ORIGINAL ARTICLE

Repetitive Negative Thinking as a Pathway from Rejection Sensitivity to Poorer Mental Health: The Role of Expectancy Versus Concern

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Abstract

Background Rejection sensitivity (RS) has widely been considered unidimensional: the product sum of elevated (i) concern and (ii) expectation of rejection in social situations. Recent research suggests that rejection concern and expectancy are distinct constructs. This study aims to explore the role of Repetitive negative thinking (RNT) as a mediator between rejection concern versus expectancy and clinical outcomes, hypothesising distinct relationships for each RS construct.

Methods Data were collected as part of the Horizon2020 project "Assessing and Enhancing Emotional Competence for Well-Being in the Young: A principled, evidence-based, mobile-health approach to prevent mental disorders and promote mental well-being." In Data Collection 1 ($N=605$; age 15–20 years; Belgium) and Data Collection 2 ($N=1199$; age 15–22 years; Belgium, UK, Germany, Spain) Confirmatory Factor Analysis contrasted unidimensional and bi-lateral models of RS, conceptualised via the Adult Rejection Sensitivity Questionnaire (A-RSQ). Next, pathway models examined whether RNT mediated the relationship between rejection concern/expectancy and depression, anxiety, and mental well-being.

Results The two-factor model assessing the structure of the A-RSQ with rejection concern and expectancy as separate constructs had the best overall fit in both datasets. Rejection concern was most strongly linked to anxiety and depression, with RNT mediating this relationship. Rejection expectancy was more directly related to clinical outcomes, especially mental well-being. Depression was most strongly related to rejection expectancy in the first Belgian sample, equally strongly to rejection expectancy and concern in the second Belgian sample, and to rejection concern in all other countries.

Conclusions Our findings support the need to treat rejection concern and expectancy as distinct constructs, as they relate to different clinical outcomes and the pathways leading to these outcomes may be different. Considering them as two aspects of one unidimensional construct could obscure meaningful differences in mental health research and practice.

Keywords Rejection concern · Rejection expectancy · Rumination · Youth · Adolescents

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Introduction

Rejection sensitivity (RS) has been defined as a disposition to defensively expect, readily perceive, and react strongly to interpersonal rejection (Downey & Feldman, 1996; Downey et al., 1994). At its core, RS may serve a protective function, helping individuals avoid the emotional pain associated with rejection by a loved one. However, maladaptive behaviours, including social withdrawal, aggression and antisociality, which can be observed in individuals with high RS (Casini et al., 2022; Downey & Feldman, 1996), often lead to relationship dissatisfaction (Downey & Feldman, 1996). This can undermine the relationships that individuals form, leading to further feelings of rejection (Downey & Feldman, 1996). Given the crucial role relationships play in mental well-being, it is not surprising that RS is linked to a multitude of clinical outcomes. A meta-analysis of 75 studies found RS to be moderately associated with depression, anxiety, borderline personality disorder and body dysmorphic disorder (Gao et al., 2017). An examination of longitudinal studies within the same meta-analysis ($n = 12$) revealed significant associations between RS and depression, anxiety and loneliness that were stable over time, suggesting that RS may precede the development of these mental health issues (Gao et al., 2017).

The theoretical foundations of RS, as it is most commonly conceptualised in the literature today, were established by Downey and Feldman (1996). They proposed a model in which early experiences of rejection foster a heightened sensitivity to rejection. In this model, children come to expect that seeking support from others will likely result in rejection, leading to anticipatory anxiety in situations where rejection is perceived as a possibility. Thereafter, RS has commonly been conceptualised as a construct with two facets: an expectation of rejection and anxiety in anticipation of this rejection. The Rejection Sensitivity Questionnaire (RSQ; Downey & Feldman, 1996) is the most commonly used measure to assess RS and comprises 18 RS-activating social situations, e.g., "you ask your boyfriend/girlfriend if he/she really loves you", where participants should rate (a) how anxious or concerned they would be about being rejected in such a scenario (i.e. rejection concern), and (b) how high their expectation is of being rejected in such a situation (i.e., rejection expectancy). Following this, an overall RS score is calculated as the product of each situation's concern and expectancy scores, averaged across all scenarios (Downey & Feldman, 1996). In line with their conceptualisation of RS as a unidimensional construct, Downey and Feldman (1996) found that a single cross-situational factor, accounting for 27% of the variance could be extracted from their study data. However, recent research indicates that concern and expectancy may be distinct constructs, each

potentially influencing clinical, emotional and behavioural outcomes in unique ways (Casini et al., 2022; Innamorati et al., 2014; Lord et al., 2022).

Given that RS may play a critical role in the development of a wide range of mental health issues (Gao et al., 2017), the consequences of misconceptualisation are far-reaching. From a theoretical perspective, an inaccurate conceptualisation could hinder the development of more refined models that reflect the complexity of social rejection experiences. Practically, it may lead to ineffective interventions that fail to address the unique contributions and mechanisms of these distinct constructs.

Defining Rejection Expectancy Versus Rejection Concern

By definition, expectations are cognitions about future events, arising from subjective assessments of the probability of those events occurring (Olson et al., 1996). In their development of a conceptual model of expectation and hope formation, Leung et al. (2009) present a framework in which during the appraisal of a precipitating event various potential outcomes are initially considered. This process is influenced by prior knowledge, which informs a person of what outcomes are possible and the probability and desirability of those outcomes. The result of this appraisal is the identification of an expectation as the most probable outcome (Leung et al., 2009). When referring to *rejection* expectancy specifically, this means that individuals who have previously experienced rejection are more likely to form an expectation of rejection when appraising future social situations. In contrast, by definition, concern or worry typically involves thoughts about future events with uncertain outcomes, particularly when those outcomes have the potential for negative consequences (Sibrava & Borkovec, 2006). In the case of *rejection* concern specifically, individuals with heightened rejection concern tendencies, may be experiencing an uneasy state of uncertainty regarding how a future social situation with the possibility of rejection may turn out. In summary, rejection expectancy involves the subjective perception of rejection being the most likely outcome, whereas rejection concern typically arises when rejection is seen as a somewhat meaningful possibility, but the outcome remains uncertain.

Is Rejection Sensitivity as Operationalised by the (A)-RSQ a Unidimensional Construct?

The first study to re-examine the unidimensional factor structure of RS as operationalised by the A-RSQ (a nine-item adult version of the RSQ, which is strongly correlated with the RSQ, $r = 0.87$; Berenson et al., 2009), did not

reproduce the unifactorial structure. They found a bifactorial model with concern and expectancy as individual factors, which also loaded onto a general factor, to have the best overall fit (Innamorati et al., 2014). However, the predictive potential of the general factor was found to be suboptimal. Building on this, in two studies administering the A-RSQ to large US adult samples (Study 1: $N=346$, Study 2: $N=540$), Lord et al. (2022) tested a two-factor model. Both studies found that a model with concern and expectancy as individual constructs had to be preferred above (a) the traditional one-factor model with nine-item scores loading onto a general factor, (b) a 2nd-order factor model with expectancy and concern ratings per scenario loading on a scenario factor and these scenario factors then loading onto a general factor and (c) a bifactor model with a general factor as well as uncorrelated concern and expectancy factors. While the bifactor model also fit the data well, the pattern of factor loadings on the general factor were difficult to interpret from a substantive point of view.

