



# STUDIA DOCTORALIA

## PSYCHOLOGY AND EDUCATIONAL SCIENCE



### STUDIA DOCTORALIA. PSYCHOLOGY AND EDUCATIONAL SCIENCE

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# STUDIA DOCTORALIA

## PSYCHOLOGY AND EDUCATIONAL SCIENCE



### EDITORIAL

## Post-Truth - When Emotion Becomes Authority

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In recent years, the concept of post-truth has gained significant traction in political discourse, media studies, and social analysis. It refers to a cultural and political condition in which objective facts are less influential in shaping public opinion than appeals to emotion and personal belief (McIntyre, 2018; Oxford University Press, 2016). The rise of post-truth discourse signals a shift in the ways knowledge, authority, and truth are perceived and constructed in the public sphere.

The term post-truth was selected as the Word of the Year 2016 by the Oxford Dictionaries, which defined it as “relating to or denoting circumstances in which objective facts are less influential in shaping public opinion than appeals to emotion and personal belief” (Oxford University Press, 2016). Although the word gained popularity in the 21st century, its conceptual roots can be traced back to the 1990s. The American-Serbian playwright and essayist Steve Tesich is credited with one of the earliest uses of the term in a 1992 essay in *The Nation*, where he criticized the public’s willingness to accept political falsehoods in the wake of the Iran-Contra scandal and the Gulf War (Tesich, 1992).

The post-truth phenomenon is characterized by several key elements: distrust in traditional institutions, with a growing skepticism toward the mainstream media, scientific authorities, academia, and governmental bodies; emotional reasoning over evidence-based reasoning, where personal feelings, intuitions, and ideological affiliations often outweigh factual analysis in public decision-making; information overload and fragmentation, where through the proliferation of digital platforms and social media, users are increasingly exposed to

tailored content that reinforces pre-existing views (the “echo chamber” effect); manipulation through misinformation, where the deliberate spread of false or misleading information, commonly referred to as “fake news”, is used to influence political, economic, or social behavior (Lewandowsky et al., 2017; Tandoc et al., 2018); and relativism of truth, where the notion that truth is subjective and constructed, rather than verifiable and universal, becomes increasingly prevalent (Keyes, 2004; McIntyre, 2018).

Post-truth discourse flourished in contexts marked by populist politics, polarization, and crises of legitimacy. One notable example is the 2016 Brexit referendum in the United Kingdom, where misleading claims (e.g., about EU funding for the NHS) were widely circulated (D’Ancona, 2017). Another example is the 2016 U.S. presidential election, during which both major campaigns were accused of misrepresenting facts, with false stories spreading virally on social media (Lewandowsky et al., 2017). A more recent example is the COVID-19 pandemic, which gave rise to massive waves of conspiracy theories, vaccine skepticism, and pseudoscience, undermining public health efforts (Wardle & Derakhshan, 2017). In these and similar situations, political leaders have often capitalized on emotions such as fear, anger, and resentment, rejecting expert knowledge in favor of rhetorical simplicity and identity-based appeals (D’Ancona, 2017; McIntyre, 2018).

The post-truth condition poses serious challenges for democratic societies. For democracy, when truth becomes negotiable, deliberative processes, accountability, and informed citizenship are undermined. Disinformation campaigns can

manipulate elections, fuel division, and erode trust in democratic institutions (Keyes, 2004; Lewandowsky et al., 2017). For education, the need to promote critical thinking, media literacy, and epistemic responsibility becomes urgent. Students must learn not only to analyze sources but to recognize bias, assess evidence, and understand the distinction between opinion and fact (McIntyre, 2018). For science, the authority of science is called into question by ideological forces. Climate change denial, anti-vaccination movements, and the rejection of evolution theory exemplify how scientific consensus can be attacked by cultural narratives or political interests (Wardle & Derakhshan, 2017).

The world is in urgent need of transformation. Current developments often diverge from the expectations and aspirations of individuals and communities alike. Yet, in the face of this uncertainty, self-destruction is not an option. We carry the ethical responsibility to protect ourselves - intellectually, emotionally, and socially - against the distortions of the post-truth era. The transition from rationality to emotional reasoning is often subtle, but alarmingly swift. This shift threatens not only our personal integrity, but also the coherence and resilience of the societies we inhabit (D'Ancona, 2017; McIntyre, 2018).

To counteract post-truth dynamics, scholars and educators propose several strategies. For example, teaching epistemic humility and cognitive biases by helping individuals understand how beliefs are formed and how cognitive shortcuts (e.g., confirmation bias) affect reasoning (Lewandowsky et al., 2017). Another approach is to foster civic dialogue and ethical communication, creating spaces for open but responsible

dialogue, rooted in mutual respect and shared commitment to truth (McIntyre, 2018). People must be supported in recognizing and understanding the truth by being encouraged to seek information from trustworthy and evidence-based sources. In this regard, cultivating the habit of reading remains a highly recommended and necessary practice - particularly the reading of scientific literature, critical essays, and well-documented journalistic investigations, which foster discernment, analytical thinking, and a deeper grasp of complex realities (D'Ancona, 2017; Keyes, 2004). Supporting independent journalism and fact-checking initiatives is another option.

While post-truth is often treated as a political or media problem, it also raises philosophical questions about the nature of truth, reality, and belief. Critics argue that postmodern relativism, emphasizing that truth is socially constructed, has inadvertently contributed to the erosion of trust in facts. Others contend that post-truth is not about truth itself, but about power: who controls narratives and whose knowledge is legitimized (McIntyre, 2018). As philosopher Lee McIntyre (2018) notes, post-truth is not the same as lying; it is the deliberate construction of narratives where truth simply doesn't matter.

The post-truth era challenges us to rethink the role of facts, evidence, and rational discourse in public life. It compels educators, scientists, and citizens alike to defend truth as a shared public good, not merely as a personal perspective. Combating post-truth requires a long-term cultural shift toward epistemic responsibility, critical inquiry, and resilient democratic values (Lewandowsky et al., 2017; McIntyre, 2018;).

## REFERENCES

- D'Ancona, M. (2017). *Post-Truth: The New War on Truth and How to Fight Back*. Ebury Press.
- Keyes, R. (2004). *The Post-Truth Era: Dishonesty and Deception in Contemporary Life*. St. Martin's Press.
- Lewandowsky, S., Ecker, U. K. H., & Cook, J. (2017). Beyond misinformation: Understanding and coping with the "post-truth"

- era. *Journal of Applied Research in Memory and Cognition*, 6(4), 353–369. <https://doi.org/10.1016/j.jarmac.2017.07.008>
- McIntyre, L. (2018). *Post-Truth*. MIT Press.
- Tesich, S. (1992). A Government of Lies. *The Nation*, 254(1), 12. <https://www.thenation.com/article/archive/post-truth-and-its-consequences-what-a-25-year-old-essay-tells-us-about-the-current-moment/>



## Socioeconomic Status as a Longitudinal Predictor of Negative Automatic Thoughts and Depression

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### ABSTRACT

The aim of the present study is to examine socio-economic status (SES) as a longitudinal predictor of negative automatic thoughts (NAT) and depression. We collected data across three waves and tested a mediation model in which SES predicted NAT, which in turn predicted depression. SES was operationalized through multiple indicators, including education, material deprivation, income per person (monthly), and perceived economic status. NAT was measured using the Automatic Thoughts Questionnaire (ATQ-15), and depression was assessed with the Beck Depression Inventory (BDI). A linear mixed model (LMM) was employed to account for repeated measures and individual variability over time. Results indicated that NAT was a strong predictor of depression across waves, while some SES indicators (income per person and perceived economic status) were associated with NAT and depressive symptoms. Limitations included high attrition rates across waves and model warnings indicating potential instability in parameter estimates. These findings underscore the mediating role of cognitive patterns in the SES–depression relationship and highlight the need for early cognitive interventions in socioeconomically disadvantaged populations.

**Keywords:** socioeconomic status, negative automatic thoughts, depression, longitudinal study, mediation, mixed model

## 1. INTRODUCTION

The relationship between socio-economic status and mental health is becoming an increasingly studied topic due to its implications in modern society. Studies show that the more deprived a person's social environment is, the more likely they are to suffer from health problems (Chai et al., 2024). Depression is a disorder linked to lower socioeconomic status (Hao & Farah, 2023). Cognitive models suggest that cognitions are organized hierarchically, so that underlying schemata influence behavior through more automatic, superficial cognitive processes (Calvete et al., 2013). Early maladaptive schemas and depressions symptoms are linked (Tariq et al., 2021). The heterogeneity aspect of depression includes the negative automatic thoughts (Chahar Mahali et al., 2020). Beck (1960) conducted numerous studies on clinical depression. According to Beck's theories dysfunctional attitudes, depressive schemas, maladaptive beliefs or assumptions, and negative automatic thoughts (Dozois & Beck, 2008) predispose individuals to process information negatively, distorted (Flynn & Rudolph, 2011).

Several studies have been conducted in the past to reveal the importance of low socioeconomic status in association with depression, but from our knowledge none of them addressed this issue from the perspective of how negative automatic thoughts mediates the relationship between them. The relationship between depressive symptoms and negative automatic thoughts about self it is a positively and strongly correlation (Chahar Mahali et al., 2020). Negative automatic thoughts (NAT) are defined as "spontaneous, involuntary, and often distorted thoughts that arise in the mind, impacting our emotions, behaviors, and overall well-being" ("Negative Automatic Thoughts," n.d.).

Romania has made significant progress in terms of the economy (România - Prezentare generală, n.d.), but the poverty rate has not decreased considerably, as expected, so Romania remains one of the countries in the European Union where 1 in 5 Romanians will be affected by poverty in 2023 (Adam, 2023). Several studies have shown that income inequality is associated with a higher risk of depression (Patel et al., 2018) and that there are comorbidities (physical illness and mental disorders) among poor population (Patel & Kleinman, 2003). People with low income are "typically 1.5 to 3 times more likely than the rich to experience depression and anxiety" (Ridley et al., 2020). Socioeconomic status has significant mediating effect between childhood environment and adulthood health (Chai et al., 2024). The mental health is influenced by social, environment and economic factors in which people are born, grow, work and age

(Knifton & Inglis, n.d.). The risk of mental health problems should therefore be addressed through social and health policies. Poverty affects education as well. Persons born in low SES households are about twice as likely as those from high – SES households to develop learning – related behaviors problems (Morgan, 2009).

Income, education, social class or wealth (Freeman et al., 2016) are indicators for socio-economic status (SES). Socioeconomic status is a significant predictor of quality of life (Nutakor et al., 2023). Living in poverty and in hostile environments could lead to poor academic success (Sheridan & McLaughlin, 2016).

In different cultures and countries, poverty and low socio-economic status have a specific language and meaning (Gweshengwe & and Hassan, 2020). Automatic thoughts are elements of language, so they are the ones that shape our perception of life, i.e. lead us to healthy or unhealthy behaviors. Through thinking, humans have a general idea of the world which surrounds them (Kosheleva, 2021). Automatic thoughts lead to cognitive distortions or bias. The term "cognitive bias" was introduced in the early 1970s by Amos Tversky and Daniel Kahneman to define poor judgment and irrational thinking (Cognitive Bias - an Overview | ScienceDirect Topics, n.d.). Cognitive bias affects a person's life due to the fact they become the cause of incorrect or inaccurate decision (Kosheleva, 2021). They could lead to see the world in a negative light, which could conduct to develop anxiety, depression and other mental health problems (Friedman Hershey H., 2025).

Chronic poverty produce chronic stress (Johnson, 2019) which affect human functioning in everyday life, it is a domino effect (Johnson, 2019). Studies suggest that combined psychoeducation, physical exercise and some cognitive behaviour therapy exercises could be an option for some disadvantaged groups for preventing depressions (van der Waerden et al., 2013).

Interventions who include culture's characteristics are effective in reducing depressive symptoms in low socioeconomic status populations (Rojas-García et al., 2015).

To this end, the present study's objectives was to examine the socioeconomic status is a longitudinal predictor for automatic negative automatic thoughts and depression.

We believed if we found a strong relationship between low socioeconomic status, negative automatic thoughts and depression, we can address these issues through psychoeducation intervention.

## 2. MATERIALS AND METHODS

We used CHERRIES checklist (Eysenbach, 2004) aimed to assess the quality of Web Surveys to enhance the methodology.

### Design

Data was collected between March 2023 and March 2024 using an online form ([www.questionpro.com](http://www.questionpro.com)). The questionnaire was distributed via social media, and a printed version distributed in urban and rural areas where access was possible. Informed consent was obtained from all patients for being included in the study. A convenience sample was used. The analysis of the model was carried out using a longitudinal design with three waves of data collection. A total of 163 participants were initially recruited, with participation dropout across waves. The time points were equally spaced, allowing for within-subject variation across time.

We conducted a linear mixed-effects model (LMM) using SPSS Statistics for Windows, version 25 to examine the influence of socioeconomic status and negative automatic thoughts on depressive symptoms over time. The model included fixed effects for education level, material deprivation, individual income, perceived economic status, and automatic negative thoughts (ATQ scores). A random intercept for participant code was included to account for individual differences. Time (Wave) was modeled as a repeated measure with a diagonal covariance structure to handle unequal variances across waves. Maximum likelihood (ML) estimation was used to accommodate missing data and enable model comparison.

### Informed consent process

The informed consent form indicated that participation was voluntary, and the participants could withdraw from the study at any time. The time required to answer the questions was approximately 25 - 30 minutes. Data were initially stored securely on QuestionPro Forms and then exported into Excel format. After export, the files were deleted from the QuestionPro Forms. We stored the participants' responses at 2 instruments (Beck Depression Scale and Automatic Thoughts Questionnaire), as well as some social and demographic data (gender, age, education, income etc.). The first and second authors investigated the participants, and data will be archived and stored 5 years after publication. No other personal information was collected, and the data collection process was anonymous.

Development and pre-testing. All the materials used for data collection were first translated from English to Romanian and then back from Romanian to English by two separate teams of two professional translators. Agreements across items were

discussed to preserve the content validity of the original instruments. A small group of 25 participants from Bucharest University, Romania, was used to pretest the questionnaires, and some items were modified. The final versions were tested again before data collection.

### Recruitment process

An online survey was distributed, and the potential participants were informed that their data would remain confidential and anonymous, and all their responses would be used solely for research. Advertising was conducted on social media sites (Facebook and Instagram) and online and physical groups.

### Survey administration

Questionnaires were designed using QuestionPro Forms, the link was distributed on social media sites, participation was not mandatory, and no incentives were given. Data collected in three different waves, approximately 3.5 months apart. Data collection was carried out over approximately 1 year (from March 2023 – March 2024). No adaptive or random item procedures were implemented. Participants were allowed to review their steps, and no completeness check method was used.

### Response rates

We did not check the response rate statistics.

### Preventing multiple entries

To prevent multiple entries, we asked for participants to write a code formed from their name initial and birth date (date and month). No multiple entries were observed.

### Analysis

We discarded questionnaires with incomplete data and no statistical corrections were applied.

### Participants

We collected data in three waves. In the first wave, 163 Romanian people completed the questionnaire, aged between 18-24 years (17.80%) and over 64 years (4.90%), 68.10% females, participated in the study. In terms of education, most had some form of higher or long education (58.90%), followed by those who graduated only from high school (33.10%) and those who had primary and secondary education (8.00%). Participants who had no income and less than or equal to the minimum wage (reported at 2022) – 25.80% and those who had individual income higher than average wage in Romania -

50.40%. 46 participants people completed second wave age between 18-24 years (32.60%) and over 64 years (4.3%), 69.9% females, participated in the study. In terms of education, most had some form of higher or long education (58.80%), followed by those who graduated only from high school (39.20%) and those who had primary and secondary education (2.20%). Participants who had no income and less than or equal to the minimum wage (reported at 2022) – 10.80% and those who had individual income higher than average wage in Romania - 52.40%. 26 participants people completed second wave age between 18-24 years (11.50%) and over 64 years (7.70), 69.20% females, participated in the study. In terms of education, most had some form of higher or long education (80.80%), followed by those who graduated only from high school (19.20%). Participants who had no income and less than or equal to the minimum wage (reported at 2022) – 15.30% and those who had individual income higher than average wage in Romania - 61.50%.

### Measures

**Depression.** To assess depression, the Beck Depression Inventory (Beck, 1961) was used, an instrument with 21 items such as: “I feel like I have nothing to look forward for the future” or “I feel like I have failed more than others”. Answers were given on a 4 - point scale, with high values indicating high levels of depression. The internal consistency of the scale was excellent (Cronbach's  $\alpha=.90$ , 95% CI [.88, .92]).

**Negative automatic thoughts.** Many researchers have intended to assess automatic thoughts in the past, and in 1980, Hollon and Kendall developed the Automatic Thoughts Questionnaire (ATQ) (Gökdağ & Kaçar-Başaran, 2014). The scale contains a number of 15 items (items like “I’m no good” or “I feel so helpless”) that received answers on an ordinal scale

from 1 (not at all) and 5 (all the time), with high scores indicating a high level of negative thoughts, and the internal consistency of the scale being very good Cronbach's  $\alpha=.97$ , 95% CI [.97, .99]) (Netemeyer & Williamson, 2024).

**Socio-economic status.** Socioeconomic status (SES) is a key indicator of an individual's or household's living conditions and overall quality of life. It significantly influences development, health, well-being, and cognitive functioning (Chakrabartty, 2024). In this study, SES was assessed using demographic and economic indicators informed by public policy documents and official statistics from the Romanian National Institute of Statistics (Institutul National de Statistica, 2016) & (Institutul National de Statistica, 2023), Eurostat (Kotzeva, 2022) and the World Bank (World Bank Group, 2015).

To capture SES, we included four measures: years of formal education (Educational Level: from early childhood education – to highly educated) (Hanandita & Tampubolon, 2014) a severe material and social deprivation (Income 1 – Material deprivation) (Kotzeva, 2022), monthly individual income (Income 3 – income per person), and subjective economic self-perception (Income 6 – Perceived economic status). The indicators were selected for their relevance and accuracy in reflecting socioeconomic conditions, especially within the Romanian context. For instance, severe material deprivation was operationalized based on the inability—due to economic constraints rather than choice—to afford at least four of nine essential items: the ability to face unexpected expenses; afford an annual one-week holiday away from home; consume meat or a protein equivalent every other day; maintain adequate home heating; and ownership of basic durable goods such as a colour television, washing machine, car, and telephone; as well as the ability to pay rent, mortgage, or utility bills (Kotzeva, 2022).

## 3. RESULTS

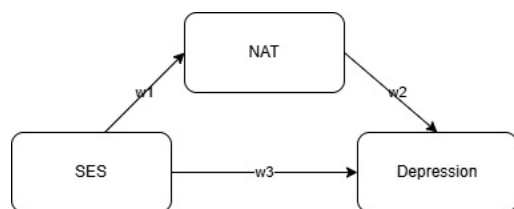
### Overview of the Statistical Analyses

We used SPSS (Version 25) to conduct multiple regression analyses and multicollinearity diagnostics (see Table 3), as well as linear mixed models to test the longitudinal effects of

socioeconomic status (SES), negative automatic thoughts (NAT), and depression (see Figure 1).

**Figure 1**

*Conceptual model*



### Preliminary descriptive analysis

Standardized residuals ranged from -3.37 to 3.83 ( $M = .00$ ,  $SD = .99$ ), and studentized residuals ranged from -3.42 to 3.89 ( $M = -.001$ ,  $SD = 1.00$ ), indicating a small number of potential outliers. However, Cook's distance values ( $M = .005$ ,  $Max = .070$ ) and centered leverage values ( $M = .021$ ,  $Max = .108$ ) were well below thresholds indicating influential observations. The Mahalanobis distance ranged from .27 to 25.25 ( $M = 4.98$ ,  $SD = 4.11$ ), suggesting a few cases may be multivariate outliers, but no extreme influence was observed.

Descriptive statistics for the study variables are presented in Table 1. Participants reported an average score of  $M = 10.77$  ( $SD = 9.53$ ) on the Beck Depression Inventory (BDI), with scores ranging from 0 to 38. The distribution of BDI scores was moderately skewed (skewness = .95, kurtosis = .18), indicating a slight positive skew but generally acceptable normality for analysis. The mean score on the Automatic Thoughts Questionnaire (ATQ) was  $M = 29.68$  ( $SD = 14.82$ ), with a range

from 15 to 75, also showing moderate positive skewness (skewness = .92).

Regarding socioeconomic status (SES) indicators, participants had an average education level (EDI) of 6.67 ( $SD = 2.29$ ) on a 10-point scale (from early childhood education – to highly educated – PhD or equivalent), with a slightly negatively skewed distribution (skewness =  $-.46$ ). The material deprivation variable (Income 1) had a low mean of .09 ( $SD = .28$ ) and showed strong positive skewness (skewness = 2.99) and leptokurtosis (kurtosis = 7.02), indicating that most participants reported no deprivation. Income per person (Income 3) had a mean of 4.26 ( $SD = 2.46$ ), and perceived economic status (Income 6) had a mean of 3.48 ( $SD = 1.61$ ), both displaying moderate negative skewness and acceptable kurtosis values. Overall, the data show acceptable distributional properties for further inferential analyses, although material deprivation may warrant caution or transformation due to its non-normal distribution.

