrios et al., 2017). Several studies suggest a positive effect of mixed feelings on mental health and well-being (Berrios et al., 2017; Hershfield et al., 2013). Hershfield et al. (2013) found that higher rates of mixed feelings are associated with a lower rate of physical health symptoms and a lower rate of health degradation (Hershfield et al., 2013). Yet recent research showed a negative effect as well. For instance, the study conducted by Oh (2022) showed that mixed feelings and emotional ambivalence that are experienced by an individual naturally, day by day, were associated with lower levels of psychological well-being and a higher level of burnout. Up until now, results about the effect of mixed feelings appeared to be in contradiction. Previous research linked mixed feelings with

conflicting goals and appraisal theories of emotions (Berrios et al., 2015a). Since biased appraisals may be associated with dysfunctional mixed feelings and health costs and non-biased appraisals may be associated with functional mixed feelings and health benefits, examining the role of biased appraisals in mixed feelings may help to clarify these contradictory findings. Yet there has been no research that has investigated the link between mixed feelings and biased appraisals, such as irrational beliefs.

Given the REBT theory of emotion (Ellis, 1994) there are several implications for mixed emotions: (1) biased appraisals such as demandingness may activate opposing goals and appraisals (needing something to much-intense approach goal may bring the fear of losing it-avoidance goal) and often result in a mixed emotional experience in positive situations, (2) there are both functional and dysfunctional mixed feelings. Thus, mixed emotions may be: (a) functional mixed feelings that include two functional and opposing valence emotions; and (b) dysfunctional mixed feelings that include at least one dysfunctional positive or negative feeling. Moreover, mixed feelings may involve a combination of both primary (functional and dysfunctional) and secondary (functional and dysfunctional) feelings. Functional mixed feelings are expected to be part of a healthy sense of well-being. On the other hand, dysfunctional mixed feelings may be detrimental to well-being.

### *Neutral Feelings*

Neutral feelings, or “feeling nothing in particular” (Gasper et al., 2021), refer to *feelings of indifference* (Gasper et al., 2021). It is what individuals feel in neutral or routine situations (Gasper et al., 2021). Although their existence has been long debated, recent research has shown the validity of the concept of neutral feelings (Gasper et al., 2019), evidencing both their positive (Gasper et al., 2021) and negative consequences (Gasper & Danube, 2016). Gasper (2018) proposed five types of neutral feelings: *minimal affective states* (when other feelings are minimal), *in-the-middle states* (neither positive nor negative), *deactivated states* (feelings resulting from neutral affect induction procedures that induce deactivation), *typical state*, and *indifferent states* (Gasper, 2018).

Several mechanisms have been suggested to underlie each of these different types of neutral feelings. Among these, the most important are progress as expected in regulation theory (Carver & Scheier, 1990), appraisal mechanisms (Yih et al., 2020), and conflicting goals or mixed feelings (Schneider et al., 2016). Of interest, reports of feeling neutral in positive situations are often mistaken for a lack of positive affect or an index of apathy (Gasper et al., 2021). On the contrary, from the perspective of neutral feelings, this kind of “neutral apathy” is rather a type of neutral feeling in response to activating situations, not an apathy mood or feeling numbness (the inability to respond with feelings). Accordingly, we may have different types of

neutral feelings in positive situations, which may reflect different mechanisms than a lack of positive emotions, with neutral feelings co-occurring with positive and negative feelings (Gasper et al., 2021; Schneider et al., 2016). Based on a theory of no interest or lack of positive emotions for explaining neutral feelings, neutral feelings are not expected to have a relationship with biased appraisals of relevance and congruence or biased secondary appraisals. Instead, if neutral feelings are conceptualized as a type of mixed feelings or middle feelings (Yih et al., 2020), we can observe a role for biased appraisals and a relationship with mixed feelings.

### *The Present Study*

Traditionally, research on the REBT binary model of emotion used a dimensional valence model of emotion. Accordingly, it examined the role of biased or flexible negative appraisals (negative irrational beliefs) in response to negative events in determination of negative feelings and the role of biased or flexible positive appraisals (positive irrational beliefs) in response to positive events in determination of positive feelings. In the present study we took a different approach: we have investigated the relationships between positive biased appraisals and reports of neutral, negative and mixed feelings in response to positive events.