To further explore the clinical implications of RS and to establish discriminant and convergent validity of the best fitting model structure, Lord et al. (2022) investigated associations between rejection concern and expectancy on the one hand, and mental health and interpersonal functioning correlates on the other hand. Findings revealed that the concern factor of the A-RSQ was more strongly associated with measures of negative affectivity, including measures of social anxiety, depression, somatic arousal and distress, while the expectancy factor was more strongly associated with reduced positive affect, correlating positively with anhedonia and negatively with extraversion. These findings provide further support for the two-factor model, as rejection concern and rejection expectancy have unique relationships with outcome variables and thus provide distinctive predictive potential. To date, these findings have not been replicated (Lord et al., 2022).

Repetitive Negative Thinking as a Mediator of Rejection Sensitivity

A question which remains unanswered is through which path rejection concern and expectancy are associated with mental health outcomes (i.e. through which mechanism does rejection concern vs. rejection expectancy lead to worse mental health) and whether the A-RSQ factors predict clinical outcomes above and beyond well-documented associations with psychopathology (Lord et al., 2022). Repetitive negative thinking (RNT) has previously been found to mediate the relationship between individuals with high RS and diverse maladaptive behavioural and mental health outcomes (Casini et al., 2022; Noda et al., 2022; Pellicane et al., 2023). The constant focus on negative thoughts

surrounding rejection may reinforce negative beliefs, exacerbate and prolong negative feelings, impairing effective coping-strategies and ultimately impacting individuals' mental health. RNT can be used as an umbrella term for the transdiagnostic trait of getting stuck in one's own negative thoughts (Wahl et al., 2019). While different forms of RNT are traditionally thought to be uniquely associated with specific disorders (e.g., rumination with depression and worry with anxiety), a bifactor model including a general RNT factor has been shown to yield the best overall fit, with the common factor predicting symptoms of anxiety and depression at a three-month follow-up (Funk et al., 2022; Samtani et al., 2022; Topper et al., 2014). Thus, recent research indicates that a transdiagnostic conceptualisation of RNT is warranted. In this paper, the umbrella term *RNT* is used consistently. However, the term *rumination* may be the vocabulary used in the papers being cited.

Cross-sectionally, strong associations have been found between RS and RNT (Andrews et al., 2022; Pearson et al., 2010). Furthermore, RNT has been found to mediate the relationship between RS and depressive and anxiety symptoms in cross-sectional studies with adult samples (Noda et al., 2022; Pellicane et al., 2023). Longitudinal studies using adult (Pearson et al., 2010) and adolescent samples (Zimmer-Gembeck, 2015; Zimmer-Gembeck et al., 2022), with follow-up periods ranging from 6 months to 2 years, found that individuals with higher baseline RS reported more RNT (Pearson et al., 2011; Zimmer-Gembeck, 2015; Zimmer-Gembeck et al., 2022) as well as social avoidance (Zimmer-Gembeck, 2015; Zimmer-Gembeck et al., 2022) and negative emotions (Zimmer-Gembeck et al., 2022). However, none of the above studies looked at the relationships of RNT with rejection concern and expectancy separately.

The importance of distinguishing rejection concern and rejection expectancy was confirmed in a study about behavioural tendencies by Casini et al. (2022): while rejection concern mainly predicted behavioural tendencies of withdrawal and this relationship was mediated by RNT, rejection expectancy mainly (negatively) predicted behavioural tendencies of prosociality, and this was not mediated by RNT. This study demonstrates that rejection concern and expectancy not only have associations with unique clinical outcomes, but also the pathways through which they are associated with these outcomes may differ (i.e. RNT was only found to mediate the relationship between rejection concern and behavioural outcomes, but not rejection expectancy). To date, no study has examined this RNT mediation model by separately investigating the relationships between rejection concern and expectancy with clinical outcomes such as depression, anxiety and mental well-being.

The Present Study

The present study investigates the mediating effect of the transdiagnostic trait *RNT* on the relationship between both rejection expectancy and rejection concern with diverse mental health outcomes including depression, anxiety and mental well-being. Given that RS is distally associated with depression and anxiety (Gao et al., 2017), it is important to understand its characteristics and which aspects are clinically relevant (i.e., concern vs. expectancy) as well as the potential mechanisms influencing the relationship between A-RSQ factors and these mental health outcomes for targeted and effective intervention.

To investigate this research question, our first step was to determine whether the two-factor structure of the A-RSQ found in Lord et al. (2022) could be replicated across four different languages. In addition, this study extends on the findings of Lord et al. (2022) by investigating the relationship between rejection expectancy and concern with similar as well as additional mental health outcomes in late adolescent and young adult samples. RS is particularly relevant during adolescence, as aversive experiences with peers are a major source of adolescents' maladjustment, leading to various negative consequences (Sandstrom & Zakriski, 2004). Furthermore, anxiety and depression often have their onset in youth (Solmi et al., 2022).

As in Lord et al. (2022), we hypothesised that a model with two factors (expectancy vs. concern) would best represent the internal structure of the A-RSQ, when compared to a one factor model with a general RS factor, a 2nd-order factor model and a bifactor model with a general RS factor and two subsidiary factors. Furthermore, we hypothesised rejection expectancy to be negatively linked with mental well-being, given that Lord et al. (2022) found rejection expectancy to be associated with a lack of positive affectivity. Finally, we hypothesised rejection concern to be associated with depression and anxiety and this relationship to be (partially) mediated by RNT, considering that RNT has cross-sectionally been found to mediate the relationship between RS and depressive and anxiety symptoms (Noda et al., 2022) and rejection concern in particular has been found to be associated with measures of negative affectivity (Lord et al., 2022).

Methods

The two data collections reported here were conducted within the Horizon2020 project "Assessing and Enhancing Emotional Competence for Well-Being in the Young: A principled, evidence-based, mobile-health approach to prevent mental disorders and promote mental well-being (ECoWeB Consortium; see Acknowledgements)" (Newbold et al., 2020). As part of the validation phase of the project, two online data collections were conducted in which measures of RS, mental illness and RNT were collected.

Participants and Procedures Across Both Data Collection Timepoints

Data from Data Collection 1 were obtained from a sample of 607 young people from Flanders (the Dutch-speaking part of Belgium). After excluding outliers, which included two individuals who fell into separate age brackets, the final sample analysed consisted of 605 participants (52.9% female, $M_{age} = 17.12$, $SD_{age} = 1.71$, Range$_{age} = 15$–20 years). Students at the Ghent University (Belgium) taking a course in assessment theory were tasked with recruiting one participant each, with half of the students being assigned to recruit a male participant and the other half to recruit a female participant. Eligible participants were (i) young people aged between 15 and 20 years, (ii) resident in Belgium, (iii) with a good knowledge of Dutch. Testing took place between March and June 2018 and commenced once informed consent was obtained. Participants completed a demographics questionnaire and a variety of measures, most of which were assessed in an online Qualtrics survey, covering domains such as intelligence, emotional intelligence, personality, behavioural, cognitive, and affective processing tendencies, current mental well-being, symptoms of anxiety and depression and health-related quality of life. Questionnaires and measures were presented in randomised order. Once the testing session was over, participants had the opportunity to provide feedback on the survey and were thanked for their participation.