**Table 1**

*Descriptive statistics and univariate normality assessment*

Variables	N	Mean	SD	Min	Max	Skew (SE)	Kurt (SE)
Depression	235	10.77	9.53	0	38	.95	.18
NAT	235	29.68	14.82	15	75	.92	-.11

### Model analysis

A multiple regression analysis was conducted to examine whether socioeconomic status (SES) indicators and negative automatic thoughts predict levels of depression. The regression model was significant,  $F(5, 229) = 75.59$ ,  $p < .001$ ,

accounting for variance in depression scores ( $R^2 = .623$ ). Among the predictors, NAT emerged as a strong positive predictor of depression, while two SES variables—income per person and perceived economic status—also contributed significantly. Education level and material deprivation were not significant predictors.

**Table 2**

*ANOVA Summary for the Multiple Regression Model Predicting Depression*

Source	SS	df	MS	F	p
Regression	13,229.57	5	2,645.92	75.59	<.001
Residual	8,015.47	229	35.00		
Total	21,245.05	234			

*Note.* Predictors: Education, Material Deprivation, Income per person, Perceived Economic Status, and Negative automatic thoughts. Dependent variable: Depression.

Collinearity diagnostics indicated no multicollinearity among the predictors. All variance inflation factor (VIF) values

**Table 3**  
*Collinearity diagnostic*

	VIF	Tolerance
(1) Education level (EDI)	1.49	.67
(2) Income 1 (Material deprivation)	1.08	.92
(3) Income 3 (Person)	1.50	.65
(4) Income 6 (Perceived economic status)	1.10	.89
(5) NAT (Negative automatic thoughts)	1.16	.85

*Note.* Tolerance values above .10 and VIF values below 5 indicate that multicollinearity is not a concern (Multivariate Data Analysis, n.d.)

Our model included fixed effects for socioeconomic status (EDI, Income 1, Income 3, Income 6) and NAT, and random

were below 2, and tolerance values were above .60, suggesting acceptable independence of predictors in the regression model (see Tabel 3).

effects for subjects (Participant\_code) and repeated measures (Wave). The model assumes an identity covariance structure for the random intercept and a diagonal covariance structure for the repeated measures. A total of 163 subjects were included in the analysis.

The analysis of fixed effects revealed that education level (EDI) ( $F(8, 184.439) = 2.32, p = .021$ ), income per person ( $F(7, 199.270) = 2.75, p = .009$ ), perceived economic status ( $F(5, 185.117) = 2.76, p = .020$ ), and negative automatic thoughts ( $F(1, 177.716) = 312.92, p < .001$ ) were significant predictors of depression. However, material deprivation was not a significant predictor ( $F(1, 228.988) = .029, p = .866$ ), and the intercept was not significant ( $F(1, 198.995) = 1.37, p = .243$ ) (see Tabel 4).

**Table 4**  
*Type III Tests of Fixed Effects for Predicting Depression*

Source	Numerator df	Denominator df	F	Sig.
Intercept	1	198.995	1.369	.243
Education Level (ED1)	8	184.439	2.320	.021
Material Deprivation (Income 1)	1	228.988	.029	.866
Income per Person (Income 3)	7	199.270	2.754	.009
Perceived Economic Status (Income 6)	5	185.117	2.759	.020
Negative Automatic Thoughts (NAT)	1	177.716	312.915	.000

*Note.* Type III tests were used to assess the fixed effects. Significant results ( $p < .05$ ) are highlighted.

The estimates of fixed effects indicate that negative automatic thoughts (NAT) ( $b = .447, SE = .025, t = 17.689, p < .001$ ) is a strong predictor for depression, with a positive

relationship. The education level (EDI) and material deprivation (Income 1) were not significant predictors for all levels of

education ( $b = -7.857$  to  $-3.438, p$  values ranging from .055 to .798) and material deprivation ( $b = .231, p = .866$ ). Income per person (Income 3) at levels 1 ( $b = 6.783, p < .001$ ) was significant, indicating that a lower income per person was associated with higher depression scores. Similarly, perceived economic status (Income 6) levels 2 and 3 ( $b = 5.555$  and  $b = -1.087$ , respectively) did not yield significant results, as indicated by  $p$  values exceeding .05 (see Table 5).

**Table 5**

*Estimates of Fixed Effects for Predicting Depression*

Parameter	Estimate	Std. Error	df	t	Sig.	95%CI
Intercept	1.959	7.637	164.898	.257	.798	[-13.120, 17.038]
Education Level (EDI=2)	-7.857	5.033	166.521	-1.561	.120	[-17.795, 2.080]
Education Level (EDI=3)	-8.136	4.735	177.347	-1.718	.087	[-17.480, 1.208]
Education Level (EDI=4)	-5.419	4.253	165.838	-1.274	.204	[-13.816, 2.979]
Education Level (EDI=5)	-4.348	4.781	173.279	-.909	.364	[-13.785, 5.090]
Education Level (EDI=6)	-7.475	5.443	163.326	-1.373	.172	[-18.223, 3.273]
Education Level (EDI=7)	-8.947	4.630	169.794	-1.933	.055	[-18.087, 0.192]
Education Level (EDI=8)	-3.438	4.200	161.913	-.819	.414	[-11.733, 4.856]
Education Level (EDI=9)	-6.218	4.195	162.401	-1.482	.140	[-14.501, 2.066]
Education Level (EDI=10)	0 <sup>b</sup>	0	.	.	.	.
Material Deprivation (Income 1=0)	.231	1.367	228.988	.169	.866	[-2.463, 2.926]
Material Deprivation (Income 1=1)	0 <sup>b</sup>	0	.	.	.	.
Income per Person (Income 3=0)	1.625	1.388	157.404	1.171	.244	[-1.117, 4.366]
Income per Person (Income 3=1)	6.783	1.628	232.370	4.167	.000	[3.576, 9.991]
Income per Person (Income 3=2)	.429	2.171	223.787	.197	.844	[-3.850, 4.707]
Income per Person (Income 3=3)	2.074	1.275	181.461	1.626	.106	[-0.443, 4.590]
Income per Person (Income 3=4)	1.556	1.245	163.233	1.250	.213	[-0.903, 4.015]
Income per Person (Income 3=5)	.920	1.104	143.530	.834	.406	[-1.262, 3.102]
Income per Person (Income 3=6)	.542	1.467	200.496	.369	.712	[-2.350, 3.434]
Income per Person (Income 3=7)	0 <sup>b</sup>	0	.	.	.	.
Perceived Economic Status (Income 6=1)	-.274	6.347	166.846	-.043	.966	[-12.806, 12.257]
Perceived Economic Status (Income 6=2)	5.555	6.552	166.544	.848	.398	[-7.382, 18.491]
Perceived Economic Status (Income 6=3)	-1.088	6.495	174.965	-.167	.867	[-13.906, 11.731]
Perceived Economic Status (Income 6=4)	-1.551	6.294	164.276	-.246	.806	[-13.979, 10.878]
Perceived Economic Status (Income 6=5)	-2.154	6.283	164.458	-.343	.732	[-14.560, 10.252]
Perceived Economic Status (Income 6=7)	0 <sup>b</sup>	0	.	.	.	.
Negative Automatic Thoughts (NAT)	.447	.025	177.716	17.689	.000	[0.397, 0.497]

All three variance estimates for the repeated measures (Wave 1, Wave 2, and Wave 3) are statistically significant ( $p < .001$ ), suggesting that there is significant variation in depression scores across the different time points (see Tabel 6).

The intercept variance is reported as zero, indicating that there is no variability in the intercept across participants for the model's random effect. This suggests that all subjects share the same initial level of depression (i.e., no individual differences in the baseline depression score).

**Table 6**  
Estimates of Covariance Parameters

Parameter	Estimate	Std. Error	Wald Z	Sig.	95% Confidence Interval
<b>Repeated Measures</b>					
Var: [Wave=1]	33.53	3.85	8.71	.000	26.77, 42.00
Var: [Wave=2]	22.98	5.20	4.42	.000	14.74, 35.81
Var: [Wave=3]	13.64	4.26	3.20	.001	7.40, 25.17
Intercept	0.00	0.00	-	-	-

#### 4. DISCUSSIONS

This study aimed to explore the relationships between socioeconomic status (SES), negative automatic thoughts, and depression over time. The results suggest that both SES and NAT are significant predictors of depression, with notable differences in how each dimension of SES (education, material deprivation, income, perceived economic status) interacts with NAT to influence depression scores. Our findings indicate that NAT has a strong positive relationship with depression, as expected (Chai et al., 2024). The significant positive coefficient for NAT ( $\beta = .456$ ,  $p < .001$ ) shows that as automatic negative thoughts increase, depression scores also rise. This supports previous research that suggests automatic thoughts play a key role in the development and maintenance of depression (Dozois & Beck, 2008). The educational levels and material deprivation variables were not significant predictors across different categories. Conversely, income measures (e.g., Income 3, Income 6) were more influential, with perceived economic status (Income 6) showing a significant inverse relationship with depression ( $\beta = -.757$ ,  $p = .003$ ), which suggests that better perceived economic circumstances can reduce depression levels.

These results highlight the importance of addressing negative automatic thoughts (Chahar Mahali et al., 2020) in therapeutic settings, such as cognitive-behavioral therapy (CBT), as a means of mitigating depression. The influence of perceived economic status underscores the need for mental health practitioners to consider clients' subjective financial perceptions in treatment planning.

Given that perceived economic status appears to be a stronger predictor of depression than objective measures like income, future research might focus on understanding the psychological mechanisms through which economic perception affects mental health.

##### Limitations and Future Directions

Despite the valuable insights gained from this study, several limitations must be acknowledged. First, the longitudinal data suffered from high attrition, with a notable drop in the number of participants from Wave 1 ( $N = 163$ ) to Wave 2 ( $N = 46$ ) and Wave 3 ( $N = 26$ ). This substantial reduction in sample size over time may have limited the power of the analysis and affected the stability of parameter estimates.

Second, SPSS issued two warnings during the mixed model analysis that further highlight potential limitations in model reliability. The first warning noted that "the covariance

structure for the random effect with only one level was changed to Identity," suggesting that the model treated the random intercept as fixed due to insufficient variability at that level. This adjustment likely reflects limited between-subject variability in the intercept, which can occur when participant data are sparse across waves.

The second warning indicated that "the final Hessian matrix is not positive definite although all convergence criteria are satisfied." This warning often points to instability or overfitting in the parameter estimates, which may again be related to the small number of participants in later waves. Although the model did converge, this issue suggests that results—particularly those involving random effects or interactions—should be interpreted with caution.

Despite these warnings, diagnostic checks for multicollinearity among the predictors revealed no concerning results. Variance inflation factors (VIFs) were all below 2, and tolerance values were above 0.6, indicating acceptable levels of collinearity among the fixed effect predictors (see Table 3). Together, these methodological challenges emphasize the need for future research to use larger and more consistently retained samples in longitudinal designs to strengthen the generalizability and stability of findings.

##### Practical Implications

The results have implications for developing countries' society in terms of mental health policies. We believe that by increasing access to psychoeducation and CBT approach, individuals would develop more functional thinking mechanisms that would help them to break the cycle of poverty or increase their socioeconomic status, thus the risk of developing a mental health problem would decrease. We believe that our research could contribute to the development of public policies aimed at combating poverty.

##### Conclusions

In conclusion, this study supports the importance of addressing automatic negative thoughts in the treatment of depression and highlights the potential role of perceived economic status as a key determinant of mental health. While education and material deprivation had mixed effects, our findings contribute to the growing body of research exploring the intersection between SES and mental health. Future research should continue to investigate these relationships, particularly the role of subjective financial perceptions in the development of depressive symptoms.

## Declarations

**Ethics approval.** The research was conducted following the Helsinki Declaration guidelines and the ethical requirements of the Ethical Committee of the University of Bucharest to which the authors are affiliated (document No. 101/19.12.2021).

## 5. REFERENCES

- Adam, R. (2023, November 17). *Saracia si excluziunea sociala—R2022*. [https://insse.ro/cms/sites/default/files/com\\_presa/com\\_pdf/saracia\\_si\\_excluziunea\\_sociala\\_r2022.pdf](https://insse.ro/cms/sites/default/files/com_presa/com_pdf/saracia_si_excluziunea_sociala_r2022.pdf)
- Calvete, E., Orue, I., & Hankin, B. L. (2013). Early maladaptive schemas and social anxiety in adolescents: The mediating role of anxious automatic thoughts. *Journal of Anxiety Disorders*, 27(3), 278–288. <https://doi.org/10.1016/j.janxdis.2013.02.011>
- Chahar Mahali, S., Beshai, S., Feeney, J. R., & Mishra, S. (2020). Associations of negative cognitions, emotional regulation, and depression symptoms across four continents: International support for the cognitive model of depression. *BMC Psychiatry*, 20(1), 18. <https://doi.org/10.1186/s12888-019-2423-x>
- Chai, Y., Xian, G., Guo, L., Fu, G., Liu, Y., Wang, M., & Luo, S. (2024). The relationship between childhood socioeconomic status and depression level in older adults: The mediating role of adult socioeconomic status and subjective well-being. *BMC Geriatrics*, 24(1), 138. <https://doi.org/10.1186/s12877-024-04750-7>
- Chakrabarty, S. N. (2024). Methodological issues: Socioeconomic status. *SN Social Sciences*, 4(8), 148. <https://doi.org/10.1007/s43545-024-00949-y>
- Cognitive Bias—An overview | ScienceDirect Topics*. (n.d.). Retrieved March 26, 2025, from <https://www.sciencedirect.com/topics/psychology/cognitive-bias>
- Dozois, D. J. A., & Beck, A. T. (2008). Chapter 6—Cognitive Schemas, Beliefs and Assumptions. In K. S. Dobson & D. J. A. Dozois (Eds.), *Risk Factors in Depression* (pp. 119–143). Elsevier. <https://doi.org/10.1016/B978-0-08-045078-0.00006-X>
- Eysenbach, G. (2004). Improving the Quality of Web Surveys: The Checklist for Reporting Results of Internet E-Surveys (CHERRIES). *Journal of Medical Internet Research*, 6(3), e34. <https://doi.org/10.2196/jmir.6.3.e34>
- Flynn, M., & Rudolph, K. D. (2011). Depression and Depressive Disorders. In B. B. Brown & M. J. Prinstein (Eds.), *Encyclopedia of Adolescence* (pp. 127–135). Academic Press. <https://doi.org/10.1016/B978-0-12-373951-3.00108-3>
- Freeman, A., Tyrovolas, S., Koyanagi, A., Chatterji, S., Leonardi, M., Ayuso-Mateos, J. L., Tobiasz-Adamczyk, B., Koskinen, S., Rummel-Kluge, C., & Haro, J. M. (2016). The role of socio-economic status in depression: Results from the COURAGE (aging survey in Europe). *BMC Public Health*, 16, 1098. <https://doi.org/10.1186/s12889-016-3638-0>
- Friedman Hershey H. (2025, January 23). *Overcoming Cognitive Distortions: How to Recognize and Challenge the Thinking Traps that Make You Miserable*. ResearchGate. <https://doi.org/10.13140/RG.2.2.31209.47208>
- Gökdağ, C., & Kaçar-Başaran, S. (2014, July 10). *An Assessment of the Validity and Reliability of the Automatic Thoughts Questionnaire (ATQ) in Depressive and Control Group*.
- Gweshengwe, B., & Hassan, N. H. (2020). Defining the characteristics of poverty and their implications for poverty analysis. *Cogent Social Sciences*, 6(1), 1768669. <https://doi.org/10.1080/23311886.2020.1768669>
- Hanandita, W., & Tampubolon, G. (2014a). Does poverty reduce mental health? An instrumental variable analysis. *Social Science & Medicine* (1982), 113, 59–67. <https://doi.org/10.1016/j.socscimed.2014.05.005>
- Hanandita, W., & Tampubolon, G. (2014b). Does poverty reduce mental health? An instrumental variable analysis. *Social Science & Medicine* (1982), 113, 59–67. <https://doi.org/10.1016/j.socscimed.2014.05.005>
- Hao, Y., & Farah, M. J. (2023). Heterogeneity of depression across the socioeconomic spectrum. *Proceedings of the National Academy of Sciences*, 120(16), e2222069120. <https://doi.org/10.1073/pnas.2222069120>
- Institutul National de Statistica. (2016). *CONDIȚIILE DE VIAȚĂ ALE POPULAȚIEI DIN ROMÂNIA, 2015*. INS. [https://insse.ro/cms/sites/default/files/field/publicatii/conditiile\\_de\\_viata\\_ale\\_populatiei\\_din\\_romania\\_in\\_anul\\_2015\\_1.pdf](https://insse.ro/cms/sites/default/files/field/publicatii/conditiile_de_viata_ale_populatiei_din_romania_in_anul_2015_1.pdf)
- Institutul National de Statistica. (2023). *Dimensiuni ale incluziunii sociale, in Romania, in anul 2022*. INS. [https://insse.ro/cms/sites/default/files/field/publicatii/dimensiuni\\_ale\\_incluziunii\\_sociale\\_in\\_romania\\_2022.pdf](https://insse.ro/cms/sites/default/files/field/publicatii/dimensiuni_ale_incluziunii_sociale_in_romania_2022.pdf)
- Johnson, K. (2019). Chronic Poverty: The Implications of Bullying, Trauma, and the Education of the Poverty-Stricken Population. *European Journal of Educational Sciences, Special*, 76–101.
- Knifton, L., & Inglis, G. (n.d.). Poverty and mental health: Policy, practice and research implications. *BJPsych Bulletin*, 44(5), 193–196. <https://doi.org/10.1192/bjb.2020.78>
- Kosheleva, Y. (2021). Linguistic Analysis Of Automatic Thoughts And Cognitive Distortions Causing Individual's Psychological Problems. *European Proceedings of Social and Behavioural Sciences, Language and Technology in the Interdisciplinary Paradigm*. <https://doi.org/10.15405/epsbs.2021.12.81>
- Kotzeva, M. (2022). *Eurostat regional yearbook 2022*.

- Morgan, P. (2009). Risk Factors for Learning-Related Behavior Problems at 24 Months of Age: Population-Based Estimates. *Journal of Abnormal Child Psychology*, 37(3), 401–413. <https://doi.org/10.1007/s10802-008-9279-8>
- Multivariate Data Analysis: A Global Perspective | Request PDF*. (n.d.). ResearchGate. Retrieved April 8, 2025, from [https://www.researchgate.net/publication/237009923\\_Multivariate\\_Data\\_Analysis\\_A\\_Global\\_Perspective](https://www.researchgate.net/publication/237009923_Multivariate_Data_Analysis_A_Global_Perspective)
- Negative automatic thoughts. (n.d.). In ResearchGate. Retrieved March 13, 2025, from [https://www.researchgate.net/publication/372108752\\_Negative\\_automatic\\_thoughts](https://www.researchgate.net/publication/372108752_Negative_automatic_thoughts)
- Netemeyer Richard G., & Williamson Donald A. (2024). Psychometric Properties of Shortened Versions of the Automatic Thoughts Questionnaire. *ResearchGate*. <https://doi.org/10.1177/0013164402062001008>
- Nutakor, J. A., Zhou, L., Larnyo, E., Addai-Danso, S., & Tripura, D. (2023). Socioeconomic Status and Quality of Life: An Assessment of the Mediating Effect of Social Capital. *Healthcare*, 11(5), 749. <https://doi.org/10.3390/healthcare11050749>
- Patel, V., Burns, J. K., Dhinra, M., Tarver, L., Kohrt, B. A., & Lund, C. (2018). Income inequality and depression: A systematic review and meta-analysis of the association and a scoping review of mechanisms. *World Psychiatry*, 17(1), 76–89. <https://doi.org/10.1002/wps.20492>
- Patel, V., & Kleinman, A. (2003). Poverty and common mental disorders in developing countries. *Bulletin of the World Health Organization*, 81(8), 609–615.
- Ridley, M., Rao, G., Schilbach, F., & Patel, V. (2020). Poverty, depression, and anxiety: Causal evidence and mechanisms. *Science*, 370(6522), eaay0214. <https://doi.org/10.1126/science.aay0214>
- Rojas-García, A., Ruiz-Perez, I., Rodríguez-Barranco, M., Gonçalves Bradley, D. C., Pastor-Moreno, G., & Ricci-Cabello, I. (2015). Healthcare interventions for depression in low socioeconomic status populations: A systematic review and meta-analysis. *Clinical Psychology Review*, 38, 65–78. <https://doi.org/10.1016/j.cpr.2015.03.001>
- România—Prezentare generală. (n.d.). [Text/HTML]. World Bank. Retrieved June 30, 2024, from <https://www.worldbank.org/ro/country/romania/overview>
- Sheridan, M. A., & McLaughlin, K. A. (2016). Neurobiological models of the impact of adversity on education. *Current Opinion in Behavioral Sciences*, 10, 108–113. <https://doi.org/10.1016/j.cobeha.2016.05.013>
- Tariq, A., Reid, C., & Chan, S. W. Y. (2021). A meta-analysis of the relationship between early maladaptive schemas and depression in adolescence and young adulthood. *Psychological Medicine*, 51(8), 1233–1248. <https://doi.org/10.1017/S0033291721001458>
- van der Waerden, J. E. B., Hoefnagels, C., Hosman, C. M. H., Souren, P. M., & Jansen, M. W. J. (2013). A randomized controlled trial of combined exercise and psycho-education for low-SES women: Short- and long-term outcomes in the reduction of stress and depressive symptoms. *Social Science & Medicine* (1982), 91, 84–93. <https://doi.org/10.1016/j.socscimed.2013.05.015>
- World Bank Group. (2015). *World Bank Document*. <https://documents1.worldbank.org/curated/en/465051467995789896/pdf/103191-WP-P147269-Box394856B-PUBLIC-Background-Study-ROMANIAN.pdf>



# STUDIA DOCTORALIA

## PSYCHOLOGY AND EDUCATIONAL SCIENCE



## What Youth Really is About: IDEA-R Confirmatory Factor Analysis

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### ABSTRACT

This study examines the psychometric validity of the IDEA-R scale through exploratory (EFA) and confirmatory factor analyses (CFA), evaluating the essential traits of emerging adulthood (18–25 years). IDEA-R was administered to a sample of 243 participants ( $M = 21.6$ ,  $SD = 2.23$ ), 77% of whom were women. The objectives included identifying the latent structure of the instrument and confirming it using advanced statistical methods. EFA revealed four main factors: identity exploration, practical autonomy, independence, and transition to maturity. CFA confirmed a moderate model fit ( $CFI = .812$ ,  $RMSEA = .0926$ ), suggesting the need for theoretical refinements. IDEA-R demonstrated high internal consistency (Cronbach's Alpha = .869), indicating adequate reliability for assessing the psychosocial characteristics specific to this developmental stage. The results highlight the complexity of identity and transitional processes during emerging adulthood, providing a foundation for tailored interventions.

