

Metacognitive beliefs and worries in relation to subjective success: evidence from Brazil and Portugal

Crenças metacognitivas e preocupações em relação ao sucesso subjetivo: evidências do Brasil e de Portugal

Creencias metacognitivas y preocupaciones en relación al éxito Subjetivo: evidencias de Brasil y de Portugal

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Chief Editor responsible for the article: Leandro Fernandes Malloy-Diniz

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Disclosure of potential conflicts of interest: none

Funding: none

Approval Research Ethics Committee (REC): not applicable

Generative AI: I hereby declare that artificial intelligence tools were used for language translation and editorial assistance during the preparation of

the manuscript. All content was reviewed, verified, and approved by the author(s), who assume responsibility for the accuracy and integrity of the manuscript.

Received on: 2026/07/09

Accepted on: 2026/07/10

Published on: 2026/07/19

How to cite: Mello RBPF, Nordahl HM, Ramos MNP, Cacau APP, Alcântara GM. Metacognitive beliefs and worries in relation to subjective success: evidence from Brazil and Portugal. *Debates Psiquiatr.* 2026;16:1-37, e1640. <https://doi.org/10.25118/2763-9037.2026.v16.1640>

ABSTRACT:

Introduction: This study investigated the relationship between metacognitive beliefs, worry, and subjective perceptions of success in a sample of 291 adults, predominantly from Brazil and Portugal. **Objective:** Based on Wells' metacognitive model, we hypothesized that negative metacognitive beliefs would be associated with lower perceived success, whereas positive beliefs would show no significant association. **Results:** Results supported these predictions. Negative metacognitive beliefs were significantly associated with lower levels of perceived success, with individuals in the "Not successful" and "Partially successful" groups reporting higher levels of dysfunctional worry. In contrast, positive metacognitive beliefs did not vary across success groups. **Conclusion:** These findings highlight the central role of negative metacognitions in shaping subjective success and suggest that interventions targeting maladaptive worry processes may enhance well-being. The study extends metacognitive theory to non-clinical, transgenerational populations and contributes to understanding psychological factors underlying perceived achievement.

Keywords: success, metacognitive beliefs, worry, metacognitive therapy.

RESUMO:

Introdução: Este estudo investigou a relação entre crenças metacognitivas, preocupação e percepções subjetivas de sucesso em uma amostra de 291 adultos, predominantemente do Brasil e de Portugal. **Objetivo:** Com base no modelo metacognitivo de Wells, hipotetizamos que crenças metacognitivas negativas estariam associadas a menor percepção de sucesso, enquanto crenças positivas não apresentariam associação significativa. **Resultado:** Os resultados apoiaram essas predições. Crenças

metacognitivas negativas foram significativamente associadas a níveis mais baixos de sucesso percebido, com indivíduos nos grupos "Não bem-sucedido" e "Parcialmente bem-sucedido" relatando níveis mais elevados de preocupação disfuncional. Em contraste, crenças metacognitivas positivas não variaram entre os grupos de sucesso. **Conclusão:** Esses achados destacam o papel central das metacognições negativas na formação do sucesso subjetivo e sugerem que intervenções voltadas para processos de preocupação disfuncional podem melhorar o bem-estar. O estudo estende a teoria metacognitiva para populações não clínicas e transgeracionais e contribui para a compreensão dos fatores psicológicos subjacentes ao sucesso percebido.

Palavras-chave: sucesso, crenças metacognitivas, preocupação, terapia metacognitiva.

RESUMEN:

Introducción: Este estudio investigó la relación entre las creencias metacognitivas, la preocupación y las percepciones subjetivas de éxito en una muestra de 291 adultos, predominantemente de Brasil y Portugal.

Objetivo: Basándonos en el modelo metacognitivo de Wells, hipotetizamos que las creencias metacognitivas negativas estarían asociadas con un menor éxito percibido, mientras que las creencias positivas no mostrarían una asociación significativa.

Resultado: Los resultados respaldaron estas predicciones. Las creencias metacognitivas negativas se asociaron significativamente con niveles más bajos de éxito percibido, con individuos en los grupos "No exitoso" y "Parcialmente exitoso" reportando niveles más elevados de preocupación disfuncional. En contraste, las creencias metacognitivas positivas no variaron entre los grupos de éxito. **Conclusión:** Estos hallazgos destacan el papel central de las metacogniciones negativas en la configuración del éxito subjetivo y sugieren que las intervenciones dirigidas a procesos de preocupación desadaptativa pueden mejorar el bienestar. El estudio extiende la teoría metacognitiva a poblaciones no clínicas y transgeneracionales y contribuye a la comprensión de los factores psicológicos subyacentes al logro percibido.

Palabras clave: éxito, creencias metacognitivas, preocupación, terapia metacognitiva.

INTRODUCTION

The importance of perceived success

Success in life is conceptualized as a multidimensional construct that has historically drawn social and scientific attention. While the definitions of success are diverse, constructs such as happiness, health, longevity, friendship, family, social recognition, and personal fulfillment are incorporated into most definitions [1].

In the present study, success is operationalized as a subjective perception rather than an objective indicator of performance, income, occupational status, or material attainment, because individuals evaluate success based on their life trajectories, resources, and cognitive and emotional states [2, 3]. This distinction is relevant because perceived success may be relatively independent of material achievements, and well-being may predict life satisfaction and other relevant outcomes, rather than merely resulting from success [2, 4, 5,]

In defining the mechanisms of success, three types of variables have been identified: attitudes, defined as cognitive or emotional evaluations of certain phenomena; behaviors, understood as observable actions under the individual's direct control; and outcomes, characterized as the consequences of those behaviors [6].

Drawing on this framework, the first major domain of life success has been identified as Health and Longevity, reflecting the presence of psychological and physical health, as well as the absence of adverse conditions that threaten well-being [7]. Within the mental health domain, this category encompasses subjective well-being, adaptive coping styles, and the absence of psychological dysfunction.

This perspective is highly pertinent to psychiatry and mental health, given that negative self-evaluations of personal achievement can coexist with persistent worry, diminished perceived efficacy, and heightened emotional distress. Crucially, the capacity to pursue and appraise success is closely linked to social adaptation.

In a systematic review and meta-analysis, [8] showed that the cognitive processes responsible for adaptation to novel and challenging social environments are subject to mature and decline across the lifespan, mirroring trajectories in other cognitive domains. According to these authors, social integrates processes that support the comprehension of emotions, perspectives, and mental states, allowing for the interpret,

explain, and predict behavior. In the present study, this literature is operationalized exclusively as contextual support for the cognitive and evaluative nature of perceived success. The specific investigative focus is centered on metacognition—that is, how individuals monitor, evaluate, and interpret their own cognitive processes in relation to their goals and achievements. Consequently, the perception of success should not be viewed merely as a reflection of objective achievements, but instead as a subjective evaluative process. The domains described above provide a structural framework, but individual differences in the appraisal of these dimensions are what shape the final sense of personal fulfillment.

Role of metacognition

Defined fundamentally as the "knowledge and control of cognition" or, more colloquially, "thinking about thinking"[9 - 10], metacognition represents a construct of broad utility within psychological science. Since its conceptual inception in the 1970s, scholars have emphasized the capacity to plan, monitor, and evaluate cognitive operations during learning [9]. Flavell associated this construct with an expansive array of domains, including oral and reading comprehension, writing, linguistic processing, attention, memory, problem-solving, social cognition, self-regulation, and self-instruction [10].

For the purposes of the present study, the focus is not metacognition in general, but metacognitive beliefs about worry. This higher-order executive domain supports the and regulation of information and may help compensate for intrinsic cognitive constraints. In educational and professional contexts, metacognitive awareness may support problem-solving and emotion regulation, particularly because these skills can be systematically developed across educational levels [11].