Data from Data Collection 2 were obtained from a sample of 1218 adolescents and young adults from Belgium ($N = 533$), UK ($N = 249$), Germany ($N = 212$) and Spain ($N = 224$). After excluding outliers, which comprised individuals who were not in the target age range, as well as those people who selected 'other' as their gender category as this group was too small to account for an additional category, the final sample analysed consisted of 1199 participants (51.5% female, $M_{age} = 18.60$, $SD_{age} = 2.355$, Range$_{age} = 15$–22), with 43.6% coming from Belgium, 20.52% from the UK, 17.35% from Germany and 18.52% from Spain. See Table 1 for additional demographic information. In Belgium, recruitment was again carried out by students at the Ghent University. In Spain, the United Kingdom and Germany, recruitment was undertaken by a contracted Qualtrics research services team. Testing took place in 2019. Eligible participants were (i) young people aged 15 to 22 years in Belgium and between 16 and 22 years in the UK, Spain, and Germany, (ii) resident in the UK, Spain, Germany, or

Table 1 Sociodemographic variables for Data Collection 1 and 2

Variable	Data Collection 1	Data Collection 2
% Female at birth	52.9	51.5
Age: mean (SD)	17.12 (1.71)	18.60 (2.355)
Study/employment status		
% Pupil secondary education	65.12	
% Student higher education	33.72	76.15
% Employed/(unemployed)*	1.16	17.51
% Unemployed	–	2.84
% Prefer not to say	0	3.50
*Ethnicity**		
% White	–	87.74
% Mixed	–	4.42
% Asian	–	3.59
% Black	–	1.50
% Arab	–	1.42
% Other/prefer not to say	–	1.33

*For Data Collection 1, employment status was not differentiated; therefore, seven participants were recorded as either employed or unemployed

**Additionally, no data on ethnicity was collected during Data Collection 1

Belgium, (iii) with a good knowledge of English, Spanish, German or Dutch, respectively. The study procedure was largely the same as for Data Collection 1, with additional digitalisation (e.g., the Qualtrics survey began with a study introduction/background information, followed by a digital consent form in the UK, Spanish, and German samples). In both data collections, informed consent was obtained either from the participants alone (in the UK and in Spain) or also from their parents if the participants were under 18 years of age (in Germany and Belgium) in line with local legal regulations. For both Data Collection 1 and 2, the Ethical Committee of the Faculty of Psychology and Educational Sciences at Ghent University has confirmed that the research was conducted in compliance with the ethical guidelines set forth in its General Ethical Protocol (see waiver 2020/93).

Measures

For the Dutch, German, and Spanish samples, existing translations of instruments were available and used for all measures (GAD-7, PHQ-9, WEMWBS), except for the A-RSQ. As no validated translations of the A-RSQ were available in the target languages, a combination of translation–back-translation and committee-based approaches was employed, with greater emphasis placed on the committee-based method. The committee consisted of members from various teams involved in the ECoWeB project, all of whom were knowledgeable about the psychological constructs under study and collaborated to determine the most accurate and contextually appropriate translations.

Rejection Sensitivity

The *Adult Rejection Sensitivity Questionnaire* (A-RSQ; Berenson et al., 2009) is a 9-item self-report questionnaire which presents participants with scenarios depicting social situations where rejection is possible. Considering, the original RSQ was developed for college students specifically and not all participants of the present study were visiting university, the more generic adult version of the questionnaire was utilised. The following question: "You ask your supervisor for help with a problem you have been having at work" was the only question which required adapting to also reflect a schooling option (i.e. "You ask your supervisor for help with a problem you have been having at work/school). Participants should (a) rate the likelihood of them being accepted in such a situation (e.g., "I would expect that he/she would want to try to help me out") on a Likert-scale of 1 (very unlikely) to 6 (very likely) and (b) how concerned they would be about being rejected in such a situation (e.g., "How concerned or anxious would you be over whether or not the person would want to help you?") again on a 6-point Likert-scale of 1 (very unconcerned) to 6 (very concerned). The total score is calculated by multiplying the concern and expectancy rating of each scenario, with the expectancy rating first being reverse coded, and then obtaining the average of all the scenarios multiplicative scores. Scores range from 0 to 36, with higher scores indicating higher levels of RS.

To address the research questions of this paper, the questions relating to concern and expectancy were separately summed across all scenarios and then averaged, to calculate unique scores for each RS factor. The A-RSQ total score has previously been found to have adequate to excellent internal consistency in non-clinical US samples ($\alpha = 0.69$–0.91) (Beekman et al., 2016; Berenson et al., 2009; Bernstein & Benfield, 2013; Cain et al., 2017; Jones et al., 2016; Lord et al., 2022). For the individual scale scores both concern and expectancy have been found to have very good internal consistency, concern: $\alpha = 0.88$; expectancy: $\alpha = 0.88$ (Lord et al., 2022).

Due to the young age of a subgroup of participants in Data Collection 1, one item in the A-RSQ, which presents a scenario concerning the use of sexual protection, was omitted. This item was also omitted from analyses in Data Collection 2 and thus the following statistics are based on 8 of the 9 scenarios in the original A-RSQ. In Data Collection 1, the internal consistency of concern was found to be good, $\alpha = 0.77$, and of expectancy it was found to be questionable, $\alpha = 0.68$. In Data Collection 2, the internal consistency of concern was found to be good to very good, *Belgium*: $\alpha = 0.76$, *UK*: $\alpha = 0.78$, *Germany*: $\alpha = 0.72$, *Spain*: $\alpha = 0.81$, and questionable to very good for expectancy, *Belgium*: $\alpha = 0.61$, *UK*: $\alpha = 0.78$, *Germany*: $\alpha = 0.70$, *Spain*: $\alpha = 0.82$.

Repetitive Negative Thinking

RNT was operationalised on the basis of the three measures: Brooding subscale of the *Ruminative Response Scale* (Nolen-Hoeksema, 1991), *Perseverative Thinking Questionnaire* (Ehring et al., 2011) and *Penn State Worry Questionnaire* (Meyer & Miller, 1990).

The RRS (Nolen-Hoeksema, 1991) is a 22-item self-report questionnaire used to assess RNT in the form of depressive rumination. The RRS has two subscales, brooding and reflection. Individuals are asked to rate their response to sad or depressed mood (e.g., "Think: what am I doing to deserve this?") on a 4-point Likert-scale ranging from '1' (never) to '4' (always). The total score is derived by summing the ratings across items and ranges from 22 to 88, with higher scores indicating a higher degree of rumination. The RRS has been found to have very good to excellent internal consistency (α = 0.88 to 0.92) and a strong test–retest correlation ($r = 0.67$, 0.80; Luminet, 2003). The RRS brooding subscale represents the dysfunctional style of depressive rumination which has been found to be related to both present and future symptoms of depression (Treynor et al., 2003). In the current study, only the 5-item brooding subscale was used across both data collections. The RRS brooding subscale exhibited good internal consistency in Data Collection 1, α = 0.70 and good to very good internal consistency in Data Collection 2, *Belgium*: α = 0.70, *UK:* α = 0.83, *Germany:* α = 0.72, *Spain:* α = 0.79.