**Keywords:** emerging adulthood, IDEA-R, factor analysis, identity, autonomy, psychometric validity

### 1. INTRODUCTION

#### The Psychosocial Model of Human Development

Human development is a complex and dynamic process, influenced by biological, psychological, social, and cultural factors. Young people explore independence and shape their identity, adults balance career and family life, while older

individuals focus on meaningful relationships and introspection. Psychological development varies significantly across life stages, affecting how individuals form relationships and regulate their emotions.

The Emerging Adulthood Model was proposed by Arnett (2000) in the work "Emerging Adulthood: A Theory of Development from the Late Teens Through the Twenties". This model describes a distinct stage of development, situated between adolescence and early adulthood, covering the approximate period of 18-25 years. Main characteristics of the Emerging Adulthood Model: Identity Exploration: young people explore their identity in areas such as career, relationships, and personal values; Instability: this period is marked by frequent changes in residence, relationships, and professional direction; Self-Focus: young adults concentrate on personal development and independence, making decisions based on their own needs and desires; Feeling In-Between: emerging adults do not perceive themselves as fully adolescent, but neither as fully mature; Endless Opportunities: the perception that the future offers numerous possibilities related to career, relationships, and personal life.

However, the theory has also faced criticism. Some have argued that the period of emerging adulthood might be more of a "luxury" experienced by the white middle class rather than a universal phenomenon (Syed, 2017). Although multiple empirical studies exist, comparative studies between theoretical models that support the distinction of this stage from adolescence or adulthood are lacking. Research takes into consideration the diversity of experiences during emerging adulthood and suggests moving beyond a normative interpretative trajectory toward a more nuanced understanding of the "forms of emerging adulthood", taking into account factors such as socioeconomic status, cultural context, and individual differences (Bowen et al., 2021).

It is precisely these inconsistencies in the literature that necessitate a detailed analysis of the instrument measuring the psychosocial characteristics relevant to the period of youth.

### **Relevant Psychosocial Characteristics in the Period of Youth**

For young people (18-25 years old), a period of major transformations arises, which can favor the onset of depression. This stage often involves intense academic pressures, financial instability, and the negative influence of social media. Constant comparison with others, amplified by digital platforms, can intensify feelings of inadequacy and emotional isolation (Smith et al., 2021).

Young people go through a dynamic stage of identity formation and socio-emotional exploration. Adolescence is characterized by heightened emotional intensity, driven by ongoing neurological development, especially in areas responsible for emotion regulation and decision-making. Peer group influence predominates during this stage, shaping the self-concept and relational patterns (van Hoorn et al., 2020).

Additionally, instability in personal relationships may contribute to a higher risk of depression. According to a meta-analysis by Kreski et al. (2022), the prevalence of major depression among young people reached 28% during this period, with individuals reporting symptoms such as changes in eating habits, a reduced interest in activities they once enjoyed, feelings of sadness, hopelessness, negative self-perception, fatigue, and sleep problems.

Regarding specific manifestations, high-risk behaviors include an increase in suicide attempts, alcohol, nicotine, and substance use, as well as engagement in risky sexual behaviors. In terms of physical health, this condition is associated with a higher risk of cardiovascular diseases and obesity (Thapar et al., 2022).

Research shows that young people with a high level of autonomy and family support develop a more robust psychological well-being, being better able to navigate the challenges of the transition to adulthood (Melendro et al., 2020). From a relational perspective, romantic relationships can be unstable due to a lack of experience in managing conflicts. Young people are more susceptible to anxiety and depression, but also to idealizing intimate relationships, which can lead to frequent relational conflicts. Their ability to manage emotions is still developing, and experiences during this stage contribute to strengthening resilience. According to Klaus Riegel, adult experiences expose individuals to a new level of cognitive challenge, discovering dialectical forces in the surrounding reality. Postformal reasoning also emerges, a level of thinking that comes after Piaget's formal operational stage, which refers to understanding multiple perspectives on a problem, depending on the context. This type of reasoning has been mentioned in several studies and is closely related to the problem-based learning (PBL) approach (Wynn, 2022).

### **The present study**

#### **Objectives**

1. Exploration of the latent factor structure within the IDEA-R questionnaire (Lisha et al., 2014) through exploratory factor analysis (EFA).
2. Confirmation of the identified factor structure using confirmatory factor analysis (CFA).
3. Evaluation of the convergent and discriminant validity of the IDEA-R constructs (Lisha et al., 2014).

#### **Hypotheses**

H1: The factor structure of the IDEA-R will highlight several distinct dimensions corresponding to the theoretical concepts being evaluated.

H2: CFA will confirm the latent model identified through EFA, showing acceptable fit indices (CFI > .90, RMSEA < .08).

## 2. METHOD

### Participants and procedure

The sample consisted of 243 participants ( $M = 21.6$ ,  $SD = 2.23$ ), of whom 77% were women ( $N = 187$ ) and 23% were men ( $N = 56$ ). In terms of education level, 19.3% of participants had primary or middle school education, while 80.7% had high school or higher education. Regarding marital status, 66.3% of participants were unmarried, while the remaining 33.7% were in a relationship or married. The professional status of participants indicated that 18.3% were employed, and 81.7% were students or unemployed. The majority of participants came from urban areas (79.4%), while 20.6% came from rural areas.

We use exploratory factor analysis (EFA) and confirmatory factor analysis (CFA), aiming to identify alternative relevant characteristics and constructs for the age group of young people (18-25 years) that are not included in Erik Erikson's psychosocial development model. The study focuses on applying the IDEA-R scale (Lisha et al., 2014) ( $N = 244$ ) to analyze dimensions such as exploration versus symbiosis, thereby conceptually adjusting the existing framework.

### Instruments

IDEA-R (Lisha et al., 2014) is a self-assessment tool that measures the essential traits of emerging adulthood, including

identity exploration, experimentation or possibilities, negativity or instability, self-focus, and the feeling of being "in-between." Studies have generally shown that the IDEA-R has good psychometric properties. A 4-point Likert scale is used, with higher scores indicating stronger endorsement of the respective dimension.

The IDEA-R scale has demonstrated high internal consistency, with a Cronbach's Alpha coefficient of .869 for both the standardized items and the original items. This value indicates a very good level of internal reliability, suggesting that the items included in the IDEA-R scale consistently measure the proposed construct.

The obtained value exceeds the minimum accepted threshold of .70 for psychometric instruments (Nunnally & Bernstein, 1994), confirming its reliability for use in research aimed at analyzing personal identity and associated psychosocial dimensions. With a total of 21 items, the IDEA-R can be considered a robust tool for evaluating constructs related to identity development, making it suitable for both exploratory and confirmatory studies.

This validation also suggests the possibility of using the instrument in various cultural and socio-demographic contexts, with potential for broad applicability in investigating psychosocial processes associated with mental health.

## 3. RESULTS

Exploratory Factor Analysis (EFA) is used to identify the dominant components of the IDEA-R scale. This stage helps to explore the latent structure of the scale and determine relevant constructs for the age group of young people, such as exploration versus symbiosis. The table presents the results of a factor analysis using the "minimum residual" extraction method and an oblimin rotation (which allows for factor correlations). Each item in the list is associated with one or more loadings on factors (1, 2, 3, or 4). High loadings ( $> .3$ ) indicate that an item strongly correlates with a specific factor. The uniqueness values reflect the proportion of variation for each item that is not explained by the extracted factors (Table 1).

We observe four relevant factors in the young adulthood period of emerging adulthood, according to Jeffrey Arnett's

model. Factor 1: Dominated by items that suggest exploration, identity definition, and planning for the future – reflects identity development and the sense of purpose in life. It includes: item 10, item 12, item 14, item 15, item 16, item 17, item 18, item 21. Factor 2: Items associated with optimism, independence, and trying new things – indicates the exploration of autonomy and opportunities. It includes: item 1, item 2, item 3, item 4, item 5. Factor 3: It contains items related to personal freedom and identity discovery – reflecting practical and personal autonomy. These include: item 6, item 7, item 8, item 9, item 11. Factor 4: It includes items related to the gradual transition to maturity and the ambiguity of roles – describing the transition to adulthood. These include: item 4 (R), item 19, item 20 (Table 3).

**Table 1***Factor loadings for IDEA-R*

	Factor				Uniqueness
	1	2	3	4	
i1		.620			.583
i2		.687			.486
i3		.658			.536
i4		.383		-.420	.523
i5		.414			.608
i6			.447		.547
i7	.345		.362		.677
i8			.458		.624
i9			.733		.507
i10	.463		.316		.591
i11			.615		.659
i12	.408				.577
i13					.788
i14	.678				.473
i15	.567				.625
i16	.870				.332
i17	.779				.391
i18	.695				.404
i19				.619	.553
i20	.332			.530	.360
i21	.319				.784

*Note.* 'Minimum residual' extraction method was used in combination with a 'oblimin' rotation

**Table 2***Factor loadings in the scale composition*

Factor	SS Loadings	% of Variance	Cumulative %
1	3.87	18.44	18.4
2	2.13	10.15	28.6
3	2.02	9.63	38.2
4	1.35	6.41	44.6

**Table 3***The four factor structure of IDEA-R*

Identity Development and Sense of Purpose in Life ( <b>Factor 1</b> )	Exploration of Autonomy and Opportunities ( <b>Factor 2</b> )	Practical and Personal Autonomy ( <b>Factor 3</b> )	Transition to Maturity ( <b>Factor 4</b> )
I10. A period of self-sufficiency without the help of others	I1. A period of many possibilities	I6. A period of optimism	I4. A period of personal freedom (R)
I12. A period of self-focus	I2. A period of exploration	I7. A period of discovering one's own identity	I19. A period when you feel like an adult in some ways, but not in others
I14. A period of defining your own identity	I3. A period of experimentation	I8. A period of independence	I20. A period of gradual becoming an adult
I15. A period of planning for the future	I4. A period of personal liberty	I9. A period of open choices	
I16. A period of searching for a sense of purpose in life	I5. A period of responsibility for yourself	I11. A period of trying new things	
I17. A period of deciding on your own beliefs and values			
I18. A period of learning independent thinking			
I21. A period when you're unsure if you've reached full maturity			

These results suggest that the four factors together explain 44.6% of the total variance in the data. The remaining 55.4% of variance is unexplained, being attributed to other latent factors or measurement errors. The factors with the highest percentage of explained variance (in this case, Factor 1) are the most relevant for understanding the data structure.

Confirmatory factor analysis (CFA) is used to validate the factor structure proposed based on the results of the exploratory factor analysis (EFA). The purpose of this stage is to confirm the adequacy of the identified models and to ensure the robustness of the resulting constructs.

**Table 4**  
*Covariance of factors*

				95% Confidence Interval		Z	p
		Estimate	SE	Lower	Upper		
Factor 1	Factor 1	.00	a				
	Factor 2	.6231	.0549	.515	.731	11.346	< .001
	Factor 3	.3649	.0741	.220	.510	.923	< .001
	Factor 4	.4455	.0848	.279	.612	.254	< .001
Factor 2	Factor 2	.0000	a				
	Factor 3	.6525	.0652	.525	.780	.006	< .001
	Factor 4	.4222	.0910	.244	.600	.642	< .001
Factor 3	Factor 3	.0000	a				
	Factor 4	.0505	.0915	.129	.230	.552	.581
Factor 4	Factor 4	.0000	a				

Confirmatory factor analysis (CFA) was conducted to identify the explanatory mechanisms relevant for the 18-25 age group, based on the hypothesis that this age group would be

better described by alternative mechanisms rather than intimacy or generativity.

Factor 1 included items such as "a period of defining one's identity" (i14) and "a period of searching for a sense of purpose in life" (i16), with the highest factor loadings (.633 and .640), suggesting that the process of identity definition and existential meaning are central components for young people in this age group.

Factor 2 was dominated by items associated with responsibility and personal freedom, such as "a period of responsibility for yourself" (i5) and "a period of personal freedom" (i4), with significant factor loadings (.439 and .644).

Factor 3 highlighted dimensions such as independence and exploration, represented by items like "a period of independence" (i8) and "a period of trying new things" (i11), with high factor loadings (.697 and .621).

Factor 4 included items related to the transition to adulthood, such as "a period in which you feel like an adult in some respects, but not in others" (i19), with a high factor loading of .667. The presence of this factor indicates that the ambivalent perception of adulthood is another key element in defining this age group.

**Table 6**  
*Fit indices*

90% CI										
CFI	TLI	SRMR	RMSEA	Lower	Upper	AIC	BIC	$\chi^2$	df	p
.812	.776	.079	.0926	.0829	.103	10688	10915	.444	144	< .001

The results indicate a moderate fit of the model. The CFI (.812) and TLI (.776) values are below the recommended threshold of .90, and the RMSEA (.0926) exceeds the acceptable limit of 0.08, suggesting that the model requires adjustments. However, the SRMR (.0796) is close to the

#### 4. DISCUSSIONS

The factorial structure of the IDEA-R scale confirms four distinct dimensions: identity exploration, practical autonomy, independence, and the transition to maturity. Comparison of CFA results with the developmental stages proposed by Erik Erikson and Jeffrey J. Arnett: The CFA results support the hypothesis that alternative mechanisms, such as exploration, independence, and identity formation, are essential for explaining the characteristics specific to the 18-25 age group. Factor 1 was dominated by dimensions such as "identity formation" and "search for meaning in life," suggesting a strong emphasis on identity development and existential meaning during this period. Factor 2 captured personal responsibility and freedom, including items such as "period of responsibility for oneself" and "period of personal freedom." Factor 3 reflected independence and exploration, emphasizing the need for young people to develop autonomy. Finally, Factor 4 highlighted the transition to maturity and role ambiguity, revealing the complexity of maturity perception during this stage. The results highlight that while intimacy and generativity are important for mental health, young people in this age group face more complex mechanisms, such as autonomy exploration and

acceptable limit, indicating moderate discrepancies between the observed and estimated data.

The exact fit test ( $\chi^2 = 444$ ,  $df = 144$ ,  $p < .001$ ) shows a significant mismatch between the model and the data, but the high sensitivity to the sample size may influence this result. The model may require theoretical improvements or methodological adjustments for a better fit.

identity formation, which are not fully captured by traditional models. Therefore, the analysis suggests that autonomy, identity exploration, and the perception of the transition to maturity are more relevant explanatory mechanisms for this age group. These findings provide a solid foundation for developing personalized interventions that address the specific needs of young people.

Although the confirmatory analysis suggests a moderate fit of the model (CFI = .812, RMSEA = .0926), the results provide a solid foundation for future improvements to the theoretical model.

#### Practical implications

The IDEA-R scale presents significant applications in psychological and educational counseling, offering a useful framework for developing support programs for young people in transition to adulthood. By identifying key dimensions, such as identity exploration and autonomy, this tool can be used in interventions aimed at improving mental health, promoting stress management, and supporting career decision-making. Additionally, IDEA-R can be integrated into educational policies to create programs tailored to the needs of psychosocial development. Its use may contribute to the prevention of depressive symptomatology through interventions focused on identity exploration and strengthening autonomy.

This study presents a rigorous methodology by combining exploratory and confirmatory factor analysis. The high reliability of the IDEA-R scale, reflected by the Cronbach's Alpha coefficient of 0.869, confirms the solid internal consistency of the instrument. Additionally, the integration of existing theoretical models, such as those proposed by Erikson and Arnett, provides a well-grounded conceptual framework. IDEA-R has wide applicability both in psychological research and in educational and clinical interventions, being adaptable to various cultural and socio-economic contexts.

### Limitations and Future Directions

The factor analysis of IDEA-R suggests that the four factors together explain 44.6% of the total variation in the data. The remaining 55.4% of the variation is unexplained, attributed to other latent factors or measurement errors.

Another limiting aspect is the use of a predominantly urban sample with high levels of education, which may restrict the generalizability of the results to more socio-economically and culturally diverse populations. Expanding the sample in future studies could provide a more comprehensive perspective.

The exclusive use of self-reported scales can introduce subjective bias. Longitudinal studies could provide a clearer perspective on the dynamics of generativity and intimacy, and how they influence mental health in the long term. Additionally, the development of a specific instrument for analyzing emerging adulthood, which integrates dimensions such as identity exploration, autonomy, and symbiosis, could significantly

contribute to understanding the psychosocial needs of young people and designing personalized interventions.

For future research, it is recommended to expand the sample to include more culturally and socio-economically diverse groups, facilitating the cross-cultural validation of the scale. Longitudinal studies could investigate the stability of the IDEA-R dimensions and how they evolve throughout the transition to adulthood. Alternative models, including bifactorial or multidimensional analyses, can be explored to capture the complexity of psychosocial processes. Other directions include correlating the IDEA-R dimensions with relevant variables such as mental health, adaptability, and professional success, to extend the predictive validity of the scale. The development of additional items or adjustments to existing ones could improve model fit. Furthermore, testing the scale in other age groups, such as adolescents or older adults, may provide insight into the continuity of identity development and autonomy processes.

Comparative analysis of the IDEA-R results with similar models applied in other cultural contexts may highlight the universality or specificity of the constructs being assessed. Integrating longitudinal analyses could offer a perspective on the stability of the identified dimensions over time, contributing to a deeper understanding of maturation processes. Additionally, linking the IDEA-R dimensions with external variables, such as social support, life satisfaction, or depressive symptoms, could extend the predictive validity of the instrument. These approaches could provide a more comprehensive view of protective and vulnerability factors during emerging adulthood.

## 5. REFERENCES

Arnett, J. J. (2000). Emerging adulthood: a theory of development from the late teens through the twenties. *American Psychologist*, 55(5), 469-480. <https://doi.org/10.1037/0003-066x.55.5.469>

Bowen, E. A., Ball, A., Jones, A. S., & Miller, B. (2021). Toward many emerging adulthoods: a theory-based examination of the features of emerging adulthood for cross-systems youth. *Emerging Adulthood*, 9(3), 189-201. <https://doi.org/10.1177/2167696821989123>

Kreski, N. T., Keyes, K. M., Parks, M. J., & Patrick, M. E. (2022). Depressive and anxious symptoms among young adults in the COVID 19 pandemic: Results from monitoring the future. *Depression and Anxiety*, 39(6), 536-547. <https://doi.org/10.1002/da.23273>

Lisha, N. E., Grana, R., Sun, P., Rohrbach, L., Spruijt-Metz, D., Reifman, A., & Sussman, S. (2014). Evaluation of the psychometric properties of the revised inventory of the

dimensions of emerging adulthood (IDEA-R) in a sample of continuation high school students. *Evaluation & the Health Professions*, 37(2), 156-177. <https://doi.org/10.1177/0163278712452664>

Melendro, M., Campos, G., Rodríguez-Bravo, A. E., & Arroyo Resino, D. (2020). Young People's Autonomy and Psychological Well-Being in the Transition to Adulthood: A Pathway Analysis. *Frontiers in Psychology*, 11, 1946.

Nunnally, J.C. and Bernstein, I.H. (1994) The Assessment of Reliability. *Psychometric Theory*, 3, 248-292.