Within the metacognitive model, attentional control and metacognitive beliefs operate as central transdiagnostic mechanisms in the development and maintenance of psychological disorders [12].

The Self-Regulatory Executive Function (S-REF) model [13 - 14] conceptualizes how metacognitive beliefs and self-regulation strategies drive cognitive biases, which are further modulated by volitional attentional control. In this framework, psychological dysfunction is maintained by Cognitive Attentional Syndrome (CAS), which is characterized by repetitive worry and rumination, threat monitoring, and maladaptive coping strategies that paradoxically perpetuate distress [15].

In the present study, positive metacognitive beliefs refer to the perception that worry may be useful for preventing problems, preparing action, or facilitating success. Negative metacognitive beliefs refer to the perception that worry is uncontrollable, dangerous, harmful, or impairing. Attentional control serves to mitigate these threats, reducing the influence of salient automatic responses and supporting goal-directed processing [16].

Supporting this association, a previous study [17] found that middle school students with negative metacognitive beliefs about worry, particularly regarding its uncontrollability and danger, reported higher levels of anxiety.

These findings support the relevance of examining whether similar metacognitive structures are also associated with subjective evaluations of personal achievement in non-clinical populations. Ultimately, the persistence of the CAS remains bound to underlying metacognitive knowledge, encompassing the explicit and implicit information individuals hold about their own mental operations, internal states, and coping repertoires. Furthermore, a paramount challenge in psychiatric and mental health research lies in translating psychopathological theories into frameworks that systematically guide clinical intervention. Despite the substantial contributions of traditional cognitive paradigms, subsequent therapeutic models have advanced to yield superior clinical outcomes [18].

A meta-analysis [19] similarly reported greater clinical benefits of Metacognitive Therapy (MCT) than Cognitive Behavioral Therapy (CBT) for generalized anxiety disorder (GAD), including higher rates of symptom remission. Together with the randomized trial [20], these findings support the clinical relevance of metacognitive mechanisms in pathological worry. Although such evidence does not permit therapeutic or causal inferences in the present cross-sectional, non-clinical study, it provides a theoretical and clinical rationale for examining whether metacognitive beliefs about worry are associated with subjective success perception.

Gaps in literature

Extensive literature consistently identifies metacognition as a robust predictor of academic achievement [21]. This relationship has been further substantiated by a recent meta-analysis conducted [22], which found a moderate positive association between metacognitive strategies and mathematics performance, moderated by age, cognitive domain, and cultural context. Similarly, research [23] has shown that elevated metacognitive awareness was correlated with better academic outcomes, a link presumably mediated by an enhanced capacity for systematic

planning, active monitoring, and cognitive regulation. In professional training contexts, such awareness among pre-service teachers has been linked to heightened professional self-assessment and greater teaching satisfaction [23].

However, this literature has focused mainly on academic performance, professional performance, or psychological symptoms, rather than subjective success as a personal evaluation of achievement. Therefore, the specific gap addressed in the present study is not metacognition in general, but the relationship between metacognitive beliefs about worry and perceived success in non-clinical populations. This distinction is necessary because objective indicators and subjective success are not equivalent constructs. Objective indicators may reflect income, status, or performance, whereas subjective success perception depends on personal standards, expectations, values, and cognitive evaluations of one's life course and may reflect evaluative processes related to well-being, self-regulation, and mental health.

Although this dichotomy of positive and negative metacognitive beliefs is traditionally implicated in the development and maintenance of clinical disorders [15], the conceptual architecture of the S-REF model justifies exploring these dimensions within non-clinical populations. In this context, testing the absence of a meaningful association between positive metacognitive beliefs and perceived success (H1), alongside a moderate negative association between negative metacognitive beliefs and perceived success (H2), offers a valuable extension of the S-REF framework to everyday functioning.

The present sample includes adults aged 18 to over 65 years, predominantly from Brazil and Portugal (N=291). This sample provides initial evidence from Lusophone contexts, which remain less represented in the international literature on metacognition and worry. However, the study does not aim to establish cultural comparisons, causal explanations, or broad population generalizations. Rather, it examines whether positive and negative metacognitive beliefs about worry are differentially associated with subjective success perception in a non-clinical, cross-sectional sample. Based on the literature reviewed in this manuscript, prior studies have mainly addressed metacognition in relation to academic performance, professional self-assessment, anxiety, and well-being, whereas the specific association between metacognitive beliefs about worry and subjective success perception remains insufficiently examined.

Study aim hypotheses

The objective of this study was to investigate the relationship between positive and negative metacognitive beliefs about worry and the subjective perception of success. Specifically, this cross-sectional inquiry aimed to: (1) evaluate the psychometric structure of a brief 10-item adaptation derived from the Metacognitions Questionnaire; (2) examine associations between factor scores for positive and negative metacognitive beliefs and categories of subjective success; and (3) test two hypotheses aligned with the metacognitive model.

The first hypothesis (H1) proposed that positive metacognitive beliefs—for example, the belief that worry facilitates success—will demonstrate no meaningful association with perceived success ($r \approx 0.00$), representing a null relationship. Conversely, the second hypothesis (H2) proposed that negative metacognitive beliefs—for example, beliefs about the uncontrollability and danger of worry—will be negatively associated with perceived success. Specifically, we anticipate a moderate negative correlation ($r = -0.30$ to -0.50), indicating that higher levels of negative metacognitive beliefs are systematically associated with lower levels of subjective success perception. Because of the cross-sectional and observational design, the hypotheses are formulated in terms of association rather than causality.

METHODS

Participants

The study included 291 adults (≥ 18 years) recruited through convenience and snowball sampling between August 2016 and January 2017. Participants were distributed across six age categories: 18–25, 26–35, 36–45, 46–55, 56–65, and over 65 years. Data were collected between August 2016 and January 2017. Most participants were Brazilian ($n = 254$, 87.3%), with 71.1% residing in the Southeast region; Portuguese participants accounted for 11.0% ($n = 32$). A few respondents were from Angola ($n = 2$, 0.7%) and from Bulgaria, Chile, and Peru (one each, 0.3%). Women constituted 72.9% ($n = 212$) of the sample, and men 27.1% ($n = 79$). Beyond the age requirement, no other inclusion or exclusion criteria were specified.

Measures

Metacognitive beliefs about worry were assessed using a 10 item adaptation of the Metacognitions Questionnaire (MCQ) [24 - 25]. The translation and cross-cultural adaptation to Portuguese included

independent translation, back-translation, expert review, and a pilot test to ensure semantic equivalence.

Although the original MCQ assesses five distinct metacognitive dimensions, positive beliefs, negative beliefs about worry, low cognitive confidence, negative beliefs about thoughts, and cognitive self-consciousness, the present study focused specifically on the positive and negative belief subscales most relevant to the research questions.

Participants responded using a 4-point Likert-type scale ranging from 1 (Strongly Disagree) to 4 (Strongly Agree). Six items assessed positive metacognitive beliefs regarding the utility of worry (PW1–PW6; e.g., the perception that worry is helpful or facilitates success), and four items assessed negative metacognitive beliefs concerning the uncontrollability and danger of worry (NW1–NW4; e.g., the perception that worry is hindering or harmful). At the item level, mean scores ranged from 1.71 to 2.81 (SD range = 0.95–1.36).

To examine the psychometric structure of this 10-item adaptation and assess whether the abbreviated version adequately represented both dimensions, an Exploratory Factor Analysis (EFA) was conducted. The resulting factor scores for positive and negative metacognitive beliefs were calculated using the regression method and subsequently used as continuous predictors in the inferential models.