Given that in natural settings individuals respond to complex activating situations by multiple appraisals, it is recognized that they may experience multiple rapidly occurring positive and negative or mixed feelings (Oatley & Johnson-Laired, 1996). The practice of REBT (Dryden & DiGiuseppe, 1990) suggests that rigid appraisals such as demanding a desired outcome also activate appraisals related to fear of losing the “must have” situation and results in negative feelings in positive situations (when the goals are met). Yet no study has examined this possibility. In this study we assessed for the first time positive irrational beliefs in response to positive events and their effect on negative emotions based on current methodology for assessing appraisals (Scherer, 2021). Participants had to vividly imagine approach-related positive events (e.g., learning it is possible to get a large amount of money/succeed) happening to them and were asked to report their estimates of how they would appraise each situation by situational positive irrational beliefs and the intensity they would experience for positive, neutral, and negative feelings.

According to proposals based on REBT theory (Dryden & DiGiuseppe, 1990), we expected that primary irrational beliefs would be associated with reports of negative and/or mixed feelings in positive situations. As neutral feelings may be a form of mixed feelings, we also examined the relationship between irrational beliefs and reports of neutral feelings in positive situations. Furthermore, we expected that the demandingness effect on negative, neutral, and mixed feelings would be mediated by secondary biased appraisals.

## Method

### *Participants*

116 undergraduate students from the University of Oradea were selected to participate in this study. Due to his repeated responses to the same question, one participant was excluded from the analysis. 115 individuals made up our final sample—102 women and 13 men. The ages of the participants ranged from 18 to 61 ( $M = 24.56$ ,  $SD = 9.47$ ). The study was carried out in accordance with the Declaration of Helsinki (World Medical Association [WMA], 2013), and received the approval issued by the faculty's ethical review board (approval number 2872/18.05.2023).

### *Measures*

*Symptoms of hypomania.* The Altman Self-Rating Scale for Mania (ASRM; Altman et al., 1997) assesses the experience of hypo/manic symptoms. The internal consistency coefficient, alpha Cronbach, was acceptable at 0.61. Participants evaluated their responses on a Likert scale from 1 (e.g., “I do not feel happier or more cheerful than usual”) to 5 (e.g., “I feel happier or more cheerful than usual all the time”).

*Positive feelings.* To measure positive feelings, we used ten positive emotion descriptors. A Likert-type scale from 1 (not at all) to 9 (very much) was used by participants to indicate how much they agreed with each statement. Six adjectives associated with positive emotions were used to create a functional positive feelings subscale, including “delighted,” “happy,” “glad,” “joyful,” “cheerful,” and “pleased” (alpha Cronbach was excellent at 0.98). Four adjectives were used to create a dysfunctional feelings scale: exuberant, ecstatic, elevated, and accelerated; (the internal consistency coefficient alpha Cronbach was excellent at 0.95).

*Neutral, negative, and mixed feelings.* A Likert-type scale from 1 (not at all) to 9 (very much) was used by participants to indicate how much they agreed with feeling neutral (neutral feelings) or feeling negative (negative feelings) in the situation. Mixed feelings were calculated based on the minimum index method between positive feelings and negative feelings (e.g., Priester & Petty, 1996). The minimum index considers the intensity of mixed feelings to be represented by the lowest value between positive and negative feelings (Priester & Petty, 1996; Berrios et al., 2015a). Two additional scores were calculated for dysfunctional mixed feelings (minimum score between dysfunctional positive feelings and negative feelings) and functional mixed feelings (minimum score between functional positive emotions and negative feelings).