Smith, A., Johnson, L., & Carter, R. (2021). Social media use and depression in young adults: A longitudinal study. *Journal of Mental Health*, 30(4), 456-465. <https://doi.org/10.1080/09638237.2021.1875418>

Syed, M. (2017). Emerging adulthood: developmental stage, theory, or nonsense?.. <https://doi.org/10.31234/osf.io/xyztd>

Thapar, A., Eyre, O., Patel, V., & Brent, D. (2022). Depression in young people. *The Lancet*, 400(10352), 617-631.

van Hoorn, J., Shablack, H., Lindquist, K. A., & Telzer, E. H. (2020). Incorporating the social context into neurocognitive models of adolescent decision-making: A neuroimaging meta-analysis. *Neuroscience & Biobehavioral Reviews*, 113, 129-140. <https://doi.org/10.1016/j.neubiorev.2020.02.011>

Wynn, C. (2022). Facilitating Postformal Thinking Through Problem-Based Learning in the History Survey Course: An

Empirically Tested PBL Model. *Journal of Problem Based Learning in Higher Education*, 10(1).



# STUDIA DOCTORALIA

## PSYCHOLOGY AND EDUCATIONAL SCIENCE



UNIVERSITY OF  
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## Fostering Posttraumatic Growth: The Other Face of Trauma

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### ABSTRACT

In the face of multiple traumatic events that people face, there are significant differences in their reactions and their overall capacity for posttraumatic growth. The present study analyses the role of centrality of events (CE), cognitive flexibility (CF), and creativity (C) in the evolution of posttraumatic growth (PTG), defined as the positive change that follows adversity. Moreover, it investigates three separate mediation models to determine the mediating role of each CE, CF, and C on the relationship between the perception of the traumatic impact (PTI) and PTG. The research analysed a sample of 164 individuals, aged between 18 and 62 years old, including 40 men (24.4%) and 124 women (75.6%). The hierarchical multiple regression highlights the predictive role of CE and CF in shaping PTG, while C did not reach statistical significance. The results of the mediation analyses showed that PTI influences CE, which also has an input in PTG, while the mediation models for CF and C were not statistically significant. Through this present study, efforts are being made to discover new relevant variables to PTG and their contribution to posttraumatic recovery, proposing a direction for future studies in the field of psychotraumatology.

**Keywords:** posttraumatic growth, centrality of events, cognitive flexibility, creativity, perception of traumatic impact

## 1. INTRODUCTION

Despite the multiple traumatic events that people endure, some of them seem to cope better with their consequences, with such experiences often becoming catalysts of change, paving the way towards better relationships, new possibilities, and a stronger sense of gratitude (Henson et al., 2021). When it comes to people's ability to cope, current literature tries to find the most important factors underlying posttraumatic growth that could explain this discrepancy in traumatic effects from one individual to another, and the mechanisms behind them. Some fundamental frameworks for this study are the Posttraumatic Growth Model (Calhoun et al., 2010) and The Recovery Concept (Tedeschi et al., 2018). The Posttraumatic Growth Model takes into account the variety of coping mechanisms that take place on an individual level, analysing the interconnectedness of certain elements such as the characteristics of the person, the management of emotional distress, rumination, self-disclosure, sociocultural influences, narrative revision, and wisdom (Calhoun et al., 2010). The Recovery Concept focuses on people's capacity to live fulfilling lives despite adversities, focusing on their capacity to create a new meaning (Tedeschi et al., 2018).

### Posttraumatic growth

Posttraumatic growth (PTG) is defined as "the positive change that the individual experiences as a result of the struggle with a traumatic event" (Calhoun & Tedeschi, 1999, p. 11). PTG is viewed as a way of reconstructing meaning, in the wake of crisis (Neimeyer, 2006), while using the traumatic experience as a continuous opportunity for growth (Turliuc & Măirean, 2014). Calhoun and Tedeschi (1998) see trauma as a seismic event that shakes one's internal and external world uncontrollably and irreversibly, generating shifts in one's view on future, their personal coping capacity and on their role in the world. PTG implies a posttraumatic adaptation that exceeds the previous functioning levels and targets specific areas from an individual's life, such as life appreciation, personal force, level of self-confidence, perception of self, interpersonal relationships, priorities and goals, and existential concerns (O'Leary & Ickovics, 1995; Tedeschi & Calhoun, 1996; Turliuc & Măirean, 2014). Moreover, PTG requires a long-term process, spanning from days to years, during which people develop new ways of functioning (Tedeschi et al., 2018). If resilience entails a return to normality, PTG has a transformative connotation, implying significant changes in the cognitive, emotional, and behavioural levels (Tedeschi & Calhoun, 1995; Tedeschi & Calhoun, 2004). While it is similar to personal development, the main difference lies in how change unfolds, as PTG is the positive result of a major crisis, a secondary effect of survival efforts rather than a planned purpose in itself (Tedeschi et al., 2018).

Posttraumatic growth occurs in 30% to 70% of survivors of a variety of traumatic events (Linley & Joseph, 2004), with

women showing an overall higher level of growth (Vishnevsky et al., 2010). The most important predictors for PTG are: cognitive processing, sharing one's negative emotions, personality traits, centrality of events, and resilience (Henson et al., 2021; Liu et al., 2018). Michael and Cooper (2013) observed that the most important variables when losing someone close were: the age of the victim, social support, elapsed time since the moment of death, religion and active coping strategies. Regarding personality traits, openness to experience is considered the best predictor for PTG (Mattson et al., 2018). The way in which the traumatic event alters core beliefs might facilitate PTG, as the result of the cognitive effort to redefine new core beliefs and gain a new sense of meaning (Triplett et al., 2012).

### Perception of traumatic impact

Perception is "the primary form of cognitive contact with the world" (Efron, 1969, p. 137). Since individuals tend to interpret reality based on previous perceptive structures (Varela et al., 1991), someone who has been through an adverse experience would show perceptive schemas based on the traumatic event, while the present is analysed in line with the traumatic climate (Ataria, 2015). Therefore, the event itself becomes a filter for the posttraumatic reality, suggesting the occurrence of a top-down perception (Ataria, 2015). Assimilating an experience into existing cognitive schemas is achieved through proper processing and engagement (Janoff-Bulman, 1992). People who are more in contact with their emotions and negative experiences may show higher levels of posttraumatic growth. This perception might be a good indicator of how much an event affected an individual, independent of its objective impact. In a study that investigated the perception of traumatic birth, it appeared that women who did not have confidence in their abilities to cope with the pain of the birth reported a higher level of traumatic perception (Türkmen et al., 2020).

### Centrality of Events

Centrality of events addresses the degree to which the traumatic experience becomes a central part of one's identity, a reference point for daily life (Berntsen & Rubin, 2007). Memories of the traumatic event often mark the beginning and the end of specific life stages, being considered defining memories of the self (Conway & Pleydell-Pearce, 2000; Singer, 1995). They become important elements in one's narrative, influencing how individuals respond to future traumatic or stressful events (Barton et al., 2013; Lancaster et al., 2013). According to Neimeyer (2006), identity tends to be a narrative result, the self being organised around the stories individuals have and tell about themselves. The process of structuring, deconstructing, and restructuring personal narratives is extremely relevant in the development of posttraumatic growth (Neimeyer, 2006). Moreover, the inability of autobiographical memory to integrate

these events into one's identity may have a pathological effect (Crane et al., 2010).

It appears that a higher CE is associated with depression and PTSD symptoms (Berntsen & Rubin, 2006; Rubin et al., 2014). When the event becomes central to one's identity, its memory remains available, which might maintain its emotional impact for longer periods (Boals & Schuettler, 2011). Despite this, CE appears to be a good predictor of PTG, acting as a double-edged sword (Allbaugh et al., 2015; Boals & Schuettler, 2011; Barton et al., 2013; Staugaard et al., 2015). This phenomenon might be explained by posttraumatic cognitions, such as deliberate rumination, which is associated with PTG (Cann et al., 2011; Henson et al., 2021), suggesting that CE could be useful immediately after the traumatic event (Taku et al., 2009). Consequently, studies investigate its role as a mediator on the relationship between trauma and PTSD, but also on the relationship between trauma and PTG (Ferreira, 2023; Tranter et al., 2021). Roland and colleagues (2014) observe that the association between CE and PTG is higher than the one with PTSD. However, it is very likely that PTSD and PTG could coexist (Groleau et al., 2013).

### **Cognitive flexibility**

Cognitive flexibility is the capacity to adapt one's cognitive strategies, depending on the new environmental conditions (Cañas et al., 2003). The ability to acknowledge different perspectives is what represents the core of cognitive flexibility (Toraman et al., 2020). The traumatic events may generate a new life context and trigger a reconstruction of existing cognitive schemas (Tedeschi & Calhoun, 2004). Following a significant change in the environment, the individual has to interpret the new reality and restructure prior knowledge to better adapt (Cañas et al., 2006).

Cognitive flexibility is essential for evaluating the emotional dimension of PTG, as emotional regulation is significantly affected following traumatic experiences (Sattari, 2022). In order to use this cognitive flexibility, one needs to be aware of all the alternatives, have the willingness to adapt, and have a certain level of self-efficacy (Martin & Anderson, 1998). Moreover, flexibility involves other neurocognitive processes apart from attention, such as: switching from one task to another, executive function, and inhibitions, in a similar way to neuroplasticity (Ben-Zion et al., 2018; Purzycki & Sosis, 2009). Neuroplasticity is the core mechanism behind cognitive flexibility, allowing individual growth (Sattari, 2022).

Previous studies associated cognitive flexibility with resilience and positive emotions (Johnson, 2008; Sünbül, 2020), well-being (Fu & Chow, 2016), and better long-term capacity to adapt to adversities (Sattari, 2022), while others reported its mediating role on the relationship between emotional schemas and psychological stress (Mohammadkhani et al., 2022), on the relationship between PTG and resilience in the context of Covid-19 pandemic (Çinar et al., 2022), and on the relationship between PTG and death attitudes among cancer patients

(Vahidi et al., 2023). Hussain and Bhushan's study (2011) reported the mediating role of some cognitive strategies on the relationship between traumatic experiences and PTG, strategies that involved: gaining new perspectives, catastrophizing, refocusing attention on positive events and planning, study that might suggest the role of cognitive flexibility in shaping these strategies.

### **Creativity**

Gardner (1997) referred to creativity as a capacity to solve problems and generate new questions, while Robinson (2001) views it through the lens of imaginative processes that yield unique outcomes. Moreover, it can be perceived as both a force and a refuge, similar to theoretical conceptualizations of resilience (Wolin & Wolin, 1993).

Creativity fosters a safe space during difficult times and is often used in therapeutic practices, given its role in emotional well-being (Desetta & Wolin, 2000; Gibbs & Green, 2008). Art therapy, either through music, dance, or painting can lead to meaningful outcomes regarding the self and the world (Sullivan, 2005). Creativity has an important function in cultivating resilience and a sense of cohesion between different internal structures (Prescott et al., 2008). In a study analysing people suffering from chronic illness or disabilities, creativity was a positive predictor for PTG (Tolleson & Zeligman, 2019). Moreover, people affected by chronic diseases often need to learn how to create a new sense of self, and different creative interventions might enhance the sense of control, through the freedom and responsibility they create (Flach, 1988; Edgar-Bailey & Kress, 2010).

Forgeard (2013) highlights the link between adverse experiences and creative thinking, individuals being able to reassess the event, possibly making out of it a source of inspiration and motivation. However, not much is known about the role of creative behaviour in this process. Moreover, openness to experience is the best predictor among personality traits for PTG (Mattson et al., 2018). This trait takes into account imagination, aesthetics, intellectual curiosity and desire to experience new things, being the best predictor for creative thinking (Feist, 1998). This creative thinking allows alternative scenarios and positive change to take place, possibly leading towards PTG. In a study on cancer patients, Skott (2002) analysed the use of metaphors and the role of these creative expressions in personal narratives to help them depict their physical sensations. Such creative methods stimulate new perspectives, training cognitive flexibility and at the same time allowing the individuals to recognise their vulnerabilities, a process that would further help them build a stronger sense of identity.

Most studies focused on the role of resilience, cognitive processes, social support and personality traits in PTG (Henson et al., 2021). Given the paradoxical nature of certain predictors such as centrality of events or rumination (Barton et al., 2013; Cann et al., 2010), new studies are needed to better understand

the mechanisms behind them. Since traumatic events have an expansive nature, taking over different areas in one's functioning, the current framework suggests a link between centrality of events, cognitive flexibility, and creativity in PTG. These often become central in one's life and it gets fully integrated in their identity, posing both an advantage and a risk, depending on the posttraumatic cognitions. At this point, cognitive flexibility is valuable for adaptation, since it fosters exploration of multiple narratives. This process of adaptation differs from one individual to another and sometimes it can consist of engaging in a variety of creative practices.

Therefore, this study conducted a hierarchical multiple regression model to investigate predictors of posttraumatic

## 2. METHOD

### Participants and procedure

To determine the sample size, a power analysis was conducted using G\*Power (Faul et al., 2007). In order to obtain a .95 power that could detect a medium effect size of .15 at the .05 error probability, 119 participants were needed. The present study analysed data from 164 people, aged between 18 and 62 years old ( $M = 26.9$ ,  $SD = 8.84$ ), including 124 women (75.6%) and 40 men (24.4%). Out of 167 initial responses, 164 met the inclusion criteria, which was the experience of at least one potentially traumatic event included in the LSC-R (Wolfe et al., 1997). Looking at their place of origin, 133 of them come from urban areas (81.1%), while 31 from rural areas (18.9%). As for their educational background, 1 participant (0.6%) graduated from elementary school, 76 (46.3%) finished high school, 48 of them (29.3%) completed their Bachelor's degree, 37 (22.6%) finished their Master's, and 2 of them (1.2%) completed a PhD. In terms of religion, 101 participants are Orthodox-Christians (61.6%), 8 are Catholic (4.9%), 42 are atheists or agnostics (25.6%), and 13 had other religious affiliation (7.9%).

The procedure used a non-probability, convenience sampling method, through the dissemination of a Google Forms questionnaire on different social media groups. Prior to answering the questionnaire, a note on informed consent, confidentiality and research purposes was introduced. The participants gave their consent to participate by continuing to complete the questionnaire. No data that could disclose participants' identity was collected. The research respected the ethics conditions regarding data confidentiality, processing and interpretation, with the author of this study being the only person granted access.

### Instruments

*Perception of traumatic impact* was measured with the 30 subitems from Life Stressor Checklist-Revised (LSC-R; Wolfe et al., 1997). The instrument covers 30 types of traumatic events and they evaluate the occurrence of each one, the age at which it occurred, how frequent it happened, how dangerous it was perceived, and whether the individual experienced strong

growth, and three separate mediation models to examine the relationship between the perception of traumatic impact and posttraumatic growth, exploring the mediating role of CE, CF, and C individually.

H1: *Centrality of events, cognitive flexibility and creativity predict posttraumatic growth.*

H2: *Centrality of events mediates the relationship between the perception of traumatic impact and posttraumatic growth.*

H3: *Cognitive flexibility mediates the relationship between the perception of traumatic impact and posttraumatic growth.*

H4: *Creativity mediates the relationship between the perception of traumatic impact and posttraumatic growth.*

psychological reactions. To evaluate the perception of traumatic impact, each event requires an answer to the following question: "How much has this affected your life in the past year?". Answers are given on a 5-point Likert scale, ranging from 1 (not at all) to 5 (extremely). This subscale demonstrated a medium internal consistency ( $\alpha = .74$ ).

*Cognitive Flexibility* was assessed with the Cognitive Flexibility Scale (Martin & Rubin, 1995) which includes 12 items (e.g., "I am willing to work at creative solutions to problems.", "In any given situation, I am able to act appropriately") with answers scored on a 6-point Likert scale ranging from 1 (strongly disagree) to 6 (strongly agree). The instrument shows good psychometric properties in terms of internal consistency ( $\alpha = .85$ ), resembling the one obtained in other previous studies (Palm & Follette, 2011).

*Centrality of Events* was measured with the Centrality of Events Scale (Berntsen & Rubin, 2006) that includes 12 items (e.g., "This event tells a lot about who I am", "This event was a turning point in my life"), with responses ranging from 1 (totally disagree) to 5 (totally agree), on a 5-point Likert scale. The internal consistency obtained in this study is high ( $\alpha = .95$ ), similar to that obtained in other studies (Groleau et al., 2013; Roland et al., 2014).

*Creativity* was measured with the short version of the Creative Behavior Inventory (Rodriguez-Boerwinkle et al., 2021) consisting of 28 items (e.g., "Wrote poems", "Kept a sketch book"), with answers ranging from 0 (never did this) to 3 (did this more than five times), on a 4-point Likert Scale. This instrument demonstrated a good internal consistency ( $\alpha = .90$ ), similar to the one obtained in other studies (Tolleson & Zeligman, 2019).

*Posttraumatic Growth* was measured with the Posttraumatic Growth Inventory - Short Form (Cann et al., 2010), which includes 12 items (e.g., "I have a greater appreciation for the value of my own life", "I know better that I can handle difficulties") measured on a 6-point Likert scale from 0 (I did not experience this change as a result of my crisis) to 5 (I experienced this change to a very great degree as a result of my crisis). The internal consistency for this study is good ( $\alpha = .90$ ), similar to previous studies (Hijazi et al., 2015).

### Study design

The current study has a non-experimental, cross-sectional, and correlational design. Statistical analyses were performed

using IBM.SPSS 25 (IBM Corp, 2017) and the medmod module from Jamovi (The Jamovi project, 2024).

## 3. RESULTS

### Descriptive statistics

Descriptive statistics including means, standard deviations, correlation coefficients, and other preliminary indicators are

shown in Table 1. Skewness and kurtosis are in the range (-1, 1), with the exception of PTI where it slightly deviates from the normal distribution.

**Table 1**

*Descriptive statistics, preliminary indicators and correlations between observed variables*

	M(SD)	Skewness	Kurtosis	VIF	T	1.	2.	3.	4.	5.
1.CE	57.19 (20)	.05	-.58	1.01	.99	-				
2.CF	54 (9.1)	-.34	.26	1.11	.90	-.10	-			
3.C	25.7(15.2)	.88	.38	1.10	.91	.02	.30**	-		
4.PTG	30.96(11.26)	-.48	-.11	-	-	.32**	.28**	.18*	-	
5.PTI	14.35(11.40)	1.67	4.73	-	-	.35**	.16*	.24**	.21**	-

Note: CE= centrality of events; CF= cognitive flexibility; C= creativity; PTG= posttraumatic growth; PTI= perception of traumatic impact; T=Tolerance

\*p < .05; \*\*p < .01

### Hierarchical Multiple Regression

In order to test the first hypothesis, a hierarchical multiple regression analysis was performed. The first step was to analyse whether the CE, CF and C are significantly correlated with PTG and furthermore. According to Table 1, each predictor significantly correlates with PTG. Following this, a multicollinearity diagnosis was carried out to verify the condition of orthogonality using the VIF and Tolerance indices available in Table 1.

According to Table 2, CE explains on its own around 10% of the variance in PTG, Model 1 being significant  $F(1,162) =$

18.5,  $R = .32$ ,  $R^2 = .10$ ,  $p < .001$ . The second model that adds CF is also significant  $F(2,161) = 20.4$ ,  $R = .45$ ,  $R^2 = .20$ ,  $p < .001$ . It appears that CF contributes an additional 10% over CE, a significant increment ( $\Delta R^2 = .10$ ,  $p < .001$ ). The two variables combined explain around 20% in the variance of PTG, statistically significant results. The third block adds creativity, the overall final model being significant  $F(3,160) = 14.1$ ,  $R = .46$ ,  $R^2 = .21$ ,  $p < .001$ . Therefore, as previously mentioned the three variables are responsible for around 21% of the variance in PTG. However, it can be noticed that creativity only brings an insignificant 1% increment in the final model ( $\Delta R^2 = .01$ ,  $p = .248$ ).

**Table 2***Hierarchical multiple regression*

	<i>b</i>	95% CI		<i>SE</i>	$\beta$	<i>t</i>	<i>R</i> <sup>2</sup>	$\Delta R^2$	<i>F</i>
		<i>LL</i>	<i>UL</i>						
Model 1							.10***		18.5
CE	.18***	.10	.26	.04	.32***	4.31			
Model 2							.20***	.10***	20.4
CE	.20***	.12	.28	.04	.35***	4.99			
CF	.39***	.22	.57	.09	.32***	4.48			
Model 3							.21***	.01	14.1
CE	.20***	.12	.28	.04	.35***	4.94			
CF	.36***	.18	.54	.09	.29***	3.94			
C	.06	-.04	.17	.05	.09	1.16			

Note: Criterion– posttraumatic growth (PTG); \*\*\**p* < .001**The mediating role of centrality of events (CE)**

To test the second hypothesis, a mediation analysis was conducted. According to Table 3, the total effect is significant  $c = .21$  ( $Z = 2.73$ ,  $p < .05$ ), the indirect effect is significant  $Z = 2.87$ ,  $p < .05$ , while the direct effect is insignificant  $c' = .11$  ( $Z = 1.40$ ,  $p > .05$ ), data that suggests a total mediation model ( $c' < c$ ). The path

estimates are:  $a = .61$ , statistically significant ( $Z = 4.78$ ,  $p < .001$ ), while  $b = .16$  is also significant ( $Z = 3.59$ ,  $p < .001$ ). The effect of the perception of traumatic impact on posttraumatic growth is around 47% mediated by the centrality of events.