Subjective success was operationalized through the qualitative-to-quantitative transformation of responses to the open-ended question: “Do you consider yourself successful? If yes, why?” The question was translated into Portuguese, and participants answered freely, without a word limit. Textual responses underwent systematic qualitative content analysis conducted by two independent coders. Discrepancies were resolved through consensus. However, inter-rater reliability coefficients, such as Cohen’s kappa, were not formally calculated, which limits the reproducibility of the categorization.

This process allowed subjective narratives to be categorized into a four-point ordinal variable (N = 289 valid cases; M = 3.19; SD = 1.16; skewness = -0.98; kurtosis = -0.70): Successful (n = 179, 61.9%), Partially Successful (n = 36, 12.5%), Not Yet Successful (n = 27, 9.3%), and Unsuccessful (n = 45, 15.6%). The four-level structure was established to capture gradations of self-efficacy and achievement. Specifically, the Not

Yet Successful category was conceptually inspired by growth mindset theory [26], accommodating a transitional state of pursuit.

Participants' justifications for perceived success were characterized by four prominent thematic domains: (a) professional achievement, expressed through recognition, autonomy, performance, and job satisfaction; (b) material stability, associated with income, housing, and financial security; (c) quality of personal and family relationships, including harmonious coexistence with family and friends; and (d) subjective well-being, defined by happiness, peace, health, and alignment with personal values. Conversely, responses classified as Partially Successful, Not Yet Successful, or Unsuccessful predominantly cited unachieved goals, financial instability, career barriers, unsatisfactory remuneration, poor time management, or a general sense of incompleteness across life domains. For analytical purposes, these categories were transformed into an ordinal scale ranging from 1 (Unsuccessful) to 4 (Successful).

Procedure

Ethical considerations were paramount throughout all stages of the research. Before and during data collection, the researchers adhered to the ethical requirements applicable at the time by consulting guidelines established by the Brazilian National Research Ethics Commission (Comissão Nacional de Ética em Pesquisa, CONEP). The study procedures complied strictly with the ethical guidance applicable in Brazil at the time of data collection, particularly [Resolution 510/2016](#), which addresses ethical standards for research in the humanities and social sciences and includes provisions for public opinion studies involving non-identifiable participants. Because the present study collected anonymous, non-identifiable survey responses and did not collect names, contact information, or other directly identifying data, the research was conducted in full accordance with the ethical framework in force during the data collection period. However, a formal Research Ethics Committee protocol number is not available for retrospective documentation.

To safeguard participant autonomy, privacy, and freedom of choice, the confidentiality and anonymization of the analytical dataset were strictly maintained. No directly identifying information, such as names or contact details, was collected. All participants provided electronic informed consent before initiating the survey.

Participants were recruited through convenience and snowball sampling via digital networks, primarily email and social media platforms, including

Facebook and WhatsApp. The survey link was posted in general-interest groups to maximize reach. This online distribution method was selected to access a diverse demographic profile, allowing respondents to participate voluntarily and complete the measures in a comfortable, self-paced environment, free from interpersonal pressure or investigator-induced coercion. No financial compensation or external incentives were offered for participation.

The survey was developed and hosted on the SurveyMonkey platform. The questionnaire was organized in the following sequence: informed consent, demographic data, the subjective success question, and the MCQ items. The instrument was pre-tested with a small pilot group to verify functionality and comprehension. To reduce the likelihood of multiple submissions from the same individual, IP addresses were monitored by the platform solely for duplicate-response control and were not retained in the final analytical dataset.

To optimize the sample size and improve demographic reach, access to the survey was opened and closed at multiple intervals. Of the nearly 400 questionnaire initiations, more than 150 incomplete responses were identified. In accordance with standard data-cleaning procedures, these incomplete submissions—defined as cases with more than 50% missing data or no response to the central success question—were systematically excluded from the study, with no penalty or adverse consequences for the respondents. This high attrition rate may be attributable to survey fatigue, and the absence of attrition bias analyses represents a methodological limitation. Ultimately, only fully completed questionnaires, for which mandatory response settings ensured no missing data across the core measures, were retained, yielding a final analytical sample of 291 participants.

Data analysis/statistics

All analyses were conducted using JASP (version 0.19.3). After descriptive statistics were calculated and data were screened for missing values and outliers, an exploratory factor analysis using Principal Axis Factoring with oblimin rotation was performed on the 10 item metacognitive scale. Two factors were retained based on eigenvalues and parallel analysis, and factor scores for the positive (F1) and negative (F2) dimensions were extracted for use in subsequent analyses.

Associations among categorical demographic variables were examined using Pearson's chi square tests. Because perceived success was measured

as an ordinal variable with four categories, primary comparisons of F1 and F2 scores across success groups were conducted using the Kruskal–Wallis test. Post hoc comparisons employed Dunn’s tests with Bonferroni Holm corrections. For comparison with parametric approaches, one way analyses of variance (ANOVA), including Welch’s ANOVA, were also conducted, and Levene’s tests assessed homogeneity of variance. Post hoc tests within the parametric framework used Tukey’s Honestly Significant Difference. Associations between perceived success and individual metacognitive items were evaluated using Spearman rank order correlations. Statistical significance was set at $p < .05$.

RESULTS

Preliminary analysis and descriptive statistics

The success construct was operationalized through an ordinal item comprising four categories, yielding 289 valid responses and two missing cases. The distribution of this variable exhibited a mean ($M = 3.19$) and a standard deviation ($SD = 1.16$), with individual values spanning the full scale from 1 to 4. The negative skewness of -0.98 indicated a higher concentration of participant responses in the upper success categories, while a kurtosis of -0.70 suggested a relatively flat distribution ([Table 1](#)).

The 10-item worry measure (PW1–PW6 and NW1–NW4) was used in subsequent analyses. Missing data were negligible across the dataset, with zero missing cases recorded for most indicators and a maximum of only one missing case observed for items PW1 and PW3. Item means ranged from a minimum of 1.71 ($SD = 0.95$) for item PW6 (“Only good and responsible people worry”) to a maximum of 2.81 ($SD = 1.19$) for item NW1 (“When I make mistakes, I keep dwelling...”). Standard deviations for the individual items ranged from 0.95 (PW6) to 1.36 (NW2). Skewness values were positive across all 10 indicators, ranging from 0.13 to 1.32, indicating a general concentration of participant scores toward the lower end of the scale. Kurtosis values ranged from -0.94 (NW2) to 0.84 (NW4) ([Table 1](#)).

To explore the initial bivariate associations, a preliminary analysis was conducted using Spearman rank-order correlations to examine the relationships between the subjective success item (AS1) and the individual worry indicators. Statistically significant negative correlations were identified between AS1 and all negative worry items: NW1, $r_s = -.185$, $p = .002$; NW2, $r_s = -.334$, $p < .001$; NW3, $r_s = -.338$, $p < .001$; and NW4, $r_s = -.303$, $p < .001$. Conversely, the correlations between AS1 and the

positive worry items remained close to zero and were not statistically significant: PW1, $r_s = .095$, $p = .110$; PW2, $r_s = .033$, $p = .580$; PW3, $r_s = -.053$, $p = .370$; PW4, $r_s = -.024$, $p = .680$; PW5, $r_s = .031$, $p = .600$; and PW6, $r_s = -.069$, $p = .240$.