*Situational Positive Irrational Beliefs.* To measure specific positive irrational beliefs, we used seven items. On a Likert-type scale from 1 (not at all) to 9 (very much), participants had to indicate how strongly they agreed with the

following statements for each favorable scenario: It is wonderful if this situation occurs (*wonderfulizing*); I can't handle the happiness if this situation occurs (*positive emotion intolerance*); I believe I am a special being if this situation occurs; I believe I am superior to others if this situation occurs (two items of *extreme self-valuing*); and I need this situation to occur (two items of positive demandingness); and I think I will succeed in all other things that are essential to me if this event occurs (*overgeneralization*; Eisner et al., 2008). An additional item measured positive rational belief (I want this to happen, but I understand that just because I desire something, doesn't mean it will) (the internal consistency coefficient alpha Cronbach was excellent at 0.97).

*Positive Irrational Beliefs Scale.* There are 23 items in the Positive Irrational Beliefs Scale (Tiba et al., 2023a) that assess dispositional positive irrational beliefs. Participants responded on a Likert-type scale by indicating whether they (1) fully disagreed with or (5) totally agreed with each statement. We determined the following scores: (1) general positive irrationality (all items); (2) general positive demandingness (two items; “When I see that important others may appreciate me, their appreciation becomes a must that I must have”), (4) general positive irrational beliefs (four items, “When I am about to succeed, succeeding is a must for me and is wonderful and I almost cannot stand the happiness”); (3) demandingness in a positive context (i.e., “I must obtain important things”), and (5) positive emotion intolerance (three items, “When I succeed at something, I almost can't bear the happiness”) (the internal consistency coefficient, alpha Cronbach was excellent at 0.94).

*The Attitude and Beliefs Scale-Short Form.* We used the Attitude and Beliefs Scale-Short Form (ABS-SF; DiGiuseppe et al., 2021) to assess dispositional irrational beliefs about adversity. On a Likert type scale, participants indicated which irrational belief topics they (1) absolutely disagreed with or (5) totally agreed with. We determined a rational subscale score and an irrational subscale score, as suggested by the authors. In order to further examine differences in assessing irrational processes towards negative situations, we also generated a demandingness in negative context score (the internal consistency coefficient alpha Cronbach was acceptable at 0.69).

### *Procedure*

Data from a previous study investigating positive feelings and the role of irrational and rational positive beliefs in positive emotions were used in the present study (<https://doi.org/10.21203/rs.3.rs-3034444/v1>). The data was collected online. A link with an invitation to the study was posted on university social media groups. Participants read the study description and the informed consent form after clicking the link. Demographic data came from those who provided their permission. Following the methodology for measuring appraisals and emotion dispositions (the



Emotion Disposition Index, Scherer, 2021), we developed eight positive scenarios that were then shown in succession (Appendix A). Participants were asked to vividly imagine each positive scenario happening to them. For each scenario, the participants were asked to judge how they would appraise each situation by each dimension of appraisal (Scherer, 2021). In this study, participants had to appraise each situation based on positive irrational beliefs. Also, they were asked to judge the intensity with which they would experience each of the ten positive emotions and how much they would feel neutral or negative in that situation. After the task, participants completed a measure of dispositional irrational beliefs about adversity (the ABS short form, DiGiuseppe et al., 2021), a measure of dispositional positive irrational beliefs (the Positive Irrational Beliefs Scale, Tiba et al., 2023a), and the Altman Self-Rating Scale for Mania (Tiba et al., 2023a).

### *Data Analysis*

An expectation-maximization approach was employed to manage the missing data for personally endorsed valence scores. Chi-square tests were used to compare the demographic and frequency data between groups. Based on SPSS statistics, the outliers for the correlation and regression analyses were eliminated. Each positive irrational process received a single score. Additionally, a total score of all-encompassing positive irrational beliefs was calculated. Exploratory factor analyses of the positive irrational scale and the dysfunctional positive feelings scale were performed using SPSS version 23 (IBM, 2015) in order to identify the best model. For positive primary rational beliefs, excessive self-valuation, general irrational views, general rational beliefs, generalization, and general positive irrational beliefs, the Kolmogorov-Smirnov test of normality indicated normal distributions (all  $ps > .01$ ). The other variables showed non-normal distributions (all  $ps < .01$ ). The P-P plot and scatterplot's visual assessment indicated that the residuals had a normal distribution, and that the data satisfied the homoscedasticity condition for mediation. A sample size of 115 offered sufficient power for mediation analyses, according to a power analysis using Monte Carlo Simulation for both simple mediation and parallel mediation based on correlation coefficients and standard deviation (Schoemann et al., 2017).