**Table 3***Mediation Estimates and Path Estimates for CE*

	<i>b</i>	<i>SE</i>	95% CI		<i>Z</i>	<i>p</i>	% Mediation
			<i>LL</i>	<i>UL</i>			
Indirect	.10	.03	.03	.16	2.87	.004	47.30
Direct	.11	.08	-.04	.26	1.40	.161	52.70
Total	.21	.08	.06	.35	2.73	.006	100
PTI → CE	.61	.13	.36	.87	4.78	< .001	
CE → PTG	.16	.04	.07	.25	3.59	< .001	
PTI → PTG	.11	.08	-.04	.26	1.40	.161	

**The mediating role of cognitive flexibility (CF)**

For the third hypothesis, another mediation model was performed. According to Table 4, the total effect is significant,  $c = .21$  ( $Z = 2.73$ ,  $p < .05$ ), the indirect effect is insignificant ( $Z = 1.79$ ,  $p > .05$ ), and the direct effect  $c' = .17$  is significant

( $Z = 2.24$ ,  $p < .05$ ). The path estimates are  $a = .13$ , significant ( $Z = 2.11$ ,  $p < .05$ ), while  $b = .31$ , also significant ( $Z = 3.38$ ,  $p < .001$ ). As a result, the mediating role of CF on the relationship between PTI and PTG is statistically insignificant.

**Table 4***Mediation Estimates and Path Estimates for CF*

	<i>b</i>	<i>SE</i>	95% CI		<i>Z</i>	<i>p</i>	% Mediation
			<i>LL</i>	<i>UL</i>			
Indirect	.04	.02	-.003	.09	1.79	.073	19.80
Direct	.17	.07	.02	.31	2.24	.025	80.20
Total	.21	.08	.06	.35	2.73	.006	100
PTI → CF	.13	.06	.01	.25	2.11	.034	
CF → PTG	.31	.09	.13	.50	3.38	< .001	
PTI → PTG	.17	.07	.02	.31	2.24	.025	

**The mediating role of creativity (C)**

For the fourth hypothesis, a final mediation model was performed. According to Table 5, the total effect is significant,

$c = .21$  ( $Z = 2.73$ ,  $p < .05$ ), the indirect effects is insignificant ( $Z = 1.52$ ,  $p > .05$ ), while the direct effect is significant  $c' = .17$  ( $Z = 2.25$ ,  $p < .05$ ). The path estimates are  $a = .32$ , significant

( $Z=3.20$ ,  $p=.001$ ) and  $b=.10$ , insignificant ( $Z=1.72$ ,  $p>.05$ ). Therefore, the mediating role of C on the relationship between PTI and PTG is statistically insignificant.

**Table 5**

*Mediation Estimates and Path Estimates for C*

	<i>b</i>	<i>SE</i>	95% CI		<i>Z</i>	<i>p</i>	% Mediation
			<i>LL</i>	<i>UL</i>			
Indirect	.03	.02	-.01	.07	1.52	.129	15.70
Direct	.17	.08	.02	.32	2.25	.024	84.30
Total	.21	.08	.06	.35	2.73	.006	100
PTI→C	.32	.10	.13	.52	3.20	.001	
C→PTG	.10	.06	-.01	.21	1.72	.085	
PTI→PTG	.17	.08	.02	.32	2.25	.024	

#### 4. DISCUSSIONS

Regarding our main hypothesis, the data supports the role of the current predictive model in PTG. However, the contribution of creativity in the final predictive model remains insignificant. The association between traumatic perception and PTG is in line with the theory of Tedeschi and Calhoun (2004), stating that a potential traumatic event needs to reach a specific threshold to generate PTG. The predictive role of CE is consistent with the existing literature (Barton et al., 2013; Boals & Schuettler, 2011; Groleau et al., 2013). Similar to Boals and Schuettler study (2011), the centrality of events was the most powerful predictor of posttraumatic growth, emphasising the idea that traumatic events can significantly shape an individual's life course, potentially giving it a new meaning and even contributing to a transformed identity. Cognitive flexibility also had a significant predictive role, similar to existing literature (Hijazi et al., 2015; Sattari, 2022). Since traumatic events alter core beliefs about the self and the world, the individual has to engage in a process of redefining these beliefs, in order to move forward. The new belief system is more complex, more mature and more flexible than prior to the event. Moreover, a lack of cognitive flexibility is associated with lower chances of seeing the traumatic event as a source of growth (Keith et al., 2015).

Although creativity generates a useful theoretical framework in the therapeutic context, its role in predicting posttraumatic growth remains insignificant when analysed with other variables, as current data suggests. This might be due to the rather frequent lack of time and disposition for creative activities when faced with a trauma, since individuals might opt for preserving their few resources available, focusing more on surviving, emotional regulation, and other coping strategies.

The second hypothesis is supported by data, as the centrality of events mediates the relationship between traumatic perception and posttraumatic growth, results similar to current literature (Tranter et al., 2021). Therefore, the perception of traumatic impact influences the degree of CE, which also impacts PTG. Centrality of events appears among survivors,

emphasising their tendency towards reevaluating and changing prior perceptions of the world, identity and relationships (Roland et al., 2014). Previous studies support the link between trauma and PTG (Bensimon, 2012), and also between CE and PTG

(Boals & Schuettler, 2011; Groleau et al., 2013; Lancaster et al., 2013). Reiland and Clark (2017) analyse the mediating role of CE on the relationship between the type of traumatic event and PTSD, centrality of events being a double-edged construct, predicting both PTSD and PTG (Boals & Schuettler, 2011).

The third hypothesis is not supported, therefore cognitive flexibility does not mediate the relationship between perception of traumatic impact and posttraumatic growth. It is somehow expected that traumatic events might mould rigid structures that make it more difficult to interpret reality, to function, to think and to show emotion, since they tend to generate maladaptive mechanisms. Although there is no similar study analysing these three constructs in a similar manner, previous literature confirms the association between CF and PTG (Sattari, 2022; Toraman et al., 2020; Vahidi et al., 2023), the mediating role of CF on the relationship between PTG and resilience (Çınar et al., 2022), and also on the relationship between PTG and death attitudes in cancer patients (Vahidi et al., 2023).

Current data does not support the fourth hypothesis, suggesting that creativity does not act as a mediator on the relationship between PTI and PTG. This might be due to the way creativity is measured in this study, focusing specifically on creative behaviour (e.g., going to the theatre, literature writing). Future studies might cover other facets of creativity, such as creative thinking or emotional creativity. Although its role as a mediator is not supported, different studies acknowledge the role of creativity in PTG and the association between a traumatic background and using creativity as a means of expressing emotions (Forgeard, 2013; Tolleson & Zeligman, 2019; Zhai et al., 2021).

#### Implications

Analysing the predictive model through the lenses of the Posttraumatic Growth Model (Calhoun et al., 2010) and the

Recovery Model (Tedeschi et al., 2018), centrality of events, cognitive flexibility and creativity enhance individuals' capacity to overcome adversities, supporting internal change. Centrality of events could lead to a thorough revision of narrative schemas, aiming to reduce emotional distress and to accept the new changed world after the traumatic event occurred. Cognitive flexibility is of utmost importance when it comes to a change in attitudes, beliefs, values, that initiates the groundwork for reaching a new meaning and purpose. In this framework, creativity may help reduce emotional distress and facilitate access to more individual resources, all these efforts aspiring to an overall wellbeing and life satisfaction, as stated in the model of Calhoun and colleagues (2010). Centrality of events is the construct with the most influence on PTG, addressing almost every element from the Model of Posttraumatic Growth (Calhoun et al., 2010). Once the adverse event takes place, the individual is more prone to rumination, even to intrusive thoughts which might propel him to find new ways to cope with the distress, to reflect more and build a narrative that could be shared with others while reaching out for support. In this way, rumination on the traumatic event might be beneficial, paving the way towards acceptance, new narrative schemas, and even PTG.

Considering the predictive role of CE, it is no wonder that the assimilation of traumatic experience in one's identity is essential in a therapeutic process. This concept is associated with trauma-specific symptomatology, but it is not yet clear whether CE triggers a more intense symptomatology or whether the symptomatology itself makes the traumatic event central in one's life (Groleau et al., 2013). Given the dual character of CE, there is an immediate need for more studies that take into account the narrative behind CE, whether it has a positive or negative connotation, aspect that seems to determine the onset of PTSD or the emergence of PTG (Bernard et al., 2015; Groleau et al., 2013). Additionally, studies should look into other variables that might explain this dual character of CE.

Cognitive flexibility has a protective role in the process of posttraumatic recovery, with higher levels of flexibility possibly leading to a more complex reflection on the traumatic history and a better tolerance of uncertainty. Taking this into account, therapeutic interventions might target the improvement and development of cognitive flexibility from early stages, highlighting the use of ACT (Acceptance and Commitment Therapy) interventions and other practices aimed at modifying cognitive schemas (Landi et al., 2022). Although data supports the role of CF in PTG, the mechanisms through which cognitive functions adapt to trauma are not yet clear. In line with Sattari's suggestion (2022), the domain of psychotraumatology would benefit a lot from more studies addressing cognitive abilities and their relationship with PTG.

### **Practical implications**

Looking at the importance of CE, psychotherapists should be familiarised with this concept, to be able to identify it and to

elaborate intervention plans around it. Techniques that target the restructuring of personal narratives might be of value to activate personal resources and to create new directions for improvement. Self-reflection techniques and support groups that would ensure safe spaces for participants to share experiences and be exposed to new and different stories might help integrate trauma. Therefore, psychotherapists should pay close attention to the way clients integrate traumatic experiences within their identity and life story. According to Neimeyer (2006), personal narrative structures are the ones that are most affected by traumatic events, and their integration is involved in PTG, resilience and recovery.

Given that trauma has the potential to generate inflexible and maladaptive patterns and structures, regaining the capacity to adapt could stimulate the potential for PTG. To gain new perspectives, ACT and DBT use a set of techniques, such as metaphors (Killick et al., 2016). The ability to think in a flexible manner in the face of a traumatic event could foster acceptance of all the emotional states that follow.

### **Limitations and future directions**

There are several limitations in the present study related to its methodology. First of all, the use of self-report instruments might lead to dishonest or inaccurate answers due to perception errors, affecting the accuracy of the results. Secondly, given the cross-sectional nature of the study, results cannot be generalised, and causal relationships cannot be extracted. Another limitation takes into account the sample and the data collection procedures, using a non-probability, convenience sampling method through the dissemination of an online questionnaire on different social media platforms. The sample is not representative for the general population, considering that the majority of respondents were young adults. Moreover, PTI slightly deviates from normality in the current data distribution.

Additionally, there are several limitations in the conceptualisation of the main variables. The degree of subjectivity might influence the results when measuring the perception of traumatic impact with LSC-R (Wolfe et al., 1997), where mechanisms such as denial, minimising the impact or exaggerating the impact of adverse experiences may interfere. Regarding posttraumatic growth, it is difficult to differentiate between self-perceived and objective growth, since the available instruments evaluate its self-perceived form, which may lead to overestimated or underestimated PTG scores. It is still unclear above what threshold the positive change becomes posttraumatic growth or whether any positive change could be interpreted as growth. When measuring creative behaviour, the instrument counted on participants' memory, which has an impact on its validity.

Since the presented framework of the study is relatively new, current literature is rather limited. Existent studies examined related concepts or propose isolated overviews, as opposed to the current research. In the future, a multiple mediation model would be advised, in order to see the

interconnectedness of these constructs and their overall effect on PTG, which is rather cumulative than isolated. Moreover, testing multiple hypotheses regarding mediation models increases the risk of type I error. However, the topic is highly relevant given the need to better understand the mechanisms of trauma.

## Conclusions

The recovery process following a traumatic event is challenging and draining. Although traumatic experiences bring up certain difficulties in managing oneself, understanding the world and the relationships around, posttraumatic growth is

## 5. REFERENCES

- Allbaugh, L. J., Wright, M. O., & Folger, S. F. (2015). The role of repetitive thought in determining posttraumatic growth and distress following interpersonal trauma. *Anxiety, Stress, & Coping*, 29(1), 21–37. <https://doi.org/10.1080/10615806.2015.1015422>
- Ataria, Y. (2015). Post-traumatic stress disorder: A theory of perception. *Body, Movement and Dance in Psychotherapy*, 11(1), 19–30. <https://doi.org/10.1080/17432979.2015.1064828>
- Barton, S., Boals, A., & Knowles, L. (2013). Thinking about trauma: The unique contributions of event centrality and posttraumatic cognitions in predicting PTSD and posttraumatic growth. *Journal of Traumatic Stress*, 26(6), 718–726. <https://doi.org/10.1002/jts.21863>
- Bensimon, M. (2012). Elaboration on the association between trauma, PTSD and posttraumatic growth: The role of trait resilience. *Personality and Individual Differences*, 52(7), 782–787. <https://doi.org/10.1016/j.paid.2012.01.011>
- Ben-Zion, Z., Fine, N. B., Keynan, N. J., Admon, R., Green, N., Halevi, M., Fonzo, G. A., Achituv, M., Merin, O., Sharon, H., Halpern, P., Liberzon, I., Etkin, A., Hendler, T., & Shalev, A. Y. (2018). Cognitive flexibility predicts PTSD symptoms: Observational and interventional studies. *Frontiers in Psychiatry*, 9. <https://doi.org/10.3389/fpsy.2018.00477>
- Bernard, J. D., Whittles, R. L., Kertz, S. J., & Burke, P. A. (2015). Trauma and event centrality: Valence and incorporation into identity influence well-being more than exposure. *Psychological Trauma: Theory, Research, Practice, and Policy*, 7(1), 11–17. <https://doi.org/10.1037/a0037331>
- Berntsen, D., & Rubin, D. C. (2006). The centrality of event scale: A measure of integrating a trauma into one's identity and its relation to post-traumatic stress disorder symptoms. *Behaviour Research and Therapy*, 44(2), 219–231. <https://doi.org/10.1016/j.brat.2005.01.009>
- Berntsen, D., & Rubin, D. C. (2007). When a trauma becomes a key to identity: Enhanced integration of trauma memories predicts posttraumatic stress disorder symptoms. *Applied Cognitive Psychology*, 21(4), 417–431. <https://doi.org/10.1002/acp.1290>
- Boals, A., & Schuettler, D. (2011). A double-edged sword: Event centrality, PTSD and posttraumatic growth. *Applied Cognitive Psychology*, 25(5), 817–822. <https://doi.org/10.1002/acp.1753>
- Bonanno, G. A. (2004). Loss, trauma, and human resilience: Have we underestimated the human capacity to thrive after extremely aversive events? *American Psychologist*, 59(1), 20–28. <https://doi.org/10.1037/0003-066x.59.1.20>
- Calhoun, L.G., Cann, A., & Tedeschi, R.G. (2010). The Posttraumatic Growth Model: Sociocultural Considerations. In T. Weiss & R. Berger (Eds.), *Posttraumatic Growth and Culturally Competent Practice: Lessons Learned From Around the Globe* (pp. 1-14). John Wiley & Sons. <https://doi.org/10.1002/9781118270028.ch1>
- Calhoun, L. G., & Tedeschi, R. G. (1998). Posttraumatic growth: Future directions. In R. G. Tedeschi, C. L. Park, & L. G. Calhoun (Eds.), *Posttraumatic growth: Positive change in the aftermath of crisis* (pp. 215–238). Routledge.
- Calhoun, L. G., & Tedeschi, R. G. (1999). *Facilitating Posttraumatic Growth: A Clinician's Guide*. Routledge.
- Cañas, J. J., Fajardo, I., & Salmeron, L. (2006). Cognitive flexibility. *International encyclopedia of ergonomics and human factors*, 1(3), 297-301.
- Cañas, J., Quesada, J., Antolí, A., & Fajardo, I. (2003). Cognitive flexibility and adaptability to environmental changes in dynamic complex problem-solving tasks. *Ergonomics*, 46(5), 482–501. <https://doi.org/10.1080/0014013031000061640>
- Cann, A., Calhoun, L. G., Tedeschi, R. G., Taku, K., Vishnevsky, T., Triplett, K. N., & Danhauer, S. C. (2010). A short form of the Posttraumatic Growth Inventory. *Anxiety, Stress & Coping*, 23(2), 127–137. <https://doi.org/10.1080/10615800903094273>
- Cann, A., Calhoun, L. G., Tedeschi, R. G., Triplett, K. N., Vishnevsky, T., & Lindstrom, C. M. (2011). Assessing posttraumatic cognitive processes: The Event Related Rumination Inventory. *Anxiety, Stress & Coping*, 24(2), 137–156. <https://doi.org/10.1080/10615806.2010.529901>

- Çinar, S. E., Boyali, C., & Özkapu, Y. (2022). The relationship between posttraumatic growth and psychological resilience in the Covid-19 pandemic: The mediating role of cognitive flexibility and positive schemas. *Turkish Psychological Counseling and Guidance Journal*, 12(64), 1-17. <https://doi.org/10.17066/tpdrd.1095688>
- Conway, M. A., & Pleydell-Pearce, C. W. (2000). The construction of autobiographical memories in the self-memory system. *Psychological Review*, 107(2), 261–288. <https://doi.org/10.1037//0033-295x.107.2.261>
- Crane, L., Goddard, L., & Pring, L. (2010). Brief report: Self-defining and everyday autobiographical memories in adults with autism spectrum disorders. *Journal of Autism and Developmental Disorders*, 40(3), 383–391. <https://doi.org/10.1007/s10803-009-0875-4>
- Desetta, A., & Wolin, S. (2000). *The struggle to be strong: True stories by teens about overcoming tough times*. Free Spirit.
- Edgar-Bailey, M., & Kress, V. E. (2010). Resolving Child and Adolescent Traumatic Grief: Creative Techniques and Interventions. *Journal of Creativity in Mental Health*, 5(2), 158–176. <https://doi.org/10.1080/15401383.2010.485090>
- Efron, R. (1969). What is perception?. In R. S. Cohen & M. W. Wartofsky (Eds.), *Proceedings of the Boston Colloquium for the Philosophy of Science 1966/1968* (pp. 137-173). Dordrecht: Springer Netherlands.
- Faul, F., Erdfelder, E., Lang, A.-G., & Buchner, A. (2007). G\*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, 39(2), 175–191. <https://doi.org/10.3758/bf03193146>
- Feist, G. J. (1998). A meta-analysis of personality in scientific and artistic creativity. *Personality and Social Psychology Review*, 2(4), 290–309. [https://doi.org/10.1207/s15327957pspr0204\\_5](https://doi.org/10.1207/s15327957pspr0204_5)
- Ferrajão, P. (2023). Event centrality and worthiness of the self mediate the link between exposure to multiple forms of violence and posttraumatic stress disorder symptoms in Portuguese young adults. *Traumatology*. Advance online publication. <https://doi.org/10.1037/trm0000463>
- Flach, F. (1988). *Resilience: Discovering a new strength at times of stress*. Ballantine Books.
- Forgeard, M. J. C. (2013). Perceiving benefits after adversity: The relationship between self-reported posttraumatic growth and creativity. *Psychology of Aesthetics, Creativity, and the Arts*, 7(3), 245–264. <https://doi.org/10.1037/a0031223>
- Fu, F., & Chow, A. (2016). Traumatic exposure and psychological well-being: The moderating role of cognitive flexibility. *Journal of Loss and Trauma*, 22(1), 24–35. <https://doi.org/10.1080/15325024.2016.1161428>
- Gardner, H. (1997). *Extraordinary Minds: Portraits of exceptional individuals and an examination of our extraordinariness*. Basic Books.
- Gibbs, K. A., & Green, E. J. (2008). Sanding in supervision: A sand tray technique for clinical supervisors. In A. A. Drewes & J. A. Mullen (Eds.), *Supervision can be playful: Techniques for child and play therapist supervisors* (pp. 27–38). Rowman & Littlefield.
- Groleau, J. M., Calhoun, L. G., Cann, A., & Tedeschi, R. G. (2013). The role of centrality of events in posttraumatic distress and posttraumatic growth. *Psychological Trauma: Theory, Research, Practice, and Policy*, 5(5), 477–483. <https://doi.org/10.1037/a0028809>
- Henson, C., Truchot, D., & Canevello, A. (2021). What promotes post traumatic growth? A systematic review. *European Journal of Trauma & Dissociation*, 5(4), 100195. <https://doi.org/10.1016/j.ejtd.2020.100195>
- Hijazi, A. M., Keith, J. A., & O'Brien, C. (2015). Predictors of posttraumatic growth in a multiwar sample of U.S. Combat veterans. *Peace and Conflict: Journal of Peace Psychology*, 21(3), 395–408. <https://doi.org/10.1037/pac0000077>
- Hussain, D., & Bhushan, B. (2011). Posttraumatic stress and growth among Tibetan refugees: The mediating role of cognitive-emotional regulation strategies. *Journal of Clinical Psychology*, 67(7), 720–735. <https://doi.org/10.1002/jclp.20801>
- IBM Corp. (2017). IBM SPSS Statistics for Windows, Version 25.0. Armonk, NY: IBM Corp.
- Janoff-Bulman, R. (1992). *Shattered Assumptions: Toward a New Psychology of Trauma*. Free Press.
- Johnson, B. (2008). Teacher–student relationships which promote resilience at school: A micro-level analysis of students' views. *British Journal of Guidance & Counselling*, 36(4), 385–398. <https://doi.org/10.1080/03069880802364528>
- Keith, J., Velezmore, R., & O'Brien, C. (2015). Correlates of cognitive flexibility in veterans seeking treatment for posttraumatic stress disorder. *Journal of Nervous & Mental Disease*, 203(4), 287–293. <https://doi.org/10.1097/nmd.0000000000000280>
- Killick, S., Curry, V., & Myles, P. (2016). The mighty metaphor: A collection of therapists' favourite metaphors and analogies. *The Cognitive Behaviour Therapist*, 9. <https://doi.org/10.1017/s1754470x16000210>
- Lancaster, S. L., Kloep, M., Rodriguez, B. F., & Weston, R. (2013). Event centrality, posttraumatic cognitions, and the experience of posttraumatic growth. *Journal of Aggression, Maltreatment & Trauma*, 22(4), 379–393. <https://doi.org/10.1080/10926771.2013.775983>
- Landi, G., Pakenham, K. I., Mattioli, E., Crocetti, E., Agostini, A., Grandi, S., & Tossani, E. (2022). Post-traumatic growth in people experiencing high post-traumatic stress during the COVID-19 pandemic: The protective role of psychological flexibility. *Journal of Contextual Behavioral Science*, 26, 44–55. <https://doi.org/10.1016/j.jcbs.2022.08.008>
- Linley, P. A., & Joseph, S. (2004). Positive change following trauma and adversity: A review. *Journal of Traumatic Stress*, 17(1), 11–21. <https://doi.org/10.1023/b:jots.0000014671.27856.7e>