Within-dimension correlations demonstrated robust internal consistency for both subscales. Among the positive worry items, associations were consistently positive, displaying moderate to high magnitudes, as exemplified by the correlation between PW4 and PW5, $r_s = .777$, $p < .001$. Similarly, correlations among the negative worry items were positive and highly pronounced, such as the association between NW3 and NW4, $r_s = .751$, $p < .001$. Taken together, this correlational pattern indicates that higher levels of self-reported success are associated with lower endorsement of negative, dysfunctional worry, while positive, functional beliefs about worry remain unrelated to perceived success. Furthermore, these preliminary analyses confirm strong directional consistency within both the positive and negative worry dimensions. [Table 1](#).

Psychometric evaluation and factor score extraction

The factorability of the 10-item worry scale was initially evaluated by examining the correlation matrix of the indicators. The Kaiser–Meyer–Olkin index indicated overall sampling adequacy (overall MSA = 0.816). Individual MSA values showed a predominantly high magnitude. For the positive worry items, the MSA ranged from 0.831 (PW4 and PW5) to 0.945 (PW6). For the negative worry items, the MSA ranged from 0.671 (NW3) to 0.866 (NW1). The lowest values were observed for NW3 (MSA = 0.671) and NW4 (MSA = 0.704), indicating lower common variance; however, these values did not preclude conducting an EFA, given the robust overall MSA. Bartlett’s test of sphericity supported the adequacy of the correlation matrix for factor analysis, $\chi^2(45) = 1627.77$, $p < .001$. This result rejected the null hypothesis of an identity matrix and confirmed that the correlations among the items were significantly different from zero.

Regarding data distribution, Mardia’s test of multivariate normality indicated a significant violation of the normality assumption, revealing marked multivariate skewness (skewness = 13.584), assessed by an approximate statistic with a chi-square distribution, $\chi^2(220) = 654.301$, $p < .001$, and significant multivariate kurtosis (kurtosis = 144.685), assessed by an approximate standardized statistic following the standard normal distribution, $z = 13.544$, $p < .001$. This finding was consistent with the univariate positive skewness observed at the individual item level,

reflecting the ordinal nature of the indicators. Additionally, the EFA model fit test was statistically significant, $\chi^2(26) = 215.580$, $p < .001$, indicating a discrepancy between the observed and reproduced correlation matrices. Consequently, model fit evaluation was based on complementary psychometric evidence, with an emphasis on explained variance, factor loadings, communalities, and theoretical coherence.

Because of the violation of multivariate normality, Principal Axis Factoring (PAF) was selected as the extraction method, as it is highly robust against distributional deviations, focusing specifically on isolating the shared common variance among variables while successfully partitioning unique variance and measurement error [27]. A parallel analysis based on factor analysis eigenvalues was conducted to determine the optimal number of latent dimensions to retain. In the unrotated solution, the first two observed eigenvalues were 4.196 and 2.487, explaining 42.0% and 24.9% of the common variance, respectively (cumulative variance = 66.8%). The parallel analysis supported a two-factor structure, as only the first two observed eigenvalues (3.600 and 1.706) exceeded the corresponding simulated eigenvalues derived from random data (0.509 and 0.228). From the third factor onward, the observed eigenvalues fell systematically below the simulated thresholds.

To achieve a simple latent structure and accommodate the anticipated theoretical associations between the metacognitive dimensions, an oblique oblimin rotation was applied. The rotated solution demonstrated an exceptionally clean two-factor structure, with no evidence of cross-loadings above the established threshold of 0.40. Items PW1 to PW6 loaded exclusively on Factor 1 (Positive Worry), with rotated pattern loadings ranging from 0.601 to 0.891, led by item PW5 ($\lambda = .891$). Conversely, items NW1 to NW4 loaded onto Factor 2 (Negative Worry), with rotated pattern loadings ranging from 0.488 to 0.989, led by item NW3 ($\lambda = .989$). Item quality was further examined via uniquenesses, defined as the proportion of specific variance not explained by the factors. Lower values were found for PW5 (0.214), PW1 (0.332), NW2 (0.258), and NW4 (0.275), indicating greater explained common variance. Item NW3 exhibited an exceptionally low unique variance (0.032), indicating that its variance was almost entirely explained by the negative factor. In contrast, items PW6 (uniqueness = 0.591) and NW1 (uniqueness = 0.619) displayed higher specific/error components, suggesting lower relative communality with their respective factors. [Table 2](#).

The correlation between the two factors was exceptionally low ($r = .117$), indicating that Positive Worry and Negative Worry operate as independent dimensions of metacognitive belief. This finding justified the extraction of separate, continuous factor scores for subsequent inferential analyses rather than a single, global index. After oblimin rotation, the total common variance remained at 66.8%, with a redistribution across the factors (Factor 1 = 39.6%; Factor 2 = 27.2%). Reliability analyses demonstrated excellent internal consistency for both subscales. McDonald's omega was estimated at $\omega = .887$ for the Positive Worry subscale and $\omega = .846$ for the Negative Worry subscale, while Cronbach's alpha coefficients were $\alpha = .883$ and $\alpha = .836$, respectively. These indices significantly exceeded standard psychometric requirements, indicating high measurement reliability [28]. The consolidated factor loadings and item-level uniquenesses are presented in Table 2. Exploratory factor analysis: structure matrix loadings (Table 3).

Interpretation of the factor structure

Differences across the four levels of self-perceived success (AS1: *No*, *Partially*, *Not yet*, and *Yes*) were examined for factor scores on Positive Worry (F1) and Negative Worry (F2) using one-way analyses of variance (ANOVAs).

As detailed in Table 4, mean scores for Positive Worry (F1) were relatively uniform across the four groups, ranging from $M = -0.07$ ($SD = 1.02$) for the *No* group to $M = 0.14$ ($SD = 0.88$) for the *Partially* group. This pattern indicates limited variation in F1 across AS1 levels. In contrast, Negative Worry (F2) scores exhibited greater separation across categories (see Table 4 and Figure 1). Participants in the *No* and *Partially* groups reported the highest levels of negative worry ($M = 0.60$, $SD = 1.00$; and $M = 0.50$, $SD = 1.06$, respectively), whereas the *Yes* group reported the lowest ($M = -0.27$, $SD = 0.88$).

Prior to model interpretation, ANOVA assumptions were evaluated. Levene's test supported the assumption of homogeneity of variance for both F1, $F(3, 283) = 0.94$, $p = .420$, and F2, $F(3, 283) = 1.27$, $p = .287$ (Table 5). In addition, visual inspection of the Q-Q plots of standardized residuals revealed minor departures from normality at the tails for both factors (Figure 2), which were considered negligible given the sample size.

A one-way ANOVA using Type II sums of squares yielded no significant main effect of AS1 on Positive Worry, $F(3, 283) = 0.34$, $p = .795$, with negligible effect sizes ($\eta^2p < .01$, $\omega^2p = .00$; Table 6). Substantively,

positive worry remained stable across levels of self-perceived success. For Negative Worry, however, the ANOVA revealed a significant main effect of AS1, $F(3, 283) = 14.54, p < .001$. The effect sizes ($\eta^2p = .13, \omega^2p = .12$) indicated a moderate association, reflecting meaningful group differences in the endorsement of negative worry content ([Table 7](#))

Given the unequal group sizes, Welch's ANOVA was estimated as a robustness check. The results corroborated the standard ANOVA, remaining non-significant for F1, $F(3, 72.75) = 0.41, p = .745$, and significant for F2, $F(3, 67.71) = 13.30, p < .001$. Tukey's honestly significant difference (HSD) post hoc tests identified no pairwise differences for Positive Worry (Table 8). For Negative Worry, the Yes group reported significantly lower scores than both the *No* group ($\Delta M = 0.87, p < .001$) and the *Partially* group ($\Delta M = 0.77, p < .001$). No other pairwise comparisons reached statistical significance (all $ps > .148$; [Table 8](#)). Thus, the *Not yet* group occupied an intermediate position and did not differ significantly from the other categories.