## **Results**

### *Descriptive Statistics*

The means and standard deviations for the main variables in the study are summarized in Table 1.

**Table 1.** Sample Characteristics

Sample characteristics	Descriptive statistics
Age in years, mean ( <i>SD</i> , range)	24.65 ( $\pm$ 9.47, 18–61)
Gender identity, <i>n/N</i> (%)	
Female	102 / 115 (88.7 %)
Male	13 / 115 (11.3 %)
<b>Dispositional irrationality in adverse situations scores (ABS-SF) (<i>SD</i>, range, <i>n</i>)</b>	
Irrationality subscale (IB)	19.41 ( $\pm$ 9.62. 1–44. <i>n</i> = 115)
Rationality subscale (RB)	33.38 ( $\pm$ 8.77. 8–64.21. <i>n</i> = 115)
<b>Dispositional positive irrationality scores (<i>SD</i>, range, <i>n</i>)</b>	
Dispositional positive irrational beliefs	82.91 ( $\pm$ 16.74. 35–115. <i>n</i> = 115)
<b>Situational biased appraisals (<i>SD</i>, range, <i>n</i>)</b>	
Positive primary irrational beliefs	5.07 ( $\pm$ 1.91. 1.13–8.50. <i>n</i> = 115)
Positive primary rational beliefs	5.20 ( $\pm$ 1.77. 1.13–9. <i>n</i> = 115)
Positive emotion intolerance	6.65 ( $\pm$ 1.73. 1.50–9. <i>n</i> = 115)
Wonderfulizing	6.87 ( $\pm$ 1.79. 1.88–9. <i>n</i> = 115)
Extreme self-valuing	4.00 ( $\pm$ 2.03. 1–8.63. <i>n</i> = 115)
Total mixed emotions ( <i>SD</i> , range, <i>n</i> )	12.73 ( $\pm$ 7.95. 8–60. <i>n</i> = 115)
Dysfunctional mixed emotions mean ( <i>SD</i> , range, <i>n</i> )	12.78 ( $\pm$ 7.99. 8–60. <i>n</i> = 115)
Functional mixed emotions mean ( <i>SD</i> , range, <i>n</i> )	13.21 ( $\pm$ 8.39. 8–60. <i>n</i> = 115)
Neutral feelings ( <i>SD</i> , range, <i>n</i> )	19.26 ( $\pm$ 10.16. 8–54. <i>n</i> = 115)
Negative feelings ( <i>SD</i> , range, <i>n</i> )	13.78 ( $\pm$ 9.27. 8–61. <i>n</i> = 115)

**Abbreviations:** IB=Dispositional Irrational Beliefs; RB= Dispositional Rational Beliefs.

When analyzing the responses across situations, between 20% and 40% of participants reported experiencing negative feelings when they imagined positive situations. Similarly, between 35.7 % and 62.6 % participants reported neutral feelings when they imagined positive situations. Except in two situations, all participants who reported negative or neutral feelings also reported having positive feelings when they imagined being in positive situations. Moreover, the participants who reported negative and neutral feelings in one scenario reported experiencing these feelings in all positive scenarios (except one participant in scenario 1 and another participant in scenario 5).

### *The Correlations between Negative, Neutral, and Mixed Feelings and Cognitive and Mood Variables*

Table 2 summarizes the Spearman correlation coefficients between negative, neutral, and mixed feelings and cognitive and mood variables.