- Liu, Y., Li, Y., Chen, L., Li, Y., Qi, W., & Yu, L. (2018). Relationships between family resilience and posttraumatic growth in breast cancer survivors and caregiver burden. *Psycho-Oncology*, 27(4), 1284–1290. <https://doi.org/10.1002/pon.4668>
- Martin, M. M., & Anderson, C. M. (1998). The Cognitive Flexibility Scale: Three validity studies. *Communication Reports*, 11(1), 1-9. <https://doi.org/10.1080/08934219809367680>
- Martin, M. M., & Rubin, R. B. (1995). A new measure of cognitive flexibility. *Psychological Reports*, 76(2), 623–626. <https://doi.org/10.2466/pr0.1995.76.2.623>
- Mattson, E., James, L., & Engdahl, B. (2018). Personality Factors and Their Impact on PTSD and Post-traumatic Growth is Mediated by Coping Style Among OIF/OEF Veterans. *Military Medicine*, 183(9–10), e475–e480. <https://doi.org/10.1093/milmed/usx201>
- Michael, C., & Cooper, M. (2013). Research Paper Post-traumatic growth following bereavement: A systematic review of the literature. *Counselling Psychology Review*, 28(4), 18–33. <https://doi.org/10.53841/bpscr.2013.28.4.18>
- Mohammadkhani, S., Foroutan, A., Akbari, M., & Shahbahrani, M. (2022). Emotional schemas and psychological distress: Mediating role of resilience and cognitive flexibility. *Iranian Journal of Psychiatry*. <https://doi.org/10.18502/ijps.v17i3.9728>
- Neimeyer, R. A. (2006). Re-storying loss: Fostering growth in the posttraumatic narrative. In Calhoun, L., & Tedeschi, R. (eds.), *Handbook of Posttraumatic Growth: Research and Practice*. (68-80). Routledge. <http://dx.doi.org/10.4324/9781315805597-11>
- O'Leary, V. E., & Ickovics, J. R. (1995). Resilience and thriving in response to challenge: An opportunity for a paradigm shift in women's health. *Women's Health: Research on Gender, Behavior and Policy*, 1 (2), 121-142.
- Palm, K. M., & Follette, V. M. (2011). The roles of cognitive flexibility and experiential avoidance in explaining psychological distress in survivors of interpersonal victimization. *Journal of Psychopathology and Behavioral Assessment*, 33, 79-86. <https://doi.org/10.1007/s10862-010-9201-x>
- Purzycki, B. G., & Sosis, R. (2009). The religious system as adaptive: Cognitive flexibility, public displays, and acceptance. In E. Volland & W. Schiefenhövel (Eds.), *The Biological Evolution of Religious Mind and Behavior* (pp. 243–256). The Frontiers Collection. [https://doi.org/10.1007/978-3-642-00128-4\\_17](https://doi.org/10.1007/978-3-642-00128-4_17)
- Prescott, M. V., Sekendur, B., Bailey, B., & Hoshino, J. (2008). Art making as a component and facilitator of resiliency with homeless youth. *Art Therapy*, 25(4), 156–163. <https://doi.org/10.1080/07421656.2008.10129549>
- Reiland, S. A., & Clark, C. B. (2017). Relationship between event type and mental health outcomes: Event centrality as mediator. *Personality and Individual Differences*, 114, 155–159. <https://doi.org/10.1016/j.paid.2017.04.009>
- Robinson, K. (2001). *Out of Our Minds: Learning to Be Creative*. Oxford: Capstone.
- Rodriguez-Boerwinkle, R., Silvia, P., Kaufman, J. C., Reiter-Palmon, R., & Puryear, J. S. (2021). *Taking Inventory of the Creative Behavior Inventory: An item response theory analysis of the CBI*. Center for Open Science. <http://dx.doi.org/10.31234/osf.io/b7cfd>
- Roland, A. G., Currier, J. M., Rojas-Flores, L., & Herrera, S. (2014). Event centrality and posttraumatic outcomes in the context of pervasive violence: a study of teachers in El Salvador. *Anxiety, Stress & Coping*, 27(3), 335–346.
- Rubin, D. C., Boals, A., & Hoyle, R. H. (2014). Narrative centrality and negative affectivity: Independent and interactive contributors to stress reactions. *Journal of Experimental Psychology: General*, 143(3), 1159–1170. <https://doi.org/10.1037/a0035140>
- Sattari, S. (2022). Investigation of the Relationship Between Interoception, Cognitive Flexibility, and Posttraumatic Growth. *Walden Dissertations and Doctoral Studies*. 13756. <https://scholarworks.waldenu.edu/dissertations/13756>
- Singer, M. (1995). Illuminating language: A review of Pinker, S. (1994) *The Language Instinct*. *Canadian Journal of Experimental Psychology*, 49, 577–581.
- Skott, C. (2002). Expressive metaphors in cancer narratives. *Cancer Nursing*, 25(3), 230–235. <https://doi.org/10.1097/00002820-200206000-00011>
- Staugaard, S. R., Johannessen, K. B., Thomsen, Y. D., Bertelsen, M., & Berntsen, D. (2015). Centrality of positive and negative deployment memories predicts posttraumatic growth in Danish veterans. *Journal of Clinical Psychology*, 71(4), 362–377. <https://doi.org/10.1002/jclp.22142>
- Sullivan, G. (2005). *Art practice as research: Inquiry in the visual arts*. SAGE.
- Sünbül, Z. A. (2020). Mindfulness, positive affection and cognitive flexibility as antecedents of trait resilience. *Studia Psychologica*, 62(4), 277-290. <https://doi.org/10.31577/sp.2020.04.805>
- Taku, K., Cann, A., Tedeschi, R. G., & Calhoun, L. G. (2009). Intrusive versus deliberate rumination in posttraumatic growth across US and Japanese samples. *Anxiety, Stress & Coping*, 22(2), 129–136. <https://doi.org/10.1080/10615800802317841>
- Tedeschi, R. G., & Calhoun, L. G. (1995). *Trauma and transformation*. SAGE.
- Tedeschi, R. G., & Calhoun, L. G. (1996). The Posttraumatic Growth Inventory: Measuring the positive legacy of trauma. *Journal of Traumatic Stress*, 9(3), 455–471. <https://doi.org/10.1007/bf02103658>
- Tedeschi, R. G., & Calhoun, L. G. (2004). TARGET ARTICLE: "Posttraumatic growth: Conceptual foundations and empirical

- evidence." *Psychological Inquiry*, 15(1), 1–18. [https://doi.org/10.1207/s15327965pli1501\\_01](https://doi.org/10.1207/s15327965pli1501_01)
- Tedeschi, R. G., Shakespeare-Finch, J., Taku, K., & Calhoun, L. G. (2018). *Posttraumatic growth: Theory, research, and applications*. Routledge.
- The jamovi project (2024). jamovi (Version 2.5) [Computer Software]. Retrieved from <https://www.jamovi.org>
- Tolleson, A., & Zeligman, M. (2019). Creativity and posttraumatic growth in those impacted by a chronic illness/disability. *Journal of Creativity in Mental Health*, 14(4), 499–509. <https://doi.org/10.1080/15401383.2019.1632769>
- Toraman, Ç., Özdemir, H. F., Koşan, A. M. A., & Orakçı, Ş. (2020). Relationships between cognitive flexibility, perceived quality of faculty life, learning approaches, and academic achievement. *International Journal of Instruction*, 13(1), 85–100. <https://doi.org/10.29333/iji.2020.1316a>
- Tranter, H., Brooks, M., & Khan, R. (2021). Emotional resilience and event centrality mediate posttraumatic growth following adverse childhood experiences. *Psychological Trauma: Theory, Research, Practice, and Policy*, 13(2), 165–173. <https://doi.org/10.1037/tra0000953>
- Triplett, K. N., Tedeschi, R. G., Cann, A., Calhoun, L. G., & Reeve, C. L. (2012). Posttraumatic growth, meaning in life, and life satisfaction in response to trauma. *Psychological Trauma: Theory, Research, Practice, and Policy*, 4(4), 400–410. <https://doi.org/10.1037/a0024204>
- Türkmen, H., Yalniz Dİlçen, H., & Özçoban, F. A. (2020). Traumatic childbirth perception during pregnancy and the postpartum period and its postnatal mental health outcomes: A prospective longitudinal study. *Journal of Reproductive and Infant Psychology*, 39(4), 422–434. <https://doi.org/10.1080/02646838.2020.1792429>
- Turtiuc, N., & Măirean, C. (2014). *Psihologia traumei*. MintRight Inc.
- Vahidi, P., Agahheris, M., & Dousti, A. (2023). Relationship between Posttraumatic Growth and Death Attitudes in People with Cancer with Mediating Role of Cognitive Flexibility. *International Journal of Applied Behavioral Sciences*, 10(1), 37–44. <https://doi.org/10.22037/ijabs.v10i1.39884>
- Varela, F., Thompson, E., & Rosch, E. (1991). *The embodied mind: Cognitive science and human experience*. MIT Press.
- Vishnevsky, T., Cann, A., Calhoun, L. G., Tedeschi, R. G., & Demakis, G. J. (2010). Gender differences in self-reported posttraumatic growth: A meta-analysis. *Psychology of Women Quarterly*, 34(1), 110–120. <https://doi.org/10.1111/j.1471-6402.2009.01546.x>
- Wolfe, J., Kimerling, R., Brown, P., Chrestman, K., & Levin, K. (1997). *The Life Stressor Checklist-Revised (LSC-R)* [Measurement instrument]. Available from <http://www.ptsd.va.gov>
- Wolin, S. J., & Wolin, S. (1993). *The resilient self: How survivors of troubled families rise above adversity*. Villard Books.
- Zhai, H.-K., Li, Q., Hu, Y.-X., Cui, Y.-X., Wei, X.-W., & Zhou, X. (2021). Emotional creativity improves posttraumatic growth and mental health during the COVID-19 pandemic. *Frontiers in Psychology*, 12. <https://doi.org/10.3389/fpsyg.2021.600798>



# STUDIA DOCTORALIA

## PSYCHOLOGY AND EDUCATIONAL SCIENCE



UNIVERSITY OF  
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## Identity Development and Well-being: A Systematic Review

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### ABSTRACT

According to Erikson, identity development is a crucial psychosocial task. This study set out to systematically review the literature on identity development and well-being, to better understand the relationship between well-being and identity processes. A systematic review was performed according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement. Searches were conducted across Web of Knowledge, Proquest, Scopus, ScienceDirect and Google Scholar, and reference lists of the included studies (1990–2024). Independent reviewers screened titles and abstracts and conducted full-text assessment. A number of 10 studies met the predetermined inclusion criteria. Analysis of findings from the systematic literature review revealed that high identity commitment is related to identity development. Inconsistent findings with in-depth exploration are reported, but empirical research in this area is limited. The links between identity development and well-being are not completely clear. The possible intermediate factors that could determine the relationship between identity development and well-being are discussed. Further empirical research is needed in this area.

**Keywords:** identity development, identity processes, well-being

## 1. INTRODUCTION

Having a personal sense of identity means having a sense of who one is and the process by obtaining one's identity is known as identity development. Identity development is considered to be the primary psychosocial task of adolescence (Crocetti, 2017; Erikson, 1950). Identity development is characterized by exploring opportunities with the purpose of making long-standing commitments (Crocetti et al., 2008). While identity development remains a concern across the lifespan, the specific developmental processes of identity become urgent in adolescence (Crocetti, 2017; Erikson, 1950).

In his theory on psychosocial development, Erikson (1968) describes identity formation as the defining crisis for adolescents. He proposes that by selectively discovering, accepting and rejecting childhood identification the adolescent obtains their identity (1950). Marcia expanded Erikson's identity theory which allowed for the development of among the first empirical model for identity development.

Marcia's model proposes that identity is a self-structure with two key processes: exploration and commitment (1966). Specifically, he proposes that exploration allows for the probing and exploring of different identity paths and when someone is clear about their values beliefs and goals, a firm choice can be made under the form of commitment about an identity domain and actively pursuing that decision. Using this conceptualization, Marcia et al. (1993) describe four different potential identity statuses for adolescents: Identity Achievement (committed identity after exploration), Moratorium (committed identity without exploration), Foreclosure (exploring identity) and Diffusion (neither exploring, nor committing to an identity). Based on Marcia's identity status paradigm, many theoretical models have been proposed in an attempt to expand upon the work of Erikson (1950) and Marcia (1966) and in order to better capture the nuances of the identity development process (Luyckx et al., 2025).

### The three-factor model

One of the most frequently used approaches in the literature is the three-factor model proposed by Crocetti et al. (2008). Their proposed model argues that one's identity is formed and changed through the continuous interplay between the following three critical identity dimensions: commitment, in-depth exploration, and reconsideration of commitment. However, the three-factor model proposes a differentiation between two exploratory dimensions: in-depth exploration and reconsideration of commitment, an approach different from the one proposed by Marcia (1966) who only considered one form of exploration. In-depth exploration indicates the period when someone deliberately thinks about, and searches supplementary information about, their current commitments, while reconsideration of commitment requires comparing existing commitments with other options. This model follows the dual-cycle identity models and offers the opportunity to

understand that exploration and commitment take place in interrelated cycles (Branje et al., 2021). By emphasizing the processes through which an individual obtains and consolidates their identity and not identity in itself, this approach is considered neo-Eriksonian (Hatano et al, 2022). Crocetti et al. (2008) three-factor model further expands on the neo-Eriksonian identity field by showing that the identity statuses can be empirically obtained from continuous measures of identity processes (Crocetti et al., 2023).

### Correlates of the three-factor model

Identity processes have been investigated in connection to several variables both in cross-sectional and longitudinal studies. Specifically, links between salient characteristics, such as personality trait development and identity formation have been investigated. While adolescents are making significant changes toward adulthood, changes in their personalities as a result to identity processes can be observed, but authenticity, environmental control, and expectation consistency across contexts have been positively associated to adaptive personality changes (Klimstra, 2013). Also across contexts, looking at how identity uncertainty carries over from adolescence to emerging adulthood, it seems that for those struggling with uncertainty and identity confusion in adolescence it remains similar in emerging adulthood (Becht et al., 2021).

Identity development, specifically identity confusion, has also been associated with depression, anxiety and eating disorder symptoms, highlighting how difficulties in achieving one's identity impacts psychosocial functioning (Potterton et al., 2021).

In regard to the processes of identity development, two statuses of identity development, ruminative exploration, and reconsideration of commitment undermine optimal identity development (Beyers & Luyckx, 2016). However, identity commitment can be a buffer against substance use and identity exploration a buffer against general deviancy in pressuring peer groups (Dumas et al., 2012). Additionally, developing one's identity with the help of firm commitments and active exploration is linked to increased positive well-being relationships between identity and well-being in Italian, Polish, and Romanian emerging adults (Karaś et al., 2015) which contradicts the theorized negative influence of in-depth exploration.

Another element of importance when considering identity development in adolescence is related to life transitions and events which are considered to provide the context for identity exploration or commitment, but at the same time, changes that come with salient transitional periods could potentially impact well-being (Branje et al., 2021). For example, for college adaptation, commitment is associated with adjustment and students with a high diffuse-avoidant styles were struggling to adapt effectively with this change (Berzonsky, & Kuk, 2022).

As indicated above, there is a growing, but disparate body of empirical evidence on the relationship between well-being and different identity statuses. Therefore, the aim of this paper is to provide a better understanding of the relationship between well-being and identity processes. Despite their importance both from a theoretical and from a practical standpoint, to the authors's knowledge, no systematic review has addressed the

## 2. METHOD

### Inclusion and exclusion criteria

Studies will be selected based on five criteria. Firstly, studies with samples including adolescents (14-18 years old) and emerging adults (18-29 years old) will be included. Secondly, studies should report the level of well-being, either as a global score, or any of its constituents. Thirdly, studies must include a measure of identity statuses. Thus, research articles reporting on general measures of identity development will be excluded.

### Search Strategies

Complementary approaches were used to identify relevant articles. Targeted keywords (e.g., identity status, identity and Marcia, ego identity, well-being) will be included in the search string: ("identity" OR "identity status" OR "domain-specific identity") AND ("well-being" OR "PERMA Model" OR "self-

relationship between these concepts so far. The review will focus on studies from the perspectives of the dual-cycle models of identity development (e.g., Crocetti et al., 2008; Luyckx et al., 2006). This will allow the possibility of exploring the underlying processes of identity development and their potential interplays with well-being.

esteem" OR "life satisfaction") AND ("adolescents" OR "adolescence" OR "emerging adults" OR "emerging adulthood").

An electronic systematic search was conducted on: Web of Knowledge, Proquest, Scopus, ScienceDirect and Google Scholar. We also conducted a legacy search by using references mentioned in key articles. Databases were searched for unpublished research (i.e., dissertations), in order to minimize the potential impact of publication bias.

In total, 10 articles were included in the systematic review. More information on the search procedure can be found in the

PRISMA flowchart, available in Figure 1. Data about participants' age was extracted. Different methods of identity development and well-being were used across the included studies, therefore meta-analytic calculations were not performed. The main characteristics of the 10 studies are presented in Table 1.