To further assess robustness against distributional deviations, a nonparametric Kruskal-Wallis test was conducted. The findings were consistent with the parametric analyses. For F1, there was no evidence of group differences, $\chi^2(3) = 1.48, p = .687, \varepsilon^2 = .01$ ([Table 9](#)), and Dunn's post hoc comparisons revealed no significant contrasts ([Table 10](#)). For F2, the Kruskal-Wallis test confirmed significant differences, $\chi^2(3) = 38.87, p < .001, \varepsilon^2 = .14$ ([Table 9](#)). Dunn's comparisons with Bonferroni-Holm correction retained significance for the *No* versus *Yes* and *Partially* versus *Yes* contrasts (adjusted $p < .001$ for both). An initially marginal difference between *No* and *Not yet* (unadjusted $p = .046$) did not remain significant after correction ($p_{Holm} = .183$), precluding an inferential interpretation of that contrast ([Table 10](#)).

Taken together, these analyses support distinct conclusions for the two metacognitive factors. For Positive Worry (F1), no significant differentiation emerged across levels of self-perceived success, indicating that the endorsement of worry as a functional, coping resource remains stable and uniform regardless of how participants categorize their achievements. In contrast, for Negative Worry (F2), the results converged on robust and statistically significant group differences. The cohort reporting high subjective success (*Yes*) exhibited systematically lower levels of negative, dysfunctional worry than both the *No* and *Partially* cohorts. This provides consistent empirical evidence that a higher subjective perception of personal success is strongly associated with a lower endorsement of the

uncontrollability and inherent danger of worry, successfully validating the study's primary directional hypotheses.

DISCUSSION

In summary, the empirical findings revealed two distinct patterns of association. Regarding positive worry (PW), the cognitive tendency to appraise worry as a functional, adaptive, or strategic resource did not vary across levels of self-perceived success. Specifically, whether participants evaluated their life achievements as highly successful or otherwise, they exhibited statistically uniform levels of PW. This stability indicates that positive beliefs regarding the utility of worry, when examined in isolation, are not systematically associated with subjective appraisals of success, a pattern that aligns closely with the observations of Reinholdt-Dunne et al. [12]. Consequently, these results provide robust validation for the first hypothesis (H1) and answer the first research question (RQ1) by confirming an absence of correlation ($r_s \approx 0$), thereby substantiating the theoretical neutrality of positive metacognitive beliefs within healthy, non-clinical cohorts.

According to Wells [25], the primary therapeutic objective within the metacognitive framework is the cultivation of cognitive flexibility and the systematic reduction of perseverative worry, thereby dismantling beliefs regarding both the efficacy and inefficacy of worry. This process necessitates a fundamental shift in how individuals relate to their thoughts, training them to recognize worry as an internal, controllable cognitive process rather than an objective reality. Consequently, positive metacognitive beliefs, when operating in isolation, are not inherently as pathogenic or destructive as their negative counterparts. However, they serve as critical upstream factors associated with the activation and maintenance of the Cognitive Attentional Syndrome (CAS). When positive and negative metacognitive beliefs coexist, they generate a highly destabilizing cognitive paradox, wherein the individual deploys worry as a coping strategy while simultaneously fearing it as an uncontrollable threat, which amplifies perceived danger and maintains chronic emotional distress [15]. Over time, this self-reinforcing cycle perpetuates the anxiety response, increasing the risk of a transition into pathological worry [25]. Within the context of self-perceived underachievement, this pattern suggests that worry functions as a maladaptive, structurally flawed cognitive attempt to resolve threat and cope with ambiguity or perceived failure.

For NW, robust differences emerged between the group that considered themselves successful ("Yes"), which showed significantly lower levels than the "No" group ($z = 5.294$, $p < .001$, $rrb = -0.511$) and "Partially" group ($z = 4.136$, $p < .001$, $rrb = -0.434$), with "Not yet" occupying an intermediate position (non-significant after Bonferroni/Holm corrections). More specifically, the ANOVA revealed a significant effect of self-perceived success on NW, with a moderate effect size, indicating that these differences were not only statistically significant but also substantively meaningful.

This pattern suggests that self-perceived success is strongly associated with lower levels of negative beliefs about worry, likely because these beliefs sustain the CAS. From a metacognitive perspective, this finding is highly coherent with the conceptualization that negative beliefs about worry are exceptionally distressing, given their direct association with appraisals of uncontrollability, physical or cognitive danger, and the anticipated catastrophic consequences of perseverative thinking [25].

Once the worry process is appraised as an imminent threat, the individual becomes trapped in a self-reinforcing, circular loop, wherein worry is simultaneously deployed as a coping mechanism and feared as a destructive, uncontrollable process. This cognitive entrapment severely intensifies emotional distress, depletes finite attentional resources, and is associated with barriers to the executive functions required for goal-directed behavior, occupational achievement, and a subjective sense of success. Whilst prior research, such as that by Fergus et al. [17], primarily observed negative worry elevating anxiety within clinical populations, the present study diverges by extending these maladaptive mechanisms to a non-clinical, transgenerational cohort across Brazil and Portugal. Consequently, these findings demonstrate that negative metacognitive beliefs are systematically related to lower subjective appraisals of personal achievement, even in the absolute absence of overt, diagnosable psychopathology.

Overall, the empirical findings highlight negative worry (NW) as the critical cognitive dimension accounting for the association between metacognitive beliefs and self-perceived success. These findings are particularly relevant to clinical psychiatry, as individuals with depressive or anxiety disorders often report profound feelings of failure or underachievement. By demonstrating that negative beliefs about the uncontrollability of worry are strongly associated with lower perceived success, this study suggests that addressing these specific metacognitions could be a valuable

transdiagnostic target for improving both clinical symptoms and overall well-being. This distinction carries profound theoretical and clinical implications, suggesting that psychological interventions designed to alleviate maladaptive worry must systematically target negative metacognitive beliefs, specifically those concerning uncontrollability, physical or cognitive danger, and harm, prior to addressing positive metacognitions.

Uniquely, the intermediate position of the Not yet cohort along the NW gradient suggests a transitional cognitive state, characterized by incomplete adaptive coping that is distinct from the more rigid patterns observed in the No and Partially cohorts. This finding indicates that individuals who do not yet perceive themselves as successful may maintain a constructive, forward-looking orientation toward future efficacy rather than experiencing learned helplessness. The specific subjective response "I do not consider myself successful yet" can be conceptualized through the lens growth mindset framework [26]. According to this model, framing an unaccomplished objective or an incomplete task not as a definitive failure, but as a transitional phase of development, indicates a high propensity for cognitive resilience. This growth-oriented orientation is highly productive for sustained learning, skill acquisition, and personal evolution, ultimately serving as a cognitive precursor to future objective success, defined by high task performance and adaptive self-regulation. Consequently, this transitional optimism, which remains largely undocumented in prior clinical literature, highlights a nuanced, non-linear cognitive pathway of emotional and operational adaptation within healthy, everyday populations.

Limitations and future directions

Although this study provides valuable insights into the metacognitive underpinnings of subjective achievement, several methodological boundaries must be acknowledged.

First, the sample was predominantly composed of Brazilian women from the Southeast region, collected via convenience sampling, which restricts the generalizability of the findings to the broader populations of Brazil and Portugal.

Second, crucial confounding variables, such as income, education, marital status, and pre-existing mental health conditions, were not measured, preventing statistical adjustments that could clarify the extent to which these associations are independent of socioeconomic or clinical factors.