The PTQ (Ehring et al., 2011) is a 15-item self-report questionnaire, assessing content independent RNT. Participants should rate how they *typically* think about negative experiences or problems (e.g. "I get stuck on certain issues and can't move on") on a 5-point Likert-scale ranging from '0' (never) to '4' (almost always). The total score of the PTQ is calculated by summing the item scores and ranges from '0' to '45', with higher scores indicating a higher degree of RNT. In a large German sample ($N = 1832$) comprising clinical and non-clinical participants, internal consistency was found to be excellent and test re-test reliability was found to be adequate. The reliability of the PTQ was established as it was significantly correlated with further measures of RNT, including the PSWQ and the RRS (Ehring et al., 2011). In Data Collection 1, the full 15 items of the PTQ were included, however, in Data Collection 2, only 9 items were included. This is because the current samples come from studies piloting instruments to be used for an RCT and in Data Collection 2, a reduced item set was tested. Questions 4, 5, 9, 10, 14, and 15 were excluded from Data Collection 2. The PTQ exhibited excellent internal consistency in Data Collection 1, α = 0.94 and in Data Collection 2, *Belgium*: α = 0.91, *UK:* α = 0.94, *Germany:* α = 0.92, *Spain:* α = 0.93.

The PSWQ (Meyer & Miller, 1990) is a 16 item self-report questionnaire, assessing RNT in the form of worry. Participants should rate statements on how they typically worry (e.g., "I find it easy to dismiss worrisome thoughts") on a 5-point Likert-scale ranging from '1' ("not at all typical of me") to '5' ("typical of me"). The total score of the PSWQ is calculated by summing the ratings across all items and ranges from 16 to 80, with higher scores indicating a higher degree of worry. The PSWQ has previously been found to have excellent internal consistency (α = 0.94) and test–retest reliability ($r = 0.92$, $p < 0.001$). Furthermore, its validity has been established with similar measures such as the Cognitive Somatic Anxiety Questionnaire (source) ($r = 0.69$, $p < 0.001$) (Meyer & Miller, 1990). An 8-item version of the PSWQ was used across both data collections of the present paper. Questions 1, 3, 8, 10, 11, 14 15 and 16 were excluded from our samples. The 8-items scale exhibited excellent internal consistency in Data Collection 1, α = 0.92 and in Data Collection 2, *Belgium*: α = 0.90, *UK:* α = 0.93, *Germany:* α = 0.92, *Spain:* α = 0.92.

As only a general RNT factor has been found to be associated with and prospectively predict mental health outcomes (Funk et al., 2022; McEvoy et al., 2018; Samtani et al., 2022; Topper et al., 2014) and as the three RNT instruments were strongly related (using principal component analysis we found a general factor accounting 72% of the variance in the Belgian Data Collection 1 sample, 69% in the Belgian Data Collection 2 sample, 77% in the UK sample, 71% in the German sample and 74% in the Spanish sample). A composite RNT score was derived by scaling the items from the three instruments, ensuring that all items had a minimum of 1 and a maximum of 5 (or 0–4) points on the Likert scale. As a result, each instrument contributed equally (one-third) to the overall rumination score.

Anxiety

The *Generalised Anxiety Disorder-7* (GAD-7) (Spitzer et al., 2006) is a 7-item self-report questionnaire which screens for symptoms of generalised anxiety disorder. Participants are asked how often they have been bothered with anxiety symptoms over the past two-weeks (e.g., feeling nervous, anxious, or on edge) on a 4-point Likert-scale ranging from '0' (not at all) to '3' (nearly every day). The total score is calculated by summing the ratings of each of the 7 items and ranges from 0 to 21, with scores above 9 indicating moderate anxiety and scores above 14 indicating severe anxiety (Spitzer et al., 2006). The GAD-7 has previously been found to have excellent internal consistency in a large US sample ($\alpha = 0.92$), good test–retest reliability (intraclass correlation = 0.83) and good construct validity, correlating highly with the Beck Anxiety Inventory ($r = 0.72$) (Spitzer et al.,

2006). The GAD-7 exhibited very good internal consistency in Data Collection 1 of this paper, $\alpha = 0.84$ and very good to excellent internal consistency in Data Collection 2, *Belgium*: $\alpha = 0.84$, *UK:* $\alpha = 0.91$, *Germany:* $\alpha = 0.84$, *Spain:* $\alpha = 0.90$.
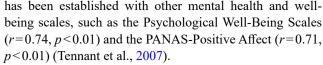
Depression

The *Patient Health Questionnaire (PHQ-9;* Kroenke et al., 2001) is a 9-item self-report questionnaire assessing symptoms of depression according to the DSM-V criteria for major depression. Participants are asked how often they have been bothered with depressive symptoms over the past two-weeks (e.g., little interest or pleasures in doing things) on a 4-point Likert-scale ranging from '0' (not at all) to '3' (nearly every day). The total score is calculated by summing the ratings of each of the 7 items and ranges from 0 to 27, with scores > 9 indicating moderate depression, > 14 indicating moderately severe depression and scores > 19 indicating severe depression (Kroenke et al., 2001). The PHQ-9 has previously been found to have very good internal consistency in a large US sample ($\alpha = 0.89$). Furthermore, criterion validity, construct validity and external validity have been well established (Kroenke et al., 2001).

In the current study, the PHQ-9 exhibited very good internal consistency in Data Collection 1, $\alpha = 0.82$ and very good to excellent internal consistency in Data Collection 2, *Belgium*: $\alpha = 0.82$, *UK*: $\alpha = 0.90$, *Germany:* $\alpha = 0.85$, *Spain:* $\alpha = 0.85$.[1]

Mental Well-Being

The *Warwick–Edinburgh Mental Well-Being Scale* (WEMWBS; Tennant et al., 2007) is a 14-item self-report questionnaire, assessing positive aspects of mental health, including positive affect and psychological functioning (autonomy, competence, self-acceptance, personal growth) and healthy interpersonal relationships. Participants are asked to rate how often they have experienced specific positive feelings and thoughts associated with mental well-being (e.g., I've been feeling optimistic about the future) over the past two weeks on a 5-point Likert-scale ranging from '1' (none of the time) to '5' (all the time). The total score of the WEMWBS is calculated by summing the item ratings and ranges from 14 to 70, with higher scores indicating a higher degree of mental well-being. The WEMWBS has been found to have excellent internal consistency in a UK sample ($N = 56$), $\alpha = 0.91$ and the validity of the WEMWBS

has been established with other mental health and well-being scales, such as the Psychological Well-Being Scales ($r = 0.74$, $p < 0.01$) and the PANAS-Positive Affect ($r = 0.71$, $p < 0.01$) (Tennant et al., 2007).

The WEMWBS exhibited very good internal consistency in Data Collection 1 of this paper, $\alpha = 0.89$ and very good to excellent internal consistency in Data Collection 2, *Belgium*: $\alpha = 0.88$, *UK*: $\alpha = 0.93$, *Germany:* $\alpha = 0.90$, *Spain:* $\alpha = 0.92$.

Data Analysis

The reliability of measures as well as the descriptive statistics of both samples were analysed using SPSS Version 28.0.1.0 (142). Confirmatory Factor Analysis (CFA) and pathway models were evaluated using MPLUS Version 8.11 (Muthen & Muthen, 2024). Considering the sample sizes were already larger than those in Lord et al. and's (2022) adequately powered study (Study 1: $N = 346$, Study 2: $N = 540$), a sample size calculation was not deemed necessary for the present study (Data Collection 1: $N = 605$, Data Collection 2: $N = 1199$).

As in Lord et al. (2022), three different models were tested: (a) a model with the expectancy and concern items of all eight scenarios loading onto a single factor; (b) a model with concern items and expectancy items of the eight scenarios loading onto two separate factors; and (c) a bi-factor model with concern items and expectancy items each loading onto separate factors as well as onto a general RS factor with the three factors being uncorrelated.[2] As each scenario introduced scenario-specific information, design-based error covariances between the expectancy and the concern item of each scenario were included in all three models, as was done in Lord et al. and's (2022) paper. A model was considered fitting if it satisfied at least two of the three commonly used criteria to evaluate model fit (Schweizer, 2010): The RMSEA should be below 0.08, and/or CFI should be above 0.90, and/or SRMR should be below 0.10 for a fair model fit. An RMSEA below 0.05, a CFI above 0.95 and an SRMR below 0.10 was considered a good model fit.