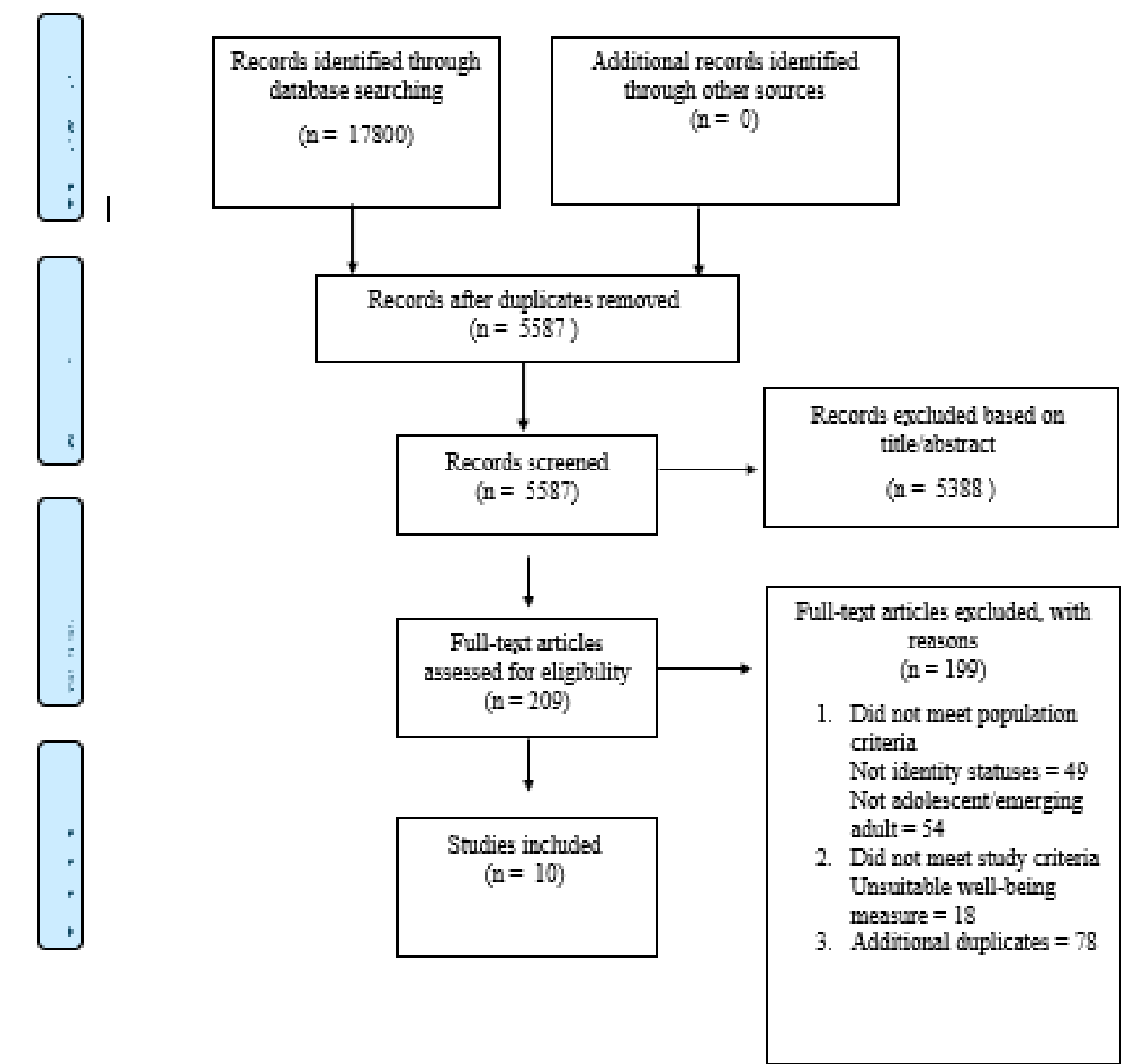
### 3. RESULTS

**Table 1**

*Assessment of study quality and data extraction*

Authors, year of publication	Sample size	Age of participants	Measures used
1. Schwartz et al., 2010	9,034 (73% female)	18-25 years M=19.76 years, SD = .61	Dimensions of Identity Development Scale (Luyckx et al. 2008) Self-Esteem Scale Rosenberg, 1965) Satisfaction with Life Scale (Pavot and Diener, 1993) Eudaimonic Well-Being (Waterman et al., 2010)
2. Berzonsky & Cieciuh, 2014	654 (60.6% female)	18-22 years M = 20.4, SD = .9	Identity Commitment from Identity Style Inventory (Berzonsky et al. 2013); Psychological Well-Being Scale (Ryff and Keyes 1995)
3. Karaś et al., 2015	1086 (60.6% female)	20-24 years old Sample 1: M = 21.04, SD = 1.73 Sample 2: M = 21.76, SD = 1.78 Sample 3: M = 22.2, SD = 1.72	Utrecht-Management of Identity Commitments Scale (Crocetti et al. 2008); The Satisfaction With Life Scale (Diener et al. 1985); Psychological Well-Being Scale (Ryff and Keyes 1995); Social Well-Being Scale (Keyes 1998)
4. Morsunbul et al., 2016	1201 (59.6% females)	12 - 24 years M = 17.53 years, SD = 3.25	Utrecht-Management of Identity Commitments Scale (Crocetti et al. 2008); Satisfaction With Life Scale (Diener et al. 1985)
5. Alonso-Stuyck, Zacarés, & Ferreres, 2018	567 (52.2.% boys)	12-18 years M = 14.48 and SD = 1.69	Occupational, and Ideological Identity Commitment scales ( Ruiz-Alfonso, 2014); Self-Esteem scale (Rosenberg, 1965)
6. Karaś & Cieciuch, 2018	1329 (77.7% women)	19-35 years M = 22.77, SD = 3.64	Questionnaire for Eudaimonic Well-Being (Waterman et al., 2010); Warsaw-Management of Identity Commitments Scale (Karaś & Cieciuch, 2015)
7. Dimitrova et al., 2018	1860 participants	12–19 years	Utrecht-Management of Identity Commitments Scale (Crocetti et al. 2008); Life Satisfaction Scale (Diener et al. 1985);
8. Villani et al., 2019	267 (59.9% females)	18-77 years M = 36.68; SD = 15.13	Utrecht-Management of Identity Commitments Scale (Crocetti et al. 2008); Life Satisfaction Scale (Diener et al. 1985); Positive and Negative Affect Schedule (Watson et al., 1988)
9. Crocetti, Benish-Weisman, & McDonald, 2020	770 (54.7% females)	12-15 years M = 13.79, SD = 0.51	Utrecht-Management of Identity Commitments Scale (Crocetti et al. 2008); Self-Esteem scale (Rosenberg, 1965)
10. De Lise, Luyckx, & Crocetti, 2024	1396 (49.93% females)	Adolescents M = 15.73, SD = 1.23	Utrecht-Management of Identity Commitments Scale (U-MICS, Crocetti et al., 2008) Mental Health Continuum –Short Form (MHC-SF; Keyes, 2005)

**Figure 1**  
*PRISMA flow diagram*



There were different methodologies used in assessing adolescent identity development and well-being. Well-being was measured using a single measure (6 studies out of 10, #2, #4, #5, #6, #7, #9) or as a composite variable from several measures (4 studies, #1, #2, #7, #10). The composite variable was based on satisfaction with life, psychological well-being, and social well-being, or cognitive and emotional dimension of the SWB (#1, #2, #7, #10). In the studies where the reliability coefficients of the measures were reported, met a proposed threshold indicating suitability for use in psychological research for group comparisons (i.e., Cronbach  $\alpha > .05$ ) (Streiner & Norman, 2008).

**Table 2**

Findings from the included studies are summarized in Table 2. In all of the included studies, there are statistically significant links between identity development and well-being. More specifically, high identity commitment was positively linked to well-being and high identity reconsideration was negatively linked to well-being. In contrast, mixed findings were reported on in-depth consideration. In particular, in-depth exploration of identity has been found to be linked both with high levels of well-being and with low levels.

*Summary of links between identity development and well-being from studies identified in the systematic literature review*

Authors, year of publication	Analyzed aspects of well-being	Methods of data analysis	Results (statistical significance)
1. Schwartz et al., 2010	Self-esteem, satisfaction with life, psychological well-being, eudaimonic well-being	MANOVA	Identity achievement is associated with the highest on all of the positive psychosocial functioning indices
2. Berzonsky & Cieciuh, 2014	psychological well-being	structural equation modeling approach	identity commitment plays a role in psychological well-being
3. Karaś et al., 2015	satisfaction with life, psychological well-being, and social well-being	structural equation modeling approach	well-being was consistently associated with high commitment, high in-depth exploration, and low reconsideration of commitment
4. Morsunbul et al., 2016	satisfaction with life	Multivariate Analyses of Variance	individuals in the achievement status (high level of commitment) reported high levels of well-being
5. Alonso-Stuyck, Zacarés, & Ferreres, 2018	self-esteem	Factorial MANOVA	occupational and ideological-domain commitments are related to greater emotional well-being
6. Karaś & Cieciuch, 2018	eudemonic well-being	structural equation modeling approach	The role of commitment, which leads to increases in well-being, appeared to be the strongest variable in all domains In-depth exploration appeared to be a significant predictor of well-being in some, but not all, domains
7. Dimitrova et al., 2018	life satisfaction	structural equation modeling approach	life satisfaction was consistently associated with high commitment, high in-depth exploration, and low reconsideration of commitment in the educational identity domain
8. Villani et al., 2019	cognitive and emotional dimension of the SWB	structural equation modeling approach	having a commitment towards a particular religion worldview helps both religious and uncertain to feel positive emotions; identity commitment only increases the life satisfaction in religious individuals
9. Crocetti, Benish-Weisman, & McDonald, 2020	self-esteem	structural equation modeling approach	commitment was positively related to self-esteem; in-depth exploration was negatively related to self-esteem
10. De Lise, Luyckx, & Crocetti, 2024	three sub-components of well-being, that is subjective, psychological, and social well-being	cross-lagged panel model	commitment was positively associated with all well-being dimensions over time

## 5. DISCUSSIONS

Identity development remains a core developmental task both in adolescence, emerging adulthood and adulthood. However, based on this systematic review there is an overall lack of studies analyzing links between well-being and identity development using neo-Eriksonian theory of psychosocial development as studies have focused on the absence of well-being (Kroger & Marcia, 2011).

Results of the systematic literature review found that identity, specifically identity statuses can be of significant importance for well-being. More specifically, identity commitment was positively associated with well-being, while reconsideration of commitment was negatively related to well-being. It seems as if commitment of identity offers a sense of stability that boosts well-being, whereas reconsideration of commitment brings a sense of instability that decreased well-being. However, the results obtained are not as clear with in-depth exploration.

Identity in-depth exploration refers to the amount to which an individual will actively engage with commitments by reflecting on them, by looking for new information and talking to others about their commitments. Results from included studies showed that in-depth exploration is both associated with positive and negative contributing factors to well-being. These findings further support the distinction proposed by the Positive Psychology Movement (e.g., Seligman, 2002) between positive well-being and mental health problems. Consequently, well-being can't be measured simply by the lack of mental health problems (e.g., anxiety and depressive symptoms), but there's also a dimension of positive well-being and adaptive functioning in psychological and social domains. This brings to attention the two philosophical conceptualizations for well-being: hedonic and eudaimonic. Hedonic well-being refers to the pursuit of pleasure and avoidance of pain, while eudaimonic well-being is seen as human flourishing (Ryan & Deci, 2001). Under this conceptualization, studies included in this systematic review focused mainly on hedonic well-being.

Another point of interest is that while it is well known that identity development shows robust variations across domains

as they are domain-specific, articles have focused mainly on two domains: romantic relationship and education. This highlights the importance of researchers carefully considering their decision of including a specific domain in their study.

Despite identifying links between identity development and well-being from the literature review, some theoretical ambiguities remain.

Firstly, the longitudinal directionality of relations between identity and well-being is not considered. It might be that identity and well-being support each other. More specifically, having a firm identity commitment helps improve well-being, but it's unclear whether having a solid social, psychological, subjective, and/or physical well-being could represent the prerequisites for a safe identity exploration which in turn could potentially lead to making a firm identity commitment. Thus, it is important to better understand this association over time.

Secondly, most studies included only one identity domain in each group. However, attaining identity in one domain doesn't automatically guarantee developing identity in another, as Luyckx and his collaborators (2004) show. Consequently, more studies considering more domains are needed. It could also be beneficial to inform us on different domain loading in different substages of adolescence and emerging adulthood as practitioners could benefit from a better understanding of specific developmental needs that could impact well-being.

Thirdly, not all studies controlled for the effects of other factors (e.g., income level, parental support) that could be significant contributors to well-being as predictors. Therefore, it is with caution that their results should be interpreted. More studies investigating these factors and identity development are needed to draw a firmer conclusion on the contribution of each of the three identity processes to well-being.

### Conclusion

Summing up, the findings of this systematic review indicate that achieving one's identity with the help of firm commitments leads to increased positive well-being, but more research is needed on validating the identity statuses to non-salient correlates..

## 6. REFERENCES

Alonso-Stuyck, P., Zacarés, J. J., & Ferreres, A. (2018). Emotional separation, autonomy in decision-making, and psychosocial adjustment in adolescence: A proposed typology. *Journal of Child and Family Studies*, 27(5), 1373-1383.

Becht, A. I., Nelemans, S. A., Branje, S. J., Vollebergh, W. A., & Meeus, W. H. (2021). Daily identity dynamics in adolescence shaping identity in emerging adulthood: An 11-year longitudinal study on continuity in development. *Journal of youth and adolescence*, 1-18.

Berzonsky, M. D., & Cieciuch, J. (2016). Mediation role of identity commitment in relationships between identity processing style and psychological well-being. *Journal of Happiness Studies*, 17(1), 145-162.

Berzonsky, M. D., & Kuk, L. (2022). Identity styles and college adaptation: the mediational roles of commitment, self-agency and self-regulation. *Identity*, 22(4), 310-325.

Beyers, W., & Luyckx, K. (2016). Ruminative exploration and reconsideration of commitment as risk factors for suboptimal identity development in adolescence and emerging adulthood. *Journal of adolescence*, 47, 169-178.

Branje, S., De Moor, E. L., Spitzer, J., & Becht, A. I. (2021). Dynamics of identity development in adolescence: A decade in

- review. *Journal of Research on Adolescence*, 31(4), 908-927. <https://doi.org/10.1111/jora.12678>
- Crocetti, E. (2017). Identity formation in adolescence: The dynamic of forming and consolidating identity commitments. *Child Development Perspectives*, 11(2), 145-150.
- Crocetti, E., Albarello, F., Meeus, W., & Rubini, M. (2023). Identities: A developmental social-psychological perspective. *European Review of Social Psychology*, 34(1), 161-201. <https://doi.org/10.1080/10463283.2022.2104987>
- Crocetti, E., Benish-Weisman, M., & McDonald, K. L. (2020). Validation of the arabic and hebrew versions of the Utrecht-management of identity commitments scale (U-MICS). *Journal of Adolescence*, 79, 11-15.
- Crocetti, E., Rubini, M., Luyckx, K., & Meeus, W. (2008). Identity formation in early and middle adolescents from various ethnic groups: From three dimensions to five statuses. *Journal of youth and adolescence*, 37(8), 983-996.
- Dimitrova, R., Buzea, C., Taušová, J., Uka, F., Zakaj, S., & Crocetti, E. (2018). Relationships between identity domains and life satisfaction in minority and majority youth in Albania, Bulgaria, Czech Republic, Kosovo, and Romania. *European Journal of Developmental Psychology*, 15(1), 61-82.
- Dumas, T. M., Ellis, W. E., & Wolfe, D. A. (2012). Identity development as a buffer of adolescent risk behaviors in the context of peer group pressure and control. *Journal of adolescence*, 35(4), 917-927.
- De Lise, F., Luyckx, K. & Crocetti, E. Identity Matters for Well-Being: The Longitudinal Associations Between Identity Processes and Well-Being in Adolescents with Different Cultural Backgrounds. *J. Youth Adolescence*, 53, 910–926 (2024). <https://doi.org/10.1007/s10964-023-01901-8>
- Erikson, E. H. (1950). Growth and crises of the "healthy personality." In M. J. E. Senn (Ed.), *Symposium on the healthy personality* (pp. 91–146). Josiah Macy, Jr. Foundation.
- Hatano, K., Hihara, S., Nakama, R., Tsuzuki, M., Mizokami, S., & Sugimura, K. (2022). Trajectories in sense of identity and relationship with life satisfaction during adolescence and young adulthood. *Developmental psychology*, 58(5), 977. <https://doi.org/10.1037/dev0001326>
- Karaš, D., Ciecuch, J., Negru, O., & Crocetti, E. (2015). Relationships between identity and well-being in Italian, Polish, and Romanian emerging adults. *Social Indicators Research*, 121(3), 727-743.
- Kroger, J., & Marcia, J. E. (2011). The identity statuses: Origins, meanings, and interpretations. In *Handbook of identity theory and research* (pp. 31-53). Springer, New York, NY.
- Luyckx, K., Goossens, L., & Soenens, B. (2006). A developmental contextual perspective on identity construction in emerging adulthood: change dynamics in commitment formation and commitment evaluation. *Developmental psychology*, 42(2), 366.
- Luyckx, K., Klimstra, T. A., Duriez, B., Van Petegem, S., & Beyers, W. (2013). Personal identity processes from adolescence through the late 20s: Age trends, functionality, and depressive symptoms. *Social Development*, 22(4), 701-721.
- Luyckx, K., Vanderhaegen, J., Raemen, L., & Claes, L. (2025). Identity formation in adolescence and emerging adulthood: A process-oriented and applied perspective. *European Journal of Developmental Psychology*, 22(2), 168-187.
- Marcia, J. E. (1966). Development and validation of ego-identity status. *Journal of personality and social psychology*, 3(5), 551.
- Morsunbul, U., Crocetti, E., Cok, F., & Meeus, W. (2016). Identity statuses and psychosocial functioning in Turkish youth: A person-centered approach. *Journal of Adolescence*, 47, 145-155.
- Norman, G. R., & Streiner, D. L. (2008). *Biostatistics: the bare essentials*. PMPH USA (BC Decker).
- Potterton, R., Austin, A., Robinson, L., Webb, H., Allen, K. L., & Schmidt, U. (2022). Identity development and social-emotional disorders during adolescence and emerging adulthood: a systematic review and meta-analysis. *Journal of youth and adolescence*, 1-14. <https://doi.org/10.1007/s10964-021-01536-7>
- Ryan, R. M., & Deci, E. L. (2001). On happiness and human potentials: A review of research on hedonic and eudaimonic well-being. *Annual review of psychology*, 52, 141.
- Schwartz, S. J., Beyers, W., Luyckx, K., Soenens, B., Zamboanga, B. L., Forthun, L. F., ... & Waterman, A. S. (2011). Examining the light and dark sides of emerging adults' identity: A study of identity status differences in positive and negative psychosocial functioning. *Journal of youth and adolescence*, 40, 839-859. <https://doi.org/10.1007/s10964-010-9606-6>
- Seligman, M. E. (2002). Positive psychology, positive prevention, and positive therapy. *Handbook of positive psychology*, 2(2002), 3-12.
- Villani, D., Sorgente, A., Iannello, P., & Antonietti, A. (2019). The role of spirituality and religiosity in subjective well-being of individuals with different religious status. *Frontiers in psychology*, 10, 1525.



# STUDIA DOCTORALIA

## PSYCHOLOGY AND EDUCATIONAL SCIENCE



## Attachment Style and Anxiety Symptoms: The Moderating Role of Self-Compassion and Nonattachment

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### ABSTRACT

The present study explored the relationship between insecure attachment styles and anxiety symptoms, while also investigating the potential moderating role of self-compassion and nonattachment as protective factors. A total of 180 Romanian adults participated in the study by completing an online questionnaire that included measures of attachment (Romanian Version of the Experiences in Close Relationships, ECR Scale; Sava & Negrei, 2006), self-compassion (Self-Compassion Scale, SC; Neff, 2003), nonattachment (Nonattachment Scale – Short Form, NAS-SF; Chio et al., 2018), and anxiety symptoms (Generalized Anxiety Disorder-7, GAD-7; Spitzer et al., 2006). Results showed that insecure attachments were positively associated with anxiety, while both self-compassion and nonattachment were negatively correlated with it. However, moderation analyses revealed that neither self-compassion nor nonattachment significantly moderated the relationship between attachment insecurity and anxiety symptoms. These findings indicate the importance of relational experiences even from childhood and suggest the potential of self-compassion and nonattachment as protective factors.

**Keywords:** attachment, anxiety, self-compassion, nonattachment

## 1. INTRODUCTION

Anxiety disorders represent the most widespread mental health conditions globally, impacting around 301 million individuals in 2019, with a higher incidence among women. Despite the availability of effective treatments, only one in four individuals with anxiety disorders accesses appropriate care (World Health Organization, 2023). This could be explained by several reasons, such as lack of awareness regarding mental health, societal stigma, or lack of financial resources needed in order to afford treatment, factors that also cause an underestimation of how widespread this disorder truly is due to underreporting (Bandelow & Michaelis, 2015).

Anxiety is the natural response to a threatening situation, often manifesting as a feeling of worry, fear, or nervousness, that may cause fast heart beating, sweat or feeling unwell (Craske et al., 2011). Even though it is a common reaction to danger, it can start to negatively affect daily life if it becomes excessive. Anxiety has been identified as a central factor in both anxiety disorders and depressive disorders, suggesting how it can contribute negatively to an individual's quality of life (Chorpita & Barlow, 1998). Also, anxiety disorders are some of the most prevalent mental health conditions (Javaid et al., 2023). The continuous spreading of anxiety symptoms affecting more and more individuals is concerning, especially if we take into consideration its effects on psychological, social or professional well-being. It affects relationships with others and also leads to isolation. Additionally, it can cause poor performance in the workplace and lost productivity (Bereza et al., 2012).

Anxiety disorders often begin in early stages of life, such as childhood or young adulthood, with rates often reaching their highest level during middle age (Bandelow & Michaelis, 2015). Experiencing stress and trauma from a very young age, as well as experiencing difficulties during childhood or later on, are common predictors for anxiety issues. Studies show that anxiety is not only a temporary reaction to stressful factors, but it can also become a psychological vulnerability developed even from childhood due to a constant feeling of lack of control (Chorpita & Barlow, 1998). When a child is frequently exposed to stressful situations without having the possibility of influencing what is happening, he can learn and understand the world as a chaotic and unsafe place. On the long run, this perspective can activate an excessive response to stress and lead to reduced resilience and autonomy, with a vulnerability to experience anxiety.

This aligns with John Bowlby's theory of attachment, which suggests that the relationship with the primary caregiver is critical in the development of the child. When the infant receives constant care and availability from the parent, the world can be understood as a safe and secure place to discover. This leads to the development of a secure attachment which will be the base for healthy future relationships. However, prolonged separation or neglect can lead to insecure attachment styles, with an increased sense of vulnerability and proneness to

anxiety (Bowlby, 1982). When children develop an insecure attachment, it becomes more difficult for them to fix social problems, get support from those around them, or preserve friendships. It is also harder to self-regulate and adapt to emotional challenges in a healthy way, which can make them more prone to anxiety symptoms in the future (Colonnese et al., 2011). In addition to that, Bowlby's concept of internal working models suggests that early attachment experiences shape an individual's strategies for emotional regulation. This refers to how others are expected to behave and how the interactions with the world will take place (Bowlby, 1982). When experiencing unreliable connections with the attachment figure, children may develop maladaptive coping mechanisms, such as avoidance, which contributes to increased anxiety. Therefore, we predict and propose the following hypothesis:

H1: Insecure attachment styles are positively associated with higher levels of anxiety.