**Table 2.** Correlation Coefficients between the Study Variables

	N	1	2	3	4	5	6	7	8	9
1.NEG	115	-								
2. MIXT	115	.944**	-							
3. NEUTRAL	115	.663**	.683**	-						
4. PD-S	115	.173	.231*	.273**	-					
5. SV-S	115	.371**	.419**	.369**	.733**	-				
6. OVER-S	115	.392**	.422**	.361**	.702**	.840**	-			
7.IB	115	.226*	.249**	.116	.259**	.318**	.297**	-		
8. RB	115	-.081	-.110	-.050	.128	.047	-.022**	.897**	-	
9. FPF	115	-.255**	-.201*	.080	.426**	.290**	.250**	.560**	.433**	-

**Abbreviations:** NEG= negative feelings; MIXT=mixed feelings; PD-S=Positive Demandingness-Situational (Positive Primary Irrational Beliefs); SV-S= Extreme Self Valuing-Situational; OVER-S= Overgeneralizations- Situational; IB=Dispositional Irrational Beliefs; RB= Dispositional Rational Beliefs; FPF = Functional Positive Feelings

*Note.* \* $p < .05$  (2-tailed). \*\* $p < .01$  (2-tailed).

Results from correlational Spearman analyses showed that negative feelings significantly correlated with dispositional irrational beliefs about adversity, extreme situational self-valuing, situational overgeneralization (biased future expectancies), and marginally with situational demandingness. A significant negative relationship has been observed with positive functional feelings, but no relationship has been observed with dysfunctional positive feelings. No significant relationships were found between negative feelings and dispositional rational beliefs, wonderfulizing, positive emotion intolerance, situational preferences, or hypomania (all  $ps > .05$ ).

Mixed feelings significantly correlated with dispositional irrational beliefs in negative situations, extreme situational self-valuing, situational overgeneralization, and situational demandingness. Moreover, an inverse relationship

has been observed between mixed feelings in positive situations and positive functional feelings, but no relationship has been observed with dysfunctional positive feelings. Similar relationships were observed between the investigated variables and both forms of mixed functional and mixed dysfunctional positive feelings. No significant relationships were found between mixed feelings and general rational beliefs, wonderfulizing, positive emotion intolerance, situational preferences, or hypomania (all  $ps > .05$ ).

Neutral feelings significantly correlated with general irrational beliefs about negative situations, extreme situational self-valuing, situational over-generalization, and situational demandingness. An inverse relationship has been observed between neutral feelings in positive situations and positive functional feelings, but no relationship has been observed with dysfunctional positive feelings. No significant relationships were found between neutral feelings and dispositional rational beliefs, wonderfulizing, positive emotion intolerance, situational preferences, or hypomania (all  $ps > .05$ ).

*The Effect of Demandingness on Negative Feelings in Positive Situations Was Mediated by Extreme Secondary Positive Appraisals*

All forms of situational irrational beliefs correlated with negative feelings in positive situations (all  $ps < .05$ ). Since wonderfulizing and positive emotion intolerance were associated with rational and not irrational dispositional beliefs about adversity, they were considered rational beliefs in this study. Two types of biased positive appraisals (extreme self-valuing and over-generalization) were positively correlated with irrational dispositional beliefs about adversity and were not correlated with rational beliefs and were considered secondary biased positive appraisals.

Based on REBT theory (Ellis, 1994), it is expected that when individuals highly demand the situation to be the way they want it, demandingness results in secondary biased appraisals, which in turn result in emotional consequences. Thus, we tested the mediation effect of demandingness on negative feelings in positive situations through biased secondary appraisals using two mediation models based on Hayes model 4: one with extreme self-valuing as a mediator and the other with over-generalization as a mediator.

For extreme self-valuing, results based on 5000 bootstrapped samples indicated that extreme self-valuing fully mediates the relationship between demandingness and negative feelings. Specifically, there was a significant indirect effect of the impact of demandingness on negative feelings through extreme self-valuing ( $b = 1.621$ , 95% CI [0.799, 2.647]). Furthermore, the direct effect of demandingness on negative feelings was not significant ( $b = -0.985$ ,  $t = -1.566$ ,  $p = .120$ ) when self-valuing was entered in the equation, suggesting a total mediation.

For over-generalization, results based on 5000 bootstrapped samples indicated that over-generalization fully mediates the relationship between positive demandingness and negative feelings. Specifically, there was a significant indirect effect of the impact of demandingness on negative feelings through overgeneralization ( $b = 1.790$ , 95% CI [0.887, 2.915]). Furthermore, the direct effect of positive demandingness on negative feelings was marginally significant ( $b = -1.154$ ,  $t = -1.987$ ,  $p = .049$ ) when overgeneralization was entered in the equation, suggesting a partial mediation.