Third, the operationalization of success relied exclusively on a subjective, qualitative self-report without inter-rater reliability metrics (e.g., Cohen's Kappa) for the categorization process. While this approach was central to capturing the idiosyncratic, lived experience of the participants, the absence of objective, external collateral validation, such as standardized indicators of income, occupational status, or academic performance, represents a clear limitation.

Fourth, despite the conceptual inclusion of rumination in the broader theoretical framing of the study, this specific perseverative process was not directly operationalized or psychometrically measured, which may have obscured its unique or interactive role alongside worry within the Cognitive Attentional Syndrome.

Fifth, the cross-sectional design of this research precludes any assertions of causality; it cannot be determined whether negative metacognitive beliefs decrease perceived success or if lower perceived success exacerbates negative worry.

Finally, the data were collected in 2016–2017. Although metacognitive architectures are theoretically considered relatively stable, global events such as the COVID-19 pandemic may have subsequently influenced baseline worry and success perceptions, limiting the temporal currency of the data. Beyond these limitations, the present study sheds valuable light on the complex interplay between metacognitive dimensions of worry and subjective perceptions of achievement, addressing a significant literature gap regarding post-2015 baseline data.

Critically, this dataset offers a highly valuable, uncontaminated baseline of psychological dynamics captured immediately prior to the profound global shifts precipitated by the COVID-19 pandemic, which remains essential for conducting rigorous comparative studies within the current 2026 academic landscape.

These findings robustly confirm that negative worry operates as a systematic barrier to perceived success, successfully extending the applicability of the Self-Regulatory Executive Function (S-REF) model to everyday, non-clinical cohorts across Brazil and Portugal. Within this framework, MCT serves as a highly effective clinical or psychoeducational intervention by systematically dismantling maladaptive metacognitive beliefs and cultivating the metacognitive mode, defined as the individual's capacity to experience internal cognitive events objectively without active

engagement or counterproductive behavioral reaction [13]. Ultimately, whilst pathological worry architectures share a common foundation of rigid cognitive processing and dysfunctional self-regulation, their impact on subjective success is determined by how these mechanisms are managed, positioning cognitive flexibility as the pivotal mechanism for reducing perseverative thinking, fostering adaptive coping, and facilitating goal attainment.

Furthermore, the focused analysis of the Not yet cohort highlights a critical, transitional cognitive state characterized by forward-looking optimism alongside still-developing coping mechanisms. Targeted, brief metacognitive interventions, such as structured psychoeducational workshops, could strategically pivot this intermediate population toward sustained subjective success by equipping them with adaptive cognitive-regulation skills. This preventative approach is particularly salient given the current sociodemographic realities of Brazilian and Portuguese populations, especially the Brazilian cohort, who must navigate persistent political and economic volatilities alongside a highly competitive and demanding contemporary labor market.

Future research could further elucidate the specific cognitive and systemic pathways through which distinct cultural contexts and socioeconomic landscapes modulate the structural relationship between metacognitive beliefs, perseverative worry, and subjective success. Specifically, prospective, longitudinal investigations examining the clinical efficacy of culturally adapted MCT interventions across heterogeneous cohorts, with a systematic focus on dismantling both positive and negative maladaptive metacognitions, would carry substantive empirical utility. Such investigations remain essential to refine transdiagnostic cognitive models and to evaluate the durability of adaptive self-regulation within diverse, non-clinical populations

CONCLUSION

This study investigated the associations between metacognitive beliefs about worry and subjective success in a transgenerational sample. Negative metacognitive beliefs were significantly associated with lower perceived success, while positive beliefs showed no significant association. These findings align with transdiagnostic metacognitive models, indicating that dysfunctional worry is a key cognitive correlate of subjective achievement appraisals. Despite limitations the study suggests that interventions targeting negative metacognitive beliefs may promote well-

being. Future longitudinal research with objective clinical and demographic variables is needed to clarify causal directions across cultural contexts.

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↑ ↑ ↑ **Table 1.** Descriptive statistics for the self-perceived success item and worry scale items

Item	Code	N	Missing	M	SD	Skewness	Kurtosis
Do you consider yourself successful? If so, why?	AS1	289	2	3.19	1.16	-0.98	-0.70
I think worry helps me be successful.	PW1	290	1	2.37	1.07	-0.40	-0.46
My worry makes me act.	PW2	291	0	2.70	1.06	0.13	-0.42
I consider myself an anxious person, and my anxiety helps me achieve the things I desire.	PW3	290	1	2.23	1.07	0.75	0.04
My worries help me avoid disastrous situations.	PW4	291	0	2.39	1.05	0.32	-0.55
By worrying, I understand the problem better and have more resources to cope with it.	PW5	291	0	2.38	1.06	0.25	-0.65
Only good and responsible people worry.	PW6	291	0	1.71	0.95	1.21	0.59
When I make mistakes, I keep dwelling on what went wrong in order to avoid making the same mistake in the future.	NW1	291	0	2.81	1.19	0.28	-0.72
I consider myself an anxious person, and I believe that my anxiety harms me.	NW2	291	0	2.57	1.36	0.49	-0.94
Worry makes me very tense and interferes with my ability to solve problems.	NW3	291	0	2.37	1.17	0.68	-0.31
My worry paralyzes me and hinders me from achieving my goals.	NW4	291	0	1.90	1.18	1.32	0.84

Source: The authors.

Note: *N* = number of valid responses; Missing = number of missing responses; *M* = mean; *SD* = standard deviation. AS1 refers to the self-perceived success item. PW1–PW6 refer to Positive Worry items. NW1–NW4 refer to Negative Worry items. Values are rounded to two decimal places

↑ ↑ **Table 2.** Exploratory factor analysis: factor loadings and uniqueness after oblimin rotation

Item	Factor 1	Factor 2	Uniqueness
PW5	0.891	—	0.214
PW4	0.844	—	0.293
PW2	0.835	—	0.306
PW1	0.823	—	0.332
PW3	0.742	—	0.396
PW6	0.601	—	0.591
NW3	—	0.989	0.032
NW4	—	0.857	0.275
NW2	—	0.828	0.258
NW1	—	0.488	0.619
Item	Factor 1	Factor 2	Uniqueness

Source: The authors

Note: Factor 1 represents Positive Worry. Factor 2 represents Negative Worry. Loadings below 0.30 were suppressed and are represented by em dashes. Uniqueness indicates the proportion of item variance not explained by the retained factors. Values are rounded to three decimal places.

 **Table 3.** Exploratory factor analysis: structure matrix loadings

Item	Factor 1	Factor 2
PW1	0.814	—
PW2	0.832	—
PW3	0.761	—
PW4	0.840	—
PW5	0.885	—
PW6	0.620	—
NW2	—	0.847
NW3	—	0.982
NW4	—	0.845
NW1	—	0.526
Item	Factor 1	Factor 2

Source: The authors

Note: Factor 1 represents Positive Worry. Factor 2 represents Negative Worry. Loadings below 0.30 were suppressed and are represented by em dashes. Values are rounded to three decimal places.

↑ ↑ **Table 4.** Descriptive statistics for Positive Worry and Negative Worry factor scores by self-perceived success category

	AS1	N	Mean	SD	SE	CV
Positive Worry (F1)	No	45	-0.070	1.019	0.152	-14.519
	Partially	36	0.143	0.884	0.147	6.174
	Not yet	27	-0.012	0.988	0.190	-83.753
	Yes	179	-0.024	1.033	0.077	-42.669
Negative Worry (F2)	No	45	0.597	1.001	0.149	1.676
	Partially	36	0.500	1.055	0.176	2.109
	Not yet	27	0.142	1.061	0.204	7.456
	Yes	179	-0.271	0.883	0.066	-3.262

Source: The authors

Note: AS1 = self-perceived success. Categories were defined as No, Partially, Not yet, and Yes. *N* = number of valid cases; *M* = mean factor score; *SD* = standard deviation; *SE* = standard error; *CV* = coefficient of variation. CV values should be interpreted with caution because factor-score means may be close to zero. Values are rounded to three decimal places.