Mary Ainsworth identified three primary attachment styles in infants: secure attachment, where infants feel safe exploring the environment; anxious-ambivalent attachment, where infants show clinginess and become distressed when separated; and avoidant attachment, where infants show indifference whether the parent is present or not (Ainsworth et al., 2015). Modern research has focused on distinguishing adult attachment by following two dimensions: model of the self, referring to one's expectation of a positive response from others, which reflects the individual's level of anxiety; and model of the others, referring to one's expectation for availability from others, which reflects the level of avoidance related to relationships (Griffin & Bartholomew, 1994). While internal working models developed in childhood tend to persist, adult attachment styles are not static. They can vary depending on the individual's experiences and situational contexts. For instance, while a person might generally possess a secure style, adverse life events or relationship disruptions may trigger insecure patterns, which shows the dynamic nature of attachment throughout adulthood (Fraley et al., 2021). Understanding this variability is important for promoting emotional adaptation across lifespan and for recognizing adult relational dynamics, as attachment styles have the capacity for change and development throughout a person's life (Thompson et al., 2022).

In other words, attachment plays an important part in the development of anxiety symptoms and emotion regulation strategies, while protective factors have an important role in maintaining well-being. By exploring the relationship between attachment and anxiety, this research can provide better insights into potential psychological mechanisms, such as self-compassion and nonattachment, that can help reduce anxiety symptoms in individuals with insecure attachment patterns.

Nonattachment is an emergent protective factor that can be useful in dealing with anxiety symptoms in the context of insecure attachment styles. It is a psychological concept that promotes a thoughtful, reflective, and balanced engagement with internal experiences, allowing individuals to recognize

thoughts and emotions without rigid fixation or unwanted emotional suppression (Whitehead et al., 2018). By strengthening openness, acceptance, and curiosity toward internal and external experiences, nonattachment allows individuals to navigate life's uncertainties more flexibly and constructively (Whitehead et al., 2018). Unlike emotional avoidance, nonattachment encourages a balanced connection with emotions rather than clinging to or rejecting them.

Historically, the concept of nonattachment is rooted in Buddhist philosophy. As opposed to Western psychology, where attachment is understood as the foundation for efficient emotion regulation and well-being, in Buddhist literature, the concept of attachment is described as clinging and grasping to objects, people or events, which eventually leads to suffering (Sahdra et al., 2010). Consequently, nonattachment refers to experiencing emotions without being entirely dependent and fixated, but rather adaptable, open and accepting of change (Sahdra et al., 2010). It was found that nonattachment is inversely related to avoidant attachment and positively associated with well-being (Sahdra et al., 2010). Furthermore, nonattachment contributes to healthier relationships with oneself and others by promoting emotional resilience and reducing emotional reactivity (Sahdra et al., 2015).

Based on these findings, the development of nonattachment could act as a buffer in the case of anxiety symptoms experienced by individuals with insecure attachment styles. The anxiety caused by fears of rejection or abandonment could be mitigated by focusing on accepting change as a natural process and responding to stressful events in a compassionate way. Another study found that nonattachment plays an important role in promoting well-being and reducing psychological distress, acting as a partial mediator in the relationship between mindfulness and these mental health outcomes (Ho et al., 2022). Moreover, individuals with higher nonattachment levels report greater job satisfaction and lower emotional distress, highlighting nonattachment's broader role in emotional and occupational well-being (Tsoi et al., 2022). Based on these findings, the following hypotheses are proposed:

H2: *Nonattachment is negatively associated with anxiety symptoms, suggesting that individuals with higher nonattachment levels report lower anxiety.*

H3: *Nonattachment moderates the relationship between insecure attachment styles and anxiety symptoms, acting as a protective factor that reduces the negative impact of insecure attachment on anxiety.*

Another general protective factor is self-compassion, which refers to treating oneself with kindness, being open and paying attention to one's own suffering (Neff, 2003). This suggests approaching stressful situations in a kind and loving manner, without being critical or judgmental of oneself (Neff & Knox, 2017). Self-compassion can be used as another efficient coping mechanism especially by individuals with insecure attachments, as their vulnerability towards rumination, self-doubt and isolation would benefit from a more gentle and positive approach. It can

become a protective factor and diminish the impression of threat while offering a sense of safety (Gilbert & Procter, 2006). Interventions aimed to improve self-compassion have been found to reduce symptoms of anxiety and depression in young people (Egan et al., 2022). Also, it was found that self-compassion has a significant negative association with anxiety and depression, meaning higher self-compassion is linked to lower symptoms of these conditions (Pérez-Aranda et al., 2021). Therefore, we propose the following hypotheses:

H4: *Self-compassion is negatively associated with anxiety symptoms, meaning that individuals with higher self-compassion levels experience fewer anxiety symptoms.*

H5: *Self-compassion moderates the relationship between insecure attachment styles and anxiety symptoms, such that individuals with higher levels of self-compassion experience lower anxiety symptoms even when attachment insecurity is high.*

While much of the existing literature has focused on global levels of self-compassion, the potential moderating effects of its individual dimensions have been less investigated. According to Neff, self-compassion has the following dimensions: self-kindness as opposed to self-judgment, common humanity as opposed to isolation, and mindfulness as opposed to overidentification (Neff & Knox, 2017). Each of these facets has an important role in how an individual perceives and deals with difficulties. Self-kindness refers to being gentle with oneself when something doesn't go well instead of becoming critical and judgmental; common humanity expresses the idea that negative experiences happen to everyone and encourages the thought that one is not alone or isolated; mindfulness entails being able to maintain an emotional balance when confronting with negative events instead of becoming overwhelmed by emotions (Allen & Leary, 2010). Research found that the six subscales of self-compassion have distinct associations with anxiety-related outcomes, depending on the person's overall level of self-compassion. Among people with low self-compassion, self-kindness stood out to be the most protective, being linked to reduced symptoms of anxiety, depression, and stress. In contrast, overidentification was strongly associated with emotion regulation difficulties, including increased rumination and self-blame. Even in individuals with high overall self-compassion, overidentification remained a significant predictor of anxiety and stress. These findings support the idea that self-compassion subscales have distinct roles across individuals, even though they work together (Phillips, 2021). The present study tries to explore the extent to which the six dimensions of self-compassion moderate the relationship between insecure attachment styles and anxiety symptoms. We predict and therefore propose the following hypothesis:

H6: *Each of the six dimensions of self-compassion moderates the relationship between insecure attachment and anxiety symptoms, such that individuals scoring higher on these dimensions experience fewer anxiety symptoms even when attachment insecurity is high.*

Additionally, diagnostic status is a relevant factor in understanding psychological vulnerability. Research has shown that individuals diagnosed with anxiety, depression, or Obsessive-Compulsive Disorder (OCD) tend to report higher levels of attachment insecurity, particularly anxious and avoidant styles (Rajkumar, 2022; Van Leeuwen et al., 2020). Moreover, adults with Attention Deficit Hyperactivity Disorder

(ADHD) report significantly lower levels of self-compassion compared to individuals without ADHD (Beaton et al., 2020). Therefore, we propose the following hypothesis:

H7: *Individuals diagnosed with a mental health disorder will report more severe anxiety symptoms and attachment insecurity and lower self-compassion and nonattachment compared to individuals without a diagnosis.*

2. METHOD

Participants

The initial sample consisted of 183 participants who were recruited using social media platforms such as Facebook, Instagram, and WhatsApp. Inclusion criteria required participants to be Romanian-speaking adults aged 18 years or older. After applying exclusion criteria, specifically incomplete demographic information or being under 18 years old, the final sample consisted of 180 participants. The required sample size was determined through a power analysis conducted with G\*Power, which indicated a minimum of 80 participants to achieve a test power of 0.80. The final sample exceeded the minimum required number to ensure greater precision.

The participants ranged in age from 18 to 64 years ( $M = 22.85$ ,  $SD = 6.28$ ). Most participants were women (85%) and resided in urban areas (81%). Regarding educational level, most held a high school diploma, followed by bachelor's and

master's degrees. In terms of mental health, 35 (19.44%) participants reported having been diagnosed with a mental health condition and 143 (79.44%) stated they had never received a diagnosis. The most commonly reported conditions were anxiety and depression, while less frequently reported diagnoses included ADHD, OCD, Post-Traumatic Stress Disorder, Borderline Personality Disorder, and bulimia. Additionally, 2 (1.09%) participants preferred not to disclose this information. Regarding relationship status, approximately 55% of participants reported being in a relationship. Participants provided self-reported information about gender, age, relationship status, educational level, area of origin, and mental health diagnosis history, along with responses to four Likert scale measures. These data were collected to better characterize the sample. A detailed overview of demographic characteristics is presented below in Table 1.

Table 1  
Demographic Characteristics of the Sample (N = 180)

Variable	Category	N	Percent
Gender	Female	153	85.0
	Male	27	15.0
Relationship status	In a relationship	99	55.0
	Not in a relationship	25	13.9
	No, but was in the past	29	16.1
	No, but I wish to	11	6.1
	No, never been in one	14	7.8
	No, and I do not wish to	2	1.1
Education level	High school diploma	132	73.3
	Bachelor's degree	31	17.2
	Master's degree	13	7.2
	Doctorate degree	4	2.2
Area of origin	Urban	145	80.6
	Rural	35	19.4

Procedure

Data were collected between December 2024 and February 2025 via an anonymous online questionnaire administered through Google Forms. Participants were recruited through distributed links on social media platforms. Individuals were informed that participation was voluntary, that

they could withdraw at any time without consequences, and that their responses would remain confidential and anonymous. Participants provided informed consent by clicking an agreement checkbox before proceeding to the survey. The online questionnaire took approximately 15–20 minutes to complete and included questions on demographic data and four

evaluation scales measuring attachment styles, anxiety symptoms, nonattachment, and self-compassion. All questions were mandatory to minimize missing data. Participants were not compensated for their participation.

### Instruments

*Attachment insecurity.* Attachment was measured using the Romanian Version of the Experiences in Close Relationships (ECR) Scale (Sava & Negrei, 2006), which was developed by Brennan, Clark and Shaver (1998) to measure adult attachment styles along two key dimensions: anxiety and avoidance. This Romanian adaptation by Sava and Negrei (2006) maintains the item loadings on the two original dimensions. The scale consists of 30 items (15 for each dimension), and responses are rated on a 7-point Likert scale, ranging from 1 (Strongly disagree) to 7 (Strongly agree). For this sample, the internal consistency of the Romanian ECR was assessed using Cronbach's Alpha, resulting in a total score of .90. Additionally, internal consistency for the subscales was calculated: .93 for Anxiety and .89 for

Avoidance, consistent with the Romanian validation study, where Cronbach's alpha coefficients were .85 for the Anxiety subscale and .81 for the Avoidance subscale (Sava & Negrei, 2006). The original version of the ECR also demonstrated good internal reliability, with reported alphas of .91 for Anxiety and .94 for Avoidance (Brennan et al., 1998).

*Self-compassion.* Self-compassion was assessed using the Self-Compassion Scale (SCS) (Neff, 2003). This is a self-report questionnaire which consists of 26 items measuring six components: self-kindness (e.g., "I try to be loving towards myself when I'm feeling emotional pain"), self-judgment (e.g., "I'm disapproving and judgmental about my own flaws and inadequacies"), common humanity (e.g., "When things are going badly for me, I see the difficulties as part of life that everyone goes through"), isolation (e.g., "When I think about my inadequacies, it tends to make me feel more separate and cut off from the rest of the world"), mindfulness (e.g., "When something upsets me I try to keep my emotions in balance"), and over-identification (e.g., "When I'm feeling down I tend to obsess and fixate on everything that's wrong"). Participants rate items on a 5-point Likert scale from 1 (almost never) to 5 (almost always). In this sample, the total internal consistency of the SCS was assessed using Cronbach's Alpha, resulting in  $\alpha = .92$ . Cronbach's alphas for the subscales were  $\alpha = .86$  (Self-Kindness),  $\alpha = .83$  (Self-Judgment),  $\alpha = .76$  (Common Humanity),  $\alpha = .78$  (Isolation),  $\alpha = .82$  (Mindfulness), and  $\alpha = .81$  (Over-Identification), consistent with the original validation study, which reported  $\alpha = .92$  for the total score and subscale alphas ranging from  $\alpha = .75$  to  $\alpha = .81$  (Neff, 2003).

*Anxiety symptoms.* Anxiety symptoms were assessed using the Generalized Anxiety Disorder-7 (GAD-7) (Spitzer et al., 2006) which is a brief self-report tool designed to screen for generalized anxiety disorder (GAD) and measure symptom severity, also frequently used for subclinical levels of anxiety. The scale includes 7 items assessing core GAD symptoms over the past two weeks, scored on a 4-point Likert scale, from 0 (Not at all) to 3 (Nearly every day). Total scores range from 0 to 21, with higher scores indicating greater anxiety severity. An example item is: "Feeling nervous, anxious, or on edge". In this study, the GAD-7's reliability was assessed, with Cronbach's Alpha calculated at .91, similar with the original study where internal consistency was at .92 (Spitzer et al., 2006). The GAD-7 has also been adapted and validated for use in Romania, demonstrating strong psychometric properties (Cotiga et al., 2023). In the Romanian validation, Cronbach's Alpha was .92 in the clinical sample and .75 in the general population sample, supporting its reliability across diverse settings.

*Nonattachment.* Nonattachment was measured using the Nonattachment Scale – Short Form (NAS-SF) (Chio et al., 2018). Items are assessed on a 6-point Likert scale, from 1 (Strongly disagree) to 6 (Strongly agree). An example item is, "I can accept the flow of events in my life without hanging onto them or pushing them away". The scale was translated from English to Romanian using the back-translation method in order to make sure conceptual and linguistic equivalence was maintained. In this sample, the NAS-SF demonstrated strong internal consistency, with a Cronbach's Alpha of .85, consistent with the original study where internal consistency was .91 (Chio et al., 2018).

### Design

This study employed a cross-sectional, non-experimental design using self-report data collected at a single time point. The dependent variable was anxiety symptoms, measured by the GAD-7 scale. The independent variables were insecure attachment, nonattachment, and self-compassion, with both global and subscale levels.

### Statistical Approach

We used R version 4.2.1 (R Core Team, 2022) and the following R-packages for all our analyses: dplyr version 1.1.4 (Wickham et al., 2023), readxl version 1.4.5 (Wickham & Bryan, 2025), writextl version 1.5.2 (Ooms, 2025), psych version 2.5.3 (Revelle, 2025), papaja version 0.1.3 (Aust & Barth, 2024), ggplot2 version 3.5.1 (Wickham et al., 2024), interactions version 1.2.0 (Long, 2024a), jtools version 2.3.0 (Long, 2024b), flextable version 0.9.7 (Gohel & Skintzos, 2024), officer version 0.6.8 (Gohel et al., 2025), broom version 1.0.7 (Robinson et al., 2025).

### 3. RESULTS

#### Descriptive statistics

**Table 2**

*Descriptive Statistics for Psychological Scales and Subscales (N=180)*

Scale	M	SD	Skewness	Kurtosis
ECR	3.89	.81	.56	.86
GAD	1.47	.83	.19	-.89
SCS	3.19	.43	.09	2.41
NAS	3.93	.97	.00	-.33
SK	3.06	.93	.00	-.39
SJ	3.24	.93	-.37	-.34
CH	3.15	.91	-.03	-.50
ISO	3.05	1.02	-.23	-.56
MIN	3.26	.92	.03	-.46
OI	3.40	.99	-.39	-.42
ANX	3.46	1.28	.28	-.29
AVD	4.45	.65	-.28	1.84

Note. ECR = Experiences in Close Relationships; GAD = Generalized Anxiety Disorder-7; SCS = Self-Compassion Scale; NAS = Nonattachment Scale-Short Form; SK = Self-Kindness; SJ = Self-Judgment; CH = Common Humanity; ISO = Isolation; MIN = Mindfulness; OI = Over-Identification; ANX = Attachment Anxiety; AVD = Attachment Avoidance.

**Table 3**

*Pearson Correlations between Psychological Scales and Subscales*

	1	2	3	4	5	6	7	8	9	10	11	12
1. ECR	—											
2. GAD	.53*	—										
3. SCS	.4*	.34*	—									
4. NAS	-.28*	-.36*	.16*	—								
5. SK	-.21*	-.31*	.34*	.68*	—							
6. SJ	.5*	.52*	.47*	-.44*	-.55*	—						
7. CH	-.12	-.16*	.51*	.51*	.64*	-.26*	—					
8. ISO	.53*	.51*	.54*	-.44*	-.38*	.66*	-.22*	—				
9. MIN	-.22*	-.3*	.4*	.69*	.73*	-.38*	.65*	-.37*	—			
10. OI	.53*	.6*	.47*	-.49*	-.45*	.69*	-.31*	.7*	-.43*	—		
11. ANX	.94*	.51*	.32*	-.38*	-.31*	.53*	-.22*	.57*	-.32*	.55*	—	
12. AVD	.47*	.22*	.32*	.16*	.2*	.09	.22*	.07	.17*	.12	.14	—

Note. ECR = Experiences in Close Relationships; GAD = Generalized Anxiety Disorder-7; SCS = Self-Compassion Scale; NAS = Nonattachment Scale-Short Form; SK = Self-Kindness; SJ = Self-Judgment; CH = Common Humanity; ISO = Isolation; MIN = Mindfulness; OI = Over-Identification; ANX = Attachment Anxiety; AVD = Attachment Avoidance; \* indicates  $p < .05$ .

As shown in Table 2, participants reported moderate levels of attachment insecurity (ECR), and anxiety symptoms (GAD-7), while levels of nonattachment (NAS-SF) and self-compassion were higher. Skewness and kurtosis values were within acceptable ranges for all values.

As proposed by Hypothesis 1, attachment insecurity was positively associated with anxiety symptoms. Hypothesis 2 was also supported, as nonattachment was negatively correlated with anxiety. Additionally, consistent with Hypothesis 4, self-compassion showed a significant negative correlation with anxiety symptoms.

**Table 4**

*Moderation Analysis Examining the Interaction Between Attachment Insecurity and Self-Compassion (Total and Subscales) in Predicting Anxiety Symptoms*

Variable	Interaction	b	SE	t	p
SCS	Attachment × SCS	-.10	.10	-1.03	.305
SK	Attachment × SK	.03	.05	.63	.528
SJ	Attachment × SJ	-.03	.06	-.50	.620
CH	Attachment × CH	.01	.06	.19	.847
ISO	Attachment × ISO	-.04	.06	-.72	.470
MIN	Attachment × MIN	.05	.06	.92	.359
OI	Attachment × OI	.01	.06	.23	.817

Note. SCS = Self-Compassion Scale; SK = Self-Kindness; SJ = Self-Judgment; CH = Common Humanity; ISO = Isolation; MIN = Mindfulness; OI = Over-Identification.

A moderation analysis was conducted to examine whether self-compassion moderates the relationship between attachment insecurity and anxiety symptoms (Table 4). The overall model with the total self-compassion score was significant,  $F(3, 176) = 25.44$ ,  $p < .001$ ,  $R^2 = .30$ . Attachment insecurity was a significant positive predictor of anxiety symptoms, while self-compassion

was a significant negative predictor. However, the interaction between attachment insecurity and self-compassion was not statistically significant. Similarly, none of the interactions between attachment insecurity and the individual self-compassion subscales reached significance. Thus, Hypotheses 5 and 6 were not supported.

**Table 5**

*Moderation Analysis Examining the Interaction between Attachment Insecurity and Nonattachment in Predicting Anxiety Symptoms*

Predictor	b	SE	t	p
Intercept	1.48	.05	28.17	< .001
Attachment Insecurity (centered)	.47	.07	7.17	< .001
Nonattachment (centered)	-.21	.06	-3.74	< .001
Interaction: Attachment × Nonattachment	.05	.05	.89	.375

Table 5 presents the results of the moderation analysis examining whether nonattachment moderates the relationship between attachment insecurity and anxiety symptoms. Hypothesis 3 stated that nonattachment moderates the relationship between insecure attachment and anxiety symptoms. This hypothesis was not supported. Although the

overall model was significant,  $F(3, 176) = 29.11$ ,  $p < .001$ ,  $R^2 = .33$ , and attachment insecurity was a significant positive predictor of anxiety symptoms, and nonattachment was a significant negative predictor, the interaction between attachment insecurity and nonattachment was not statistically significant.

**Table 6**

*Differences between Diagnosed (N= 35) and Non-Diagnosed Individuals (N=143) on Anxiety, Self-compassion, Nonattachment, and Attachment Scores*

Variable	t	df	p	Mean diagnosed	Mean nondiagnosed
GAD	4.45	52	< .001	2.00	1.34
SCS Total	1.12	67	.266	3.25	3.17
NAS	-1.68	50	.098	3.69	4.00
ECR Total	2.42	52	.019	4.19	3.82

Hypothesis 7 stated that individuals diagnosed with a mental health disorder would report more severe anxiety symptoms and attachment insecurity and lower self-compassion and nonattachment compared to individuals without a diagnosis. This hypothesis was partially supported. Individuals with a diagnosis reported significantly higher anxiety symptoms

compared to those without a diagnosis. Similarly, diagnosed individuals reported significantly higher attachment insecurity