For Data Collection 2, measurement invariance across the four language groups was examined. Three subsequently more restrictive measurement invariance models were run: (1) the configural measurement invariance model in which the same model parameters were estimated without any restriction on the size of the parameters, (2) the

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[1] In Data Collection 1, all PHQ-9 items were included. In Data Collection 2, the item on suicidality was removed due to the anonymous nature of the Qualtrics panel and the inability to follow up with participants, including minors.

[2] As in Lord et al. (2022) also a fourth model was run with concern and expectancy items of each scenario loading onto eight first-order factors and these eight first-order scenario factors loading on a second-order factor rejection sensitivity factor. This model did not converge in either Data Collection 1 or in Data Collection 2 and is not further reported. Also Lord et al. (2022) found this model not to converge.

Table 2 Fit measures of three CFA-models for the first belgian sample

Model	df	χ2	RMSEA	90% CI RMSEA	CFI	SRMR
1-factor	96	791.61	.11	.10–.12	.62	.11
2-factor	95	349.79	.07	.06–.07	.86	.06
Bifactor	80	157.61	.04	.03–.05	.96	.04

df degrees of freedom, *χ2* chi-square, *RMSEA* root mean square error of approximation, *90% CI* 90% confidence interval, *CFI* comparative fit index, *SRMR* standardised root mean square residual

Table 3 Fit measures of three CFA-models for the UK, German, Spanish and second Belgian sample assuming configural measurement invariance

Model	df	χ2	RMSEA	90% CI RMSEA	CFI	SRMR
1-factor	384	1780.50	.11	.11–.12	.65	.11
2-factor	380	870.61	.07	.06–.07	.88	.06
Bifactor	320	501.11	.04	.04–.05	.96	.06

df degrees of freedom, *χ2* chi-square, *RMSEA* root mean square error of approximation, *90% CI* 90% confidence interval, *CFI* comparative fit index, *SRMR* standardised root mean square residual

metric measurement invariance model, which additionally constrained the unstandardised factor loadings to be equal across language groups and (3) the scalar measurement invariance model, which further constrained item intercepts to be equal across language groups. To evaluate whether the more restrictive models could be accepted, three criteria were applied: (1) the RMSEA of the more restrictive model had to fall within the 90% confidence interval of the RMSEA of the less restrictive model (Selig et al., 2008) (2) the difference in CFI between models had to be ≤ 0.01 (Cheung & Rensvold, 2002) and (3) the more restrictive model had to continue to meet the general thresholds for fair model fit.

Path models were used to investigate associations between the concern and expectancy facets of the A-RSQ and clinical correlates including depression (PHQ-9), anxiety (GAD-7), mental well-being (WEMWBS*)*, and the mediating effect of RNT (RRS-brooding, PTQ PSWQ) on these associations. While these outcome variables were moderately to highly correlated,[3] as anticipated based on previous literature (e.g., Blenkiron & Goldsmith, 2019), we sought to examine whether the individual variables differed in their predictive validity for the A-RSQ sub facets, warranting the decision to keep them separate. See Supplemental Tables S1–5 for bivariate correlations between all variables across languages and data collection timepoints. Gender and age were treated as exogenous variables in all models. The same path model was run in both Data Collection 1 and 2. Bootstrapped confidence intervals for the mediation analyses are provided in Supplemental Table S15.

Results

Factor Structure of the A-RSQ

As shown in Tables 2 and 3, the one-factor model, in which all A-RSQ items loaded onto a single factor, did not meet any of the three model fit criteria. The RMSEA exceeded 0.08, the CFI was below 0.90, and the SRMR exceeded 0.10. In addition, the one-factor model was not stable across the two data collections or the four language groups. The two-factor model, with all concern items loading on one factor and all expectancy items on another, met two of the three fit criteria. Specifically, the RMSEA was below 0.08 and the SRMR was below 0.10, both in the first Belgian sample and in the configural invariance model across the four language groups. The bifactor model satisfied all criteria for good model fit. In both the first Belgian sample and the configural invariance model across the four language groups, the RMSEA was below 0.05, the CFI was above 0.95, and the SRMR was below 0.10. See Supplemental Tables S8–9 for the differences in fit measures between the three CFA models across both datasets.

Although the fit indices supported the bifactor model, the pattern of loadings on the general factor was not interpretable. Some concern items loaded positively while others loaded negatively, and the same inconsistency was observed for the expectancy items (see Table 4). This general factor can thus clearly not be interpreted as an overall A-RSQ factor. See Supplemental Table S6 for a theoretical example of the expected factor loadings for the bifactor model. This inconsistent pattern of loadings for the general factor was also observed by Lord et al. (2022). Moreover, the magnitude and direction of the loadings varied considerably across the two data collections and the four languages. Therefore, the bifactor model was rejected and the two-factor model, which satisfied two of the three fit criteria, was selected. As Lord et al. (2022) observed, the two-factor model could be

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[3] Data Collection 1: rGAD-7-PHQ-9 = .65; rGAD-7-WEM-WBS = −.57; rPHQ-9-WEMWBS = −.59. Data Collection 2: rGAD-7-PHQ-9 = .73; rGAD-7-WEMWBS = −.55; rPHQ-9-WEMWBS = −.55; p < .001 for all correlations.

Table 4 Standardised factor loadings of the one-, two-factor and bifactor models across samples and languages

1-factor model

| | General factor | | | | |
	BE1	BE2	UK	GE	SP
E1	.44***	.48***	.36***	.44***	.40***
E2	.55***	.44***	.26***	.61***	.48***
E3	.48***	.54***	.36***	.10	.51***
E4	.70***	.62***	.52***	.45***	.55***
E5	.59***	.67***	.38***	.23***	.48***
E6	.36***	.33***	.34***	.56***	.47***
E7	.63***	.53***	.41***	.27***	.49***
E8	.59***	.66***	.35***	.19*	.43***
C1	−.08	−.03	.34***	.37***	.52***
C2	−.04	.00	.36***	.48***	.43***
C3	−.15**	−.01	.46***	.40***	.55***
C4	.10*	.09	.51***	.36***	.63***
C5	.06	−.06	.44***	.38***	.56***
C6	−.08	−.08	.31***	.16*	.34***
C7	.06	.10	.49***	.40***	.61***
C8	−.01	−.06	.40***	.48***	.59***

2-factor model

| | Expectancy factor | | | | | Concern factor | | | | |
	BE1	BE2	UK	GE	SP	BE1	BE2	UK	GE	SP
E1	.43***	.48***	.55***	.58***	.51***					
E2	.55***	.45***	.41***	.66***	.66***					
E3	.46***	.55***	.57***	.27**	.63***					
E4	.71***	.62***	.63***	.42***	.72***					
E5	.61***	.68***	.61***	.42***	.59***					
E6	.35***	.31***	.55***	.60***	.49***					
E7	.64***	.54***	.55***	.42***	.61***					
E8	.59***	.66***	.57***	.35***	.53***					
C1						.41***	.41***	.43***	.41***	.62***
C2						.45***	.44***	.53***	.58***	.54***
C3						.35***	.38***	.58***	.58***	.65***
C4						.49***	.42***	.69***	.17*	.71***
C5						.52***	.48***	.53***	.55***	.65***
C6						.43***	.35***	.46***	.28***	.36***
C7						.43***	.31***	.69***	.49***	.66***
C8						.56***	.49***	.55***	.66***	.66***