↑ **Table 5.** Levene's test of homogeneity of variance for Positive Worry and Negative Worry

<i>Factor</i>	<i>F</i>	<i>df1</i>	<i>df2</i>	<i>p</i>
<i>Positive Worry (F1)</i>	<i>0.944</i>	<i>3</i>	<i>283</i>	<i>.420</i>
<i>Negative Worry (F2)</i>	<i>1.265</i>	<i>3</i>	<i>283</i>	<i>.287</i>

Source: The authors

Note: Levene's test was used to assess homogeneity of variance across the four self-perceived success categories. *F* = Levene's test statistic; *df1* = numerator degrees of freedom; *df2* = denominator degrees of freedom; *p* = statistical significance.

**Table 6.** One-way ANOVA for Positive Worry factor scores across self-perceived success categories

Model	Source	SS	df	MS	F	p	η^2p	ω^2p
Standard ANOVA	AS1	1.044	3.000	0.348	0.342	.795	0.004	0.000
	Residuals	288.203	283.000	1.018	—	—	—	—
Welch ANOVA	AS1	1.044	3.000	0.348	0.412	.745	0.004	0.000
	Residuals	288.203	72.753	3.961	—	—	—	—

Source: The authors

Note: AS1 = self-perceived success. SS = sum of squares; MS = mean square; η^2p = partial eta squared; ω^2p = partial omega squared. Sums of squares are Type II. Em dashes indicate values not applicable to the corresponding row. Values are rounded to three decimal places.



Table 7. One-way ANOVA for Negative Worry factor scores across self-perceived success categories

Model	Source	SS	df	MS	F	p	η^2p	ω^2p
Standard ANOVA	AS1	38.717	3.000	12.906	14.543	< .001	0.134	0.124
	Residuals	251.138	283.000	0.887	—	—	—	—
Welch ANOVA	AS1	38.717	3.000	12.906	13.296	< .001	0.134	0.124
	Residuals	251.138	67.714	3.709	—	—	—	—

Source: The authors

Note: AS1 = self-perceived success. SS = sum of squares; MS = mean square; η^2p = partial eta squared; ω^2p = partial omega squared. Sums of squares are Type II. Em dashes indicate values not applicable to the corresponding row. Values are rounded to three decimal places.

↑ **Table 8.** Tukey post hoc comparisons for Positive Worry and Negative Worry factor scores

Comparison	Mean difference	95% CI lower	95% CI upper	SE	df	t	Cohen's d	d lower	d upper	pTukey
Panel A. Positive Worry (F1)										
No vs Partially	-0.213	-0.797	0.370	0.226	283	-0.946	-0.211	-0.806	0.383	.780
No vs Not yet	-0.058	-0.693	0.576	0.246	283	-0.238	-0.058	-0.705	0.589	.995
No vs Yes	-0.046	-0.481	0.389	0.168	283	-0.273	-0.046	-0.489	0.398	.993
Partially vs Not yet	0.155	-0.509	0.819	0.257	283	0.603	0.154	-0.523	0.830	.931
Partially vs Yes	0.167	-0.309	0.644	0.184	283	0.908	0.166	-0.320	0.651	.800
Not yet vs Yes	0.012	-0.526	0.551	0.208	283	0.060	0.012	-0.536	0.561	1.000
Panel B. Negative Worry (F2)										
No vs Partially	-0.213	-0.797	0.370	0.226	283	-0.946	-0.211	-0.806	0.383	.780
No vs Not yet	-0.058	-0.693	0.576	0.246	283	-0.238	-0.058	-0.705	0.589	.995
No vs Yes	-0.046	-0.481	0.389	0.168	283	-0.273	-0.046	-0.489	0.398	.993
Partially vs Not yet	0.155	-0.509	0.819	0.257	283	0.603	0.154	-0.523	0.830	.931
Partially vs Yes	0.167	-0.309	0.644	0.184	283	0.908	0.166	-0.320	0.651	.800
Not yet vs Yes	0.012	-0.526	0.551	0.208	283	0.060	0.012	-0.536	0.561	1.000

Source: The authors

Note: Comparisons were performed across the four categories of self-perceived success (AS1). CI = confidence interval; SE = standard error; df = degrees of freedom. pTukey values were adjusted using the Tukey method. Confidence intervals for Cohen's d were adjusted using the Bonferroni method. Values are rounded to three decimal places.

Table 9. Kruskal–Wallis tests for self-perceived success categories and factor scores

Factor	Statistic	<i>df</i>	<i>p</i>	Rank ϵ^2	95% CI lower	95% CI upper	Rank η^2	95% CI lower	95% CI upper
AS1–F1	1.480	3	.687	0.005	0.001	0.042	0.000	0.000	0.030
AS1–F2	38.868	3	< .001	0.136	0.070	0.232	0.127	0.068	0.228

Source: The authors

Note: AS1 = self-perceived success; F1 = Positive Worry; F2 = Negative Worry. Rank ϵ^2 and Rank η^2 are nonparametric effect size estimates. CI = confidence interval. Values are rounded to three decimal places.



Table 10. Dunn post hoc comparisons for self-perceived success categories

Comparison	<i>z</i>	<i>Wi</i>	<i>Wj</i>	<i>rrb</i>	<i>p</i>	<i>pBonf</i>	<i>pHolm</i>
Panel A. Positive Worry (F1)							
No vs Partially	-1.138	137.889	159.000	0.159	.255	1.000	1.000
No vs Not yet	-0.162	137.889	141.167	0.029	.871	1.000	1.000
No vs Yes	-0.365	137.889	142.947	0.032	.715	1.000	1.000
Partially vs Not yet	0.844	159.000	141.167	-0.146	.399	1.000	1.000
Partially vs Yes	1.059	159.000	142.947	-0.106	.290	1.000	1.000
Not yet vs Yes	-0.104	141.167	142.947	0.010	.917	1.000	1.000
Panel B. Negative Worry (F2)							
No vs Partially	0.570	194.822	184.250	-0.060	.569	1.000	.569
No vs Not yet	1.998	194.822	154.463	-0.295	.046	.275	.183
No vs Yes	5.294	194.822	121.550	-0.511	< .001	< .001	< .001
Partially vs Not yet	1.410	184.250	154.463	-0.208	.159	.952	.317
Partially vs Yes	4.136	184.250	121.550	-0.434	< .001	< .001	< .001
Not yet vs Yes	1.921	154.463	121.550	-0.233	.055	.329	.183

Source: The authors

Note: Comparisons were performed across the four categories of self-perceived success (AS1). CI = confidence interval; *SE* = standard error; *df* = degrees of freedom. *p*Tukey values were adjusted using the Tukey method. Confidence intervals for Cohen's *d* were adjusted using the Bonferroni method. Values are rounded to three decimal places