*The Effect of Demandingness on Mixed Feelings in Positive Situations Was Mediated by Extreme Secondary Positive Appraisals*

All forms of situational irrational beliefs correlated with mixed feelings in positive situations (all  $ps < .05$ ). Similar to our analyses for negative feelings, we tested the mediation effect of demandingness on mixed feelings in positive situations through biased secondary appraisals of extreme self-valuing and over-generalization.

For extreme self-valuing, results based on 5000 bootstrapped samples indicated that extreme self-valuing fully mediates the relationship between demandingness and mixed feelings. Specifically, there was a significant indirect effect of the impact of demandingness on mixed feelings through self-valuing ( $b = 1.466$ , 95% CI [0.744, 2.362]). Furthermore, the direct effect of demandingness on mixed feelings was not significant ( $b = -0.736$ ,  $t = -1.384$ ,  $p = .168$ ) when self-valuing was entered in the equation, suggesting a total mediation.

For over-generalization, results based on 5000 bootstrapped samples indicated that over-generalization fully mediates the relationship between demandingness and mixed feelings. Specifically, there was a significant indirect effect of the impact of demandingness on mixed feelings through overgeneralization ( $b = 1.527$ , 95% CI [0.730, 2.584]). Furthermore, the direct effect of demandingness on mixed feelings was not significant ( $b = -0.797$ ,  $t = -1.613$ ,  $p = .109$ ) when overgeneralization was entered in the equation, suggesting a total mediation.

*The Effect of Demandingness on Neutral Feelings in Positive Situations Was Mediated by Extreme Secondary Positive Appraisals*

Similar to our analyses for negative feelings, we tested the mediation effect of positive demandingness on neutral feelings in positive situations through extreme secondary appraisals of extreme self-valuing and over-generalization.

For extreme self-valuing, results based on 5000 bootstrapped samples indicated that extreme self-valuing fully mediates the relationship between demandingness and neutral feelings. Specifically, there was a significant indirect effect of the impact of demandingness on neutral feelings through self-valuing

( $b = 1.462$ , 95% CI [0.411, 2.456]). Furthermore, the direct effect of demandingness on neutral feelings was not significant ( $b = -0.150$ ,  $t = -0.220$ ,  $p = .826$ ) when self-valuing was entered in the equation, suggesting a total mediation.

For over-generalization, results based on 5000 bootstrapped samples indicated that over-generalization fully mediates the relationship between demandingness and neutral feelings. Specifically, there was a significant indirect effect of the impact of demandingness on neutral feelings through overgeneralization ( $b = 1.274$ , 95% CI [0.387, 2.159]). Furthermore, the direct effect of demandingness on neutral feelings was not significant ( $b = 0.373$ ,  $t = 0.572$ ,  $p = .954$ ) when overgeneralization was entered in the equation, suggesting a total mediation.

## Discussion

We examined the relationship between negative, neutral, and mixed feelings in response to imagined positive situations and the role of a specific type of biased positive appraisal: *situational positive irrational beliefs*. First, participants who reported feeling negative or neutral when they imagined positive situations also reported experiencing positive feelings. Thus, our study suggests that negative and neutral feelings are part of a mixed emotional experience. In our study 40% of participants reported mixed feelings involving positive and negative feelings. This percent is consistent with previous estimates of mixed emotions ranging from 5% to 50% (Larsen et al., 2017).

Our results supported the hypotheses and showed that participants who endorsed responding with higher levels of demandingness, extreme self-valuing and over-generalization to positive situations also reported higher levels of mixed feelings when imagining being in positive situations. Thus, they tend to experience higher levels of negative and neutral feelings along with positive feelings in positive situations. As predicted by REBT theory, the effect of situational demandingness on all negative, neutral, and mixed feelings as responses to positive situations is mediated by situational secondary irrational beliefs (extreme self-valuing and overgeneralization).

The main way of interpreting these results is in line with existing theories of the mechanisms involved in mixed emotions. Our first finding was that biased positive appraisals were associated with mixed feelings in positive situations. Except for two situations, all participants who endorsed negative and/or neutral feelings in positive situations reported positive feelings as well in all scenarios. Thus, feeling negative in response to positive situations may be interpreted as a type of mixed feelings. Similar relationships between negative and mixed feelings were found with other variables, which supports the idea that negative feelings reported in positive situations are most likely a type of mixed feelings.

The main theory that explains mixed feelings suggests that mixed feelings are the result of the activation of conflicting goals. For instance, previous studies by Berrios et al. (2015a) showed that mixed emotions are triggered when a person decides about conflicting goals in the present. Thus, the emotions reported by the participants result from multifaceted evaluations of the relevance and implications of the event, often based on appraisals that may be in conflict (Shuman et al., 2013). In our study, there are two types of conflicts that may arise in imagining positive situations: (1) the conflict between having the imagined thing they need and losing or not getting it (Dryden & DiGiuseppe, 1990); and (2) the conflict between imagining the situation and the reality of the situation (Oettingen et al., 2016). Thus, in the first situation, imagining a highly positive event happening and feeling superior to others may lead to the thought that the event may not happen, which will result in negative and mixed feelings. In the second type of conflict, imagining a highly positive event in which they felt superior to others and had a highly successful life may contrast with the reality of the participants (e.g., in reality, I am not special, and all the things I want will not happen). The greater the level of extreme positive appraisals, the higher the amount of discrepancy and subsequent negative feelings. Thus, similar to the proposals of Shuman et al. (2013) a conflict will arise between appraisals of a multifaceted situation. Although based on our data we cannot differentiate between the two scenarios, our result suggests a new pathway of conflicting goals and experiencing negative and mixed emotions in positive situations: demandingness and associated extreme positive self and life appraisals in response to imagined positive situations.

Our results are in line with the findings examining the negative effects of positive fantasies (Oettingen et al., 2016). In a series of experiments, Oettingen et al. (2016) found that positive fantasies increase depressive symptoms in the long term. Although they interpreted the negative long-term effect of positive fantasies in terms of avoidance, ameliorating symptoms “only until reality hits” (Oettingen et al., 2016, p. 8) and then increasing depression, this is consistent with a conflicting goals and mixed emotions framework. Thus, it is possible that in individuals who react to positive fantasies with extreme positive appraisals, due to a larger discrepancy, reality hits sooner and negative feelings are evident much earlier. No relationship was observed between the vividness of imagining positive fantasies and mixed feelings. This result strengthens the idea that behind the negative effects of positive fantasies is not how vividly individuals imagine positive fantasies but how much they think they need that situation, and they overvalue their self and future based on that fantasy.

Macrynika et al. (2017) explored the mechanisms behind the negative effects of positive fantasies. They found that experiencing positive fantasies results in a dampening of positive affect, higher levels of rumination (repeatedly thinking of the mood consequences, such as “why I deserve it” or “why I react this way”) and then higher depressive reactions (Macrynika et al. 2017). Based on our results, we

suggest adding a new mechanism: reacting to positive imagined situations with extreme positive appraisals will increase the discrepancy between the imagined and real situations, resulting in mixed feelings and thoughts about positive fantasies. Then, further rumination may, over time, foster higher levels of depressive symptoms.

In our study, negative and mixed feelings correlated negatively with functional positive feelings, and no relationship was found between negative, neutral, or mixed feelings and dysfunctional positive feelings. This result suggests that experiencing negative and mixed feelings in positive situations goes hand in hand with lower levels of experiencing positive functional emotions; no relationship was observed between extremely intense positive feelings and mixed feelings. Thus, it is not that individuals with extreme positive feelings will end up with negative feelings, but individuals with exaggerated positive appraisals will experience more negative and mixed feelings in positive situations.

We also found that irrational beliefs are associated with reports of neutral feelings in positive situations. Our findings show that neutral feelings are significantly correlated with mixed and negative feelings. Neutral feelings endorsed by participants in our study may be interpreted as forms of mixed feelings (Schreier et al., 2016) or in the middle of neutral affect (Gasper, 2018). Thus, participants who endorse rigid motivational relevance and congruence of the positive situations (things must be as I want) probably also activate incongruent appraisals of the real situation (Yih et al., 2020). This is the first report of this “neutral feelings” type of mixed emotion in positive situations that is associated with high demands and exaggerated secondary appraisals (biased self-worth and over-generalization). Nonetheless, this result is consistent with clinical reports of highly demanding individuals who verbally report that because situations were supposed to happen, there was no extra benefit when they happened (i.e., it was as expected, so it was no surprise). Further research should clarify the nature of this type of neutral feelings (whether they are secondary or concomitant mixed emotions).

There are several limitations to the study. First, we used self-reported data, and the results are vulnerable to self-reporting bias. Second, most participants were females (88.7 %), so the generalization to the male population is limited. Third, we tested the assessment of emotions individuals would endorse if the situation happened. Thus, our measures of emotions are based on a subjective report of more foreseen emotions than experienced emotions. Fourth, the small sample size suggests that further studies are needed to replicate the results. Further studies should focus on using different measures of experienced feelings.

There are several implications for the field of mixed emotions and positive fantasies. First, we point to demandingness and biased positive appraisals as new pathways for mixed feelings in positive situations. Second, we suggest a new type of goal discrepancy induction mechanism based on mixed feelings via demandingness and biased secondary appraisals that may result in negative mood



effects from positive fantasies. Our study also has implications for the REBT model of well-being. It points to a new pathway by which biased appraisals may affect mental health: increasing the experience of negative, neutral, and mixed emotions in positive situations. Thus, our study suggests that biased appraisals in the form of irrational beliefs may act on several pathways to affect mental health: (1) reduce functional positive emotions; (2) increase dysfunctional positive emotions; and (3) increase mixed feelings in positive situations.

The current models of the well-being advantage of mixed emotions focus on the advantage of experiencing mixed emotions in stressful situations (Reich et al., 2003), conflicting positive situations (Berrios et al., 2017), or at moderate levels of frequency or intensity (Miyamoto & Ryff, 2011).

Here we show that mixed emotions in positive situations have rather negative effects, being linked with lower levels of healthy positive emotions and processes involved in vulnerability to emotional disorders (e.g., rigid goals). In different contexts (positive or negative), amounts (low, moderate, or high), or depending on their ingredients (rigid goals, biased appraisals), mixed feelings may be healthy or unhealthy. Thus, we may find contradictory findings depending on the context in which mixed feelings were measured. Berrios et al. (2017) found positive effects of mixed emotions in positive situations on well-being. Yet they measured mixed emotions in a rather conflicting positive situation (graduation accompanied by messages about conflicting goals) and functional positive and negative emotions (enthusiasm-sad; happy-sad) and not dysfunctional emotions (enthusiasm-depressed or euphoric-depressed).

Based on REBT theory, we suggest that mixed feelings may be healthy or unhealthy depending on their ingredients: functional or dysfunctional feelings, rigid goals, and biased appraisals. In this study, we explored the relationships between mixed feelings that include functional positive emotions and mixed feelings containing dysfunctional positive emotions with different variables. No difference in their relationships with other variables was observed. Our results did not support this distinction when we analyzed mixed feelings with functional positive emotions and mixed feelings with dysfunctional positive emotions. It seems that mixed feelings in positive situations are unhealthy based on the presence of negative feelings, regardless of whether positive feelings are functional or dysfunctional. Yet a different situation may exist for negative feelings. We did not differentiate mixed feelings based on functional and dysfunctional negative feelings. Further research should examine mixed emotions that include dysfunctional negative feelings and their effect on well-being.

Indulging ourselves in positive fantasies makes us feel better, but it comes with a cost: it adds negative feelings. The more we demand those fantasies happen and let ourselves feel more valuable and have a brighter future, the more negative feelings we experience. Mixed emotions and biased positive appraisals seem to be important processes involved in the negative effects of positive fantasies. It seems

that both practical suggestions and theoretical proposals from the REBT cognitive theory of emotions are right: when things we demand happen, we feel dysfunctional positive feelings and negative feelings as well.

## Authors' Notes

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