Bi-factor model

| | Expectancy factor | | | | | Concern factor | | | | | General factor | | | | |
	BE1	BE2	UK	GE	SP	BE1	BE2	UK	GE	SP	BE1	BE2	UK	GE	SP
E1	.39***	.45***	.54***	.54***	.47***						.20***	.21**	.07	−.20	.36*
E2	.59***	.53***	.39***	.58***	.68***						−.08	−.15*	−.22*	−.47***	−.06
E3	.40***	.50***	.60***	.43***	.60***						.49***	.23*	.27**	.40***	.12
E4	.73***	.64***	.63***	.36***	.76***						.02	.04	−.28**	−.27*	−.09
E5	.54***	.59***	.65***	.61***	.54***						.37***	.38***	.32**	.38**	.40*
E6	.37***	.36***	.53***	.53***	.48***						−.09	−.12	−.19*	−.36***	−.03
E7	.68***	.55***	.56***	.45***	.63***						−.05	.04	−.41***	.06	−.12
E8	.53***	.56***	.59***	.51***	.49***						.38***	.49***	.18*	.36**	.45**
C1						.38***	.35***	.42***	.34***	.64***	−.20***	−.21**	−.24**	−.25**	−.12
C2						.47***	.42***	.53***	.47***	.54***	.08	−.03	.14	−.32***	.05
C3						.29***	.33***	.58***	.53***	.64***	−.57***	−.19**	−.30***	−.34***	.23
C4						.51***	.54***	.68***	.14	.69***	.06	.18*	−.01	−.09	.16
C5						.50***	.43***	.54***	.47***	.69***	−.15**	−.38***	−.35***	−.36***	−.24
C6						.45***	.30***	.49***	.35***	.32***	.14*	−.02	.24**	.08	.27*
C7						.49***	.43***	.72***	.42***	.63***	.21***	.19**	.17	−.28***	.26
C8						.53***	.43***	.55***	.51***	.67***	−.29***	−.34***	−.18*	−.51***	−.11

E1–8 = rejection expectancy items 1 to 8. C1–8 = rejection concern items 1 to 8. BE1 First Belgian Sample, BE2 Second Belgian sample, UK sample, GE German Sample, SP Spanish sample

***p<.001; **p<.01; *p<.05

Table 5 Fit measures of three measurement invariance models for the two-factor model

Measurement Invariance Model	df	χ2	RMSEA	90% CI RMSEA	CFI	SRMR
Configural	380	870.61	.07	.06–.07	.88	.06
Metric	422	977.81	.07	.06–.07	.86	.07
Scalar	464	1603.58	.09	.09–.10	.72	.10

df degrees of freedom, *χ2* chi-square, *RMSEA* root mean square error of approximation, *90% CI* 90% confidence interval, *CFI* comparative fit index, *SRMR* standardised root mean square residual

Fig. 1 *Note*: RNT=repetitive negative thinking. Standardised path coefficients from rejection concern and expectancy to the mediator repetitive negative thinking (RNT), and from RNT to anxiety, depression and mental well-being. Including significant direct path coefficients from rejection sensitivity (RS) facets to clinical outcomes, controlling for RNT. Solid lines represent relationships that were consistent in the five samples across Study 1 and Study 2 (Belgium 1, Belgium 2, UK, Germany, Spain); The dashed line represents a relationship that was only significant in 3/5 samples (Belgium 1, Belgium 2 and UK); The ranges depicted include only significant values. Effects that were significant in none, one or two samples are not represented

well interpreted and had an acceptable fit. See Table 4 for a full overview of the standardised factor loadings across both data collections for the one-factor, the two-factor and the bifactor models (using the configural measurement invariance models). See Supplemental Table S7 for the unstandardised factor loadings of these models across both data collections (Table 5).

For the selected two-factor model, measurement invariance was further examined. The scalar invariance model demonstrated a substantially poorer fit and failed to meet any of the criteria for acceptable model fit. The metric invariance model met two of the three criteria. The RMSEA remained stable and below 0.08, while the SRMR increased slightly but remained below 0.10. These findings indicate that the two-factor model is robust and replicable across the two data collections and the four language groups. However, due to the lack of scalar invariance, direct quantitative comparisons between the language groups are not supported. Fit indices for the configural, metric, and scalar invariance models are provided in Supplemental Table S10.

Path Analysis: Predicting Clinical Outcomes Based on Rejection Concern and Expectancy and Repetitive Negative Thinking as a Mediator

Following the identification of the two-factor model as the only acceptably fitting, interpretable, and replicable factor solution, path analysis was conducted to examine the relationships between the concern and expectancy facets of the A-RSQ, clinical outcomes, and repetitive negative thinking (RNT) as a mediator using scale scores. Gender and age were included as exogenous variables in all models. Path models were initially estimated separately for each data collection and sample. Although some variation was observed between the samples, there was a very clear and replicable patterning of effects. See Fig. 1 for an overview of all significant, replicable pathways.

Differential Predictive Validity of Rejection Concern and Expectancy for Indicators of Mental Well-Being and Illness

An examination of the total predictive effects of the concern and expectancy facets of the A-RSQ revealed distinct patterns. The concern facet emerged as a stronger predictor of

Table 6 Standardised total path coefficients of concern and expectancy to WEMWBS, GAD-7, and PHQ-9

Instrument	RS facet	BE1	BE2	UK	GE	SP
WEMWBS	Concern	−.25***	−.21***	−.16**	−.21**	−.14*
	Expectancy	.34***	.30***	.48***	.32***	.30***
GAD-7	Concern	.29***	.24***	.29***	.35***	.29***
	Expectancy	−.18***	−.20***	−.20**	−.10	−.23***
PHQ-9	Concern	.17	.19***	.31***	.37***	.32***
	Expectancy	−.24***	−.19***	−.21***	−.18**	−.22**

BE1 First Belgian Sample, BE2 Second Belgian sample, UK sample, GE German Sample, SP Spanish sample; PHQ-9=Patient Health Questionnaire (Kroenke et al., 2001); GAD-7=Generalised Anxiety Disorder-7 (Kroenke et al., 2001); WEMWBS=Warwick–Edinburgh Mental Well-Being Scale (Tennant et al., 2007)

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

Table 7 Standardised path coefficients from concern and expectancy to the mediator RNT

RS facet	BE1	BE2	UK	GE	SP
Concern	.37***	.30 ***	.40 ***	.35***	.41 ***
Expectancy	−.22 ***	−.17 ***	−.18 **	−.07	−.11

BE1 First Belgian Sample, BE2 Second Belgian sample, UK sample, GE German Sample, SP Spanish sample

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

Table 8 Standardised path coefficients from RNT to WEMWBS, GAD-7, and PHQ-9

Instrument	BE1	BE2	UK	GE	SP
WEMWBS	−.54***	−.48***	−.31***	−.28***	−.41***
GAD-7	.68***	.66***	.64***	.65***	.69***
PHQ-9	.62***	.59***	.62***	.62***	.56***

BE1 First Belgian Sample, BE2 Second Belgian sample, UK sample, GE German Sample, SP Spanish sample; PHQ-9=Patient Health Questionnaire (Kroenke et al., 2001); GAD-7=Generalised Anxiety Disorder-7 (Kroenke et al., 2001); WEMWBS=Warwick–Edinburgh Mental Well-Being Scale (Tennant et al., 2007)

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

psychopathological symptoms, as measured by the GAD-7 and PHQ-9, whereas the expectancy facet more strongly predicted mental well-being, as assessed by the WEMWBS. For depressive symptoms (PHQ-9), the predictive strength of the two facets varied by data collection: expectancy showed slightly stronger predictive value in Data Collection 1, while concern was more predictive in Data Collection 2 (see Table 6).

The Mediating Role of Repetitive Negative Thinking

As expected, the concern facet of the A-RSQ stably predicted RNT in all five samples (see Table 7). In contrast, the expectancy facet demonstrated smaller and often non-significant associations with RNT. Moreover, RNT, significantly predicted all three outcome variables (see Table 8), with the strongest association observed for anxiety symptoms (GAD-7) and the weakest for mental well-being (WEMWBS).

When decomposing the predictive pathways into direct and indirect effects via RNT, it became evident that the concern facet's relationship with clinical outcomes was predominantly, and in some cases fully, mediated by RNT. In contrast, the expectancy facet's predictive value was either not mediated or only weakly mediated by RNT (see Table 9). Supplemental Tables S11–14 for the unstandardised versions of Tables 6–9.

To further investigate the stability of the path coefficients across the four languages, a model was run with all unstandardised path coefficients being identical in all four samples of Data Collection 2. This model demonstrated fair to good fit: $df=69$, $\chi2=129.91$, RMSEA=0.05, 90% CI RMSEA: 0.04–0.07; CFI=0.98, SRMR=0.06. This gives clear

Table 9 Standardised indirect (via RNT) and direct path coefficients of concern and expectancy to WEMWBS, GAD-7, and PHQ-9

Instrument	RS facet	Indirect effect					Direct effect				
		BE1	BE2	UK	GE	SP	BE1	BE2	UK	GE	SP
WEMWBS	Concern	−.20***	−.15***	−.13***	−.10**	−.17***	−.05	−.07	−.02	−.11	.03
	Expectancy	.12***	.08***	.06**	.02	.04	.22***	.21***	.43***	.30***	.25**
GAD-7	Concern	.25***	.20***	.26***	.23***	.28***	.04	.04	.03	.12*	.01
	Expectancy	−.15***	−.11***	−.11**	−.05	−.07	−.03	−.09**	−.08	−.06	−.15**
PHQ-9	Concern	.23***	.18***	.25***	.22***	.23***	−.06	.01	.07	.15**	.09
	Expectancy	−.13***	−.10***	−.11**	−.04	−.06	−.11**	−.09*	−.10*	−.14**	−.16**

BE1 First Belgian Sample, BE2 Second Belgian sample, UK sample, GE German Sample, SP Spanish sample; PHQ-9=Patient Health Questionnaire (Kroenke et al., 2001); GAD-7=Generalised Anxiety Disorder-7 (Kroenke et al., 2001); WEMWBS=Warwick–Edinburgh Mental Well-Being Scale (Tennant et al., 2007)

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

support for the stability of the paths across the four samples of Data Collection 2.

Discussion

Summary of Findings

The purpose of this study was to explore RNT as a mediator of the relationship between RS and depression, anxiety and mental well-being. We first evaluated the factor structure of RS as operationalised by the A-RSQ in order to establish whether rejection concern and expectancy are more accurately viewed as being separate, as found in Lord et al. (2022), or as combined, which was originally proposed by the model of Downey and Feldman (1996). We found that rejection expectancy and concern were best conceptualised as unique constructs and were therefore analysed separately in our mediation model. Our model found RNT to be a consistent mediator of the relationship between rejection concern and symptoms of psychopathology, while rejection expectancy was more directly associated with outcomes, especially mental well-being. We extended the findings of Lord et al. (2022) to two independent community samples of adolescents and young adults across four different languages (Belgium, Spain, Germany and the UK). Our findings across both Data Collection 1 and 2 extend a previous study in adults (Lord et al., 2022) to suggest that RS as operationalised by the A-RSQ is unlikely to be unidimensional. Treating rejection concern and expectancy as separate constructs may have theoretical as well as clinical benefits.

Interpretation of Findings

Consistent with Lord et al. (2022), both the two-factor model and bifactor model fit the data well, as indicated by the absolute fit indices. However, in the bifactor model, the factor loadings of concern and expectancy onto the general factor could not be meaningfully interpreted. Moreover, research suggests that factor loadings should be taken into consideration when assessing the fit of a bifactor model, as absolute fit indices can overestimate a bifactor models fit (Bonifay et al., 2017). Therefore, in line with our hypothesis, we conclude that the model with two-specific factors (rejection expectancy and concern) yielded the best overall utility and fit.

As hypothesised and in line with findings from Lord et al. (2022), we found that rejection concern was more strongly related to symptoms of negative affectivity, as indicated by measures of anxiety and depression, whereas rejection expectancy was more strongly associated with symptoms of diminished positive affect, as indicated by mental

well-being in the present study. Rejection expectancy was a stronger predictor of depressive symptoms in the first Belgian sample, while rejection concern was a stronger predictor in all samples from Data Collection 2, except the Belgian sample, where both concern and expectancy predicted symptoms equally. This difference may be due to variations in recruitment methods. In the Belgian sample, second-year bachelor students were asked to recruit an individual in the target age range with no known psychopathology, whereas participants in the other countries were recruited through a Qualtrics sample. These differing recruitment strategies could have influenced the composition of the sample, though it is difficult to pinpoint the exact effects of these sampling differences. Alternatively, depression may be a condition which draws on both expectancy and concern as it reflects both a lack of positive (e.g., little interest or pleasure in doing things) and negative affect (feeling down, depressed, and hopeless).

Furthermore, our findings suggest that RNT may be a mediator of the relationship between RS and psychopathology. Across both data collection timepoints, particularly anxiety and depression were associated with rejection concern, which was associated with increased RNT. RNT is a maladaptive emotion regulation strategy, and individuals who engage in it often overestimate its effectiveness, believing, for instance, that worry can help them gain control over unpleasant outcomes or emotions (Dugas et al., 2007). As previously mentioned, expectancy refers to the perception of a specific outcome being most likely (Leung et al., 2009), whereas concern involves a heightened focus on the possibility of a negative outcome, but with more uncertainty about what the outcome will actually be. Consistent with the Meta-cognitive Model of GAD (Wells, 1995), individuals with elevated rejection concern may engage in RNT as a way to try to cope with or even control the uncertainty of potential outcomes. For instance, someone with high rejection concern might worry that a colleague will reject their idea in a meeting. This worry may be reinforced by positive metacognitive beliefs such as, *"Worrying helps me prepare,"* which increase the likelihood and intensity of worry episodes. Over time, this may activate negative metacognitive beliefs such as, *"Worrying is uncontrollable,"* or *"Worrying will harm me,"* contributing to a self-reinforcing cycle of dysfunctional worry characteristic of GAD (Wells, 1995).

While the relationship between rejection concern and repetitive negative thinking (RNT) has primarily been examined within the context of anxiety models, similar mechanisms may also contribute to depressive symptoms. A common RNT factor, defined by repetitive, intrusive, and unproductive thought processes, has been shown to predict both anxiety and depression symptoms (Funk et al., 2022). These thought patterns are often associated with problematic

metacognitive beliefs, such as beliefs about the uncontrollability or harmfulness of thinking, which can sustain and intensify negative emotional states. Given the evidence that shared cognitive and metacognitive processes underlie various forms of RNT, it is plausible that rejection concern contributes to depression in a similar way to anxiety. In this framework, heightened concern about rejection may activate transdiagnostic RNT processes, including maladaptive metacognitive beliefs, which in turn exacerbate depressive symptoms.

In contrast, negative expectations may have direct detrimental effects on mood and behaviour, as individuals may experience a decline in mental well-being when holding negative predictions, which in turn may lead to resignation rather than control attempts. Research supports this idea, with studies showing that anticipating negative events can worsen an individual's mood while waiting for the event to occur (Golub et al., 2009), suggesting that negative expectations diminish positive affect. Furthermore, chronic social exclusion, which leads to negative expectations about rejection, has been found to be associated with resignation characteristics including unworthiness, helplessness, alienation and depression (Riva et al., 2017). In our study, we also found rejection expectancy to be associated with depression.

In summary, rejection concern may be more strongly associated with anxiety and depressive symptoms (negative affectivity) due to the maladaptive coping strategies it triggers (e.g., RNT). In contrast, rejection expectancy may have a more direct relationship with mental well-being and elements of depression (lack of positive affect), as the heightened sense of certainty about negative outcomes can directly impact mood and foster feelings of resignation.

Limitations, Strengths and Future Research

A limitation of the present study is the cross-sectional design, which limits conclusions about the causality of the relationships investigated. For example, RNT or mental illness might causally contribute to RS. However, when supported by well-established theories that clarify the causal direction, cross-sectional measures can still provide valuable insights into temporal processes. Notably, the cross-sectional relationships observed in this study align with the expected causal interpretation: RS has been shown to influence clinical outcomes (Gao et al., 2017) and RNT (Pearson et al., 2011), and RNT, in turn, has been shown to affect clinical outcomes (Funk et al., 2022). Furthermore, due to the cross-sectional nature of the study, it is possible that the association between RS and mental health outcomes are inflated because they naturally co-occur (Gao et al., 2017). A longitudinal study (Norona et al., 2016) examining the relationship between rejection sensitivity (RS) and depressive

symptoms in American adolescent girls found a moderate, statistically significant correlation between RS and depression at baseline ($r = 0.30$). However, when baseline RS was used to prospectively predict depression fourteen-month later, the correlation attenuated and became nonsignificant ($r = 0.13$; Norona et al., 2016). Future research should investigate these relationships experimentally or longitudinally, to establish the direction of effects and the strength of associations distally.

While the RSQ is the most used measure of RS in the literature, it is important to acknowledge that future research using other validated instruments to assess RS could provide further insights into the robustness of these findings. Moreover, the expectancy scale of the RSQ exhibited varying degrees of reliability across samples (from questionable to very good internal consistency), which may have implications for the findings and warrants further investigation.

Furthermore, although our findings on the factor structure of RS extend those of Lord et al. (2022) to a younger sample, future developmental studies exploring RS across the lifespan could improve the generalisability of our results, particularly in relation to RNT as a potential mediator of RS, as this was not explored in Lord et al. and's (2022) adult sample. Finally, interaction effects were not explored in this study. It is possible that rejection concern has a stronger influence on clinical outcomes when coupled with heightened beliefs in the imminent occurrence of rejection, or vice versa. Examining interaction effects in future studies would reveal whether RS manifests in a more convoluted way than initially suggested. Notably, this interaction has not yet been examined due to the predominant use of the total RSQ scale score. Accounting for these interaction effects would have exceeded the scope of this study by increasing complexity and decreasing overall comprehensibility.

The present study not only replicates, but also extends the findings of Lord et al. (2022) by examining relationships across two large, independent samples, including four languages, and importantly, generalising their findings to late adolescent and young adult populations. Furthermore, this study explores these relationships using additional variables and different instruments and investigates the mediating role of RNT. This broadens the generalisability of the findings, strengthens the evidence supporting these relationships and introduces a further level of complexity, in terms of how RS facets may affect mental illness. Furthermore, Lord et al. (2022)) called for the replication of results in a normally distributed sample and our study contributes to this by deriving its data from community samples across Europe, which enhances the ecological validity of the findings. Together, these factors provide a foundation for future research to further explore and confirm these relationships

across various populations and contexts longitudinally and experimentally.

Theoretical and Clinical implications

Making a distinction between RS factors is crucial not only for improved theoretical models of psychopathology but also for the development of more targeted interventions. Our research indicates that current models of RS may not paint an informative or detailed enough picture of the concept of RS. This has far-reaching implications as it indicates that previous research relying on the product-sum of rejection and concern may have blurred the boundaries between two distinct constructs. As a result, important nuances may have been overlooked, potentially leading to an underestimation of the role of RS in earlier studies. An inaccurate or oversimplified conceptualisation of RS could limit the advancement of more nuanced models of psychopathology that more accurately capture the complexity of social rejection experiences and their impact on mental health. Current models may fail to distinguish between different types of rejection sensitivity (e.g., rejection concern vs. rejection expectancy) and their unique contributions to the onset or exacerbation of mental health issues. Consequently, this lack of specificity may hinder the development of tailored, effective interventions. For instance, individuals with a primary tendency toward rejection expectancy may benefit more from cognitive reappraisal techniques aimed at altering maladaptive thought patterns, whereas individuals with a predominant rejection concern might respond better to RNT-focused interventions/emotion regulation strategies, meta-cognitive approaches or social skills training. Refining the conceptualisation of RS and exposing potential mechanisms underlying each aspect of RS is crucial for both theoretical advancement and the development of more effective, targeted clinical interventions.

Since rejection sensitivity (RS) is most operationalised using the RSQ within the field of clinical psychology, we believe that our findings are relevant to the broader understanding of RS as a psychological construct. For example, in a meta-analysis examining associations between RS and mental health outcomes, 38 studies employed the RSQ, whereas only three used the Interpersonal Sensitivity Measure (IPSM; (Boyce & Parker, 1989) and two relied on other instruments when investigating the relationship between RS and depression. As such, the implications of our findings are likely to extend beyond the use of single measurement tool.

Conclusion

The purpose of this study was to investigate the mediating effect of RNT on the relationship between rejection concern and expectancy, as operationalised by the A-RSQ, and clinical outcomes, including depression, anxiety and mental well-being. In doing so, we first aimed to replicate the previously found two-factor structure of RS (Lord et al., 2022) across two adolescent and young adult samples and four different languages (Belgium, Spain, Germany and the UK). Our results showed that the two-factor model had the best overall utility and fit. Most importantly, the clinical outcomes associated with rejection concern versus rejection expectancy and the potential pathways which lead to these outcomes differed. While rejection concern was most strongly related to symptoms of anxiety and depression and this association was mediated by RNT, rejection expectancy had a more direct effect on clinical outcomes, with the strongest association being with mental well-being. Depression was more strongly associated with rejection expectancy among Belgian participants in Data Collection 1, equally associated with expectancy and concern in the Belgian sample of Data Collection 2, and more strongly associated with rejection concern in the remaining countries. Maintaining concern and expectancy as distinct constructs provides a clearer understanding of the conceptual foundations of rejection sensitivity. Moreover, examining these facets separately allows for a more nuanced investigation of their differential impact on mental health outcomes, thereby informing the development of more targeted interventions.

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Declarations

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