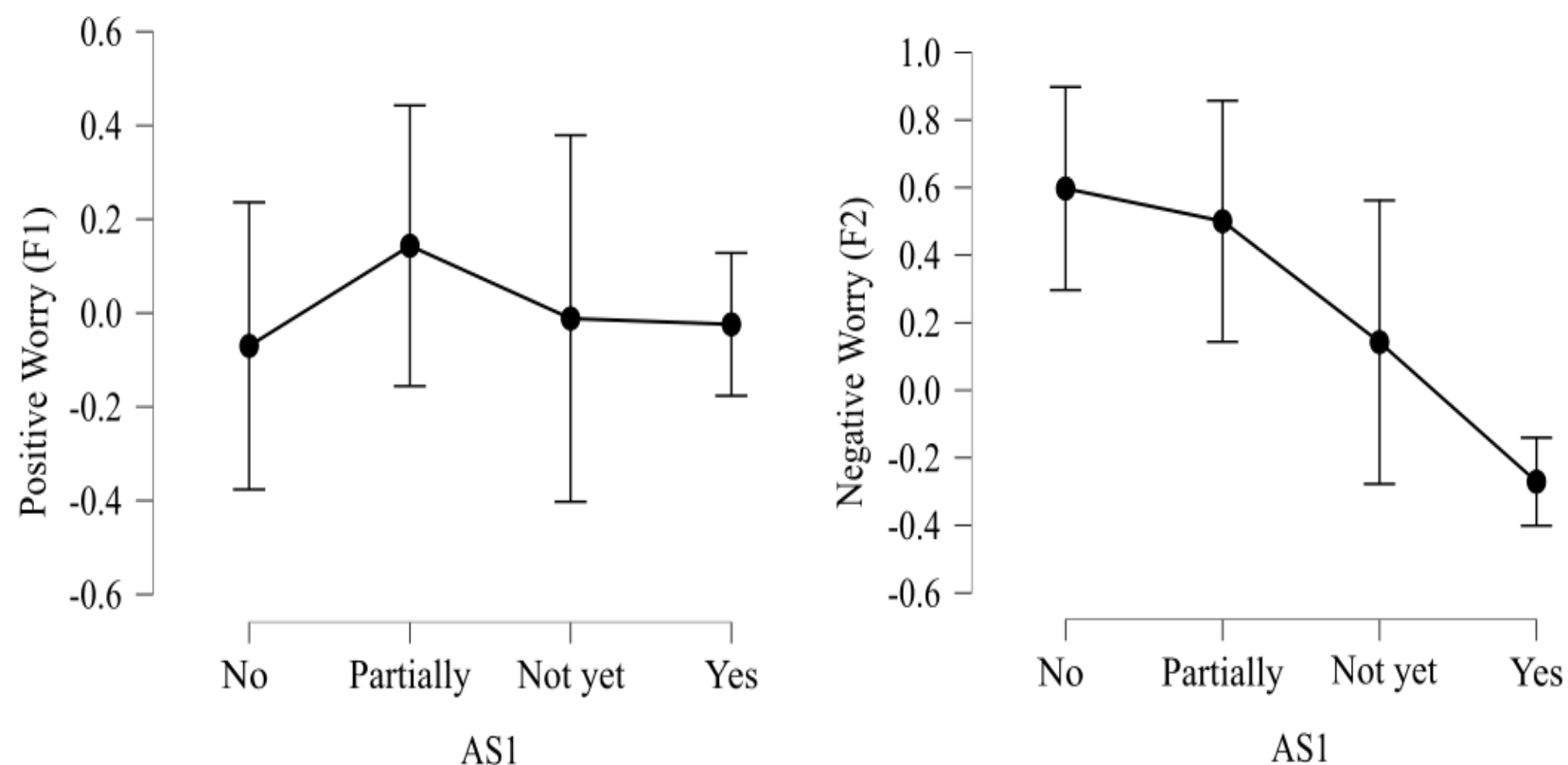


Figure 1. Mean factor scores for Positive Worry and Negative Worry across self-perceived success categories

Source: The authors

Note. Markers represent mean factor scores for Positive Worry (F1) and Negative Worry (F2) across the four self-perceived success categories (AS1): No, Partially, Not yet, and Yes. Error bars represent 95% confidence intervals.

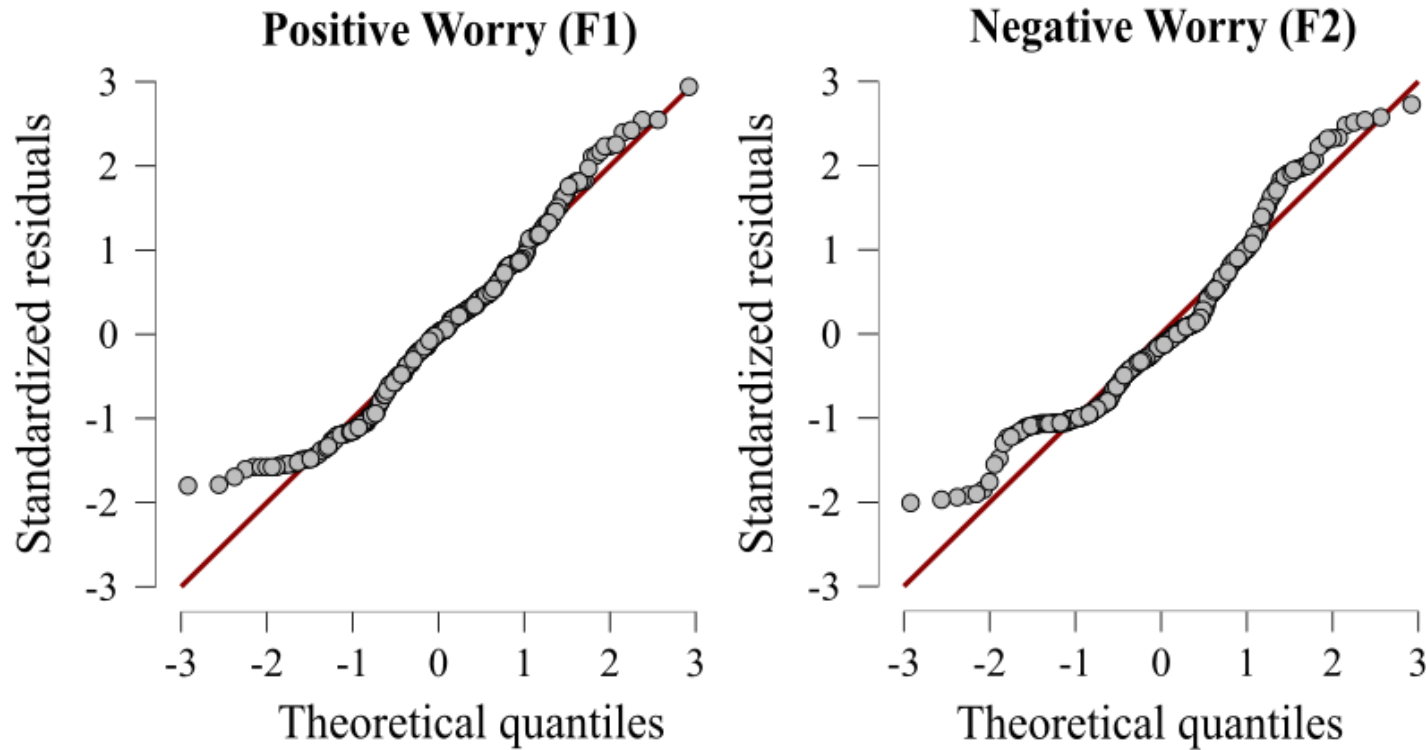


Figure 2. Normal Q-Q plots of standardized residuals for Positive Worry and Negative Worry

Source: The authors

Note. Q-Q = quantile-quantile. The plots show standardized residuals against theoretical normal quantiles for Positive Worry (F1) and Negative Worry (F2). Visual inspection indicated minor deviations from normality, especially at the distribution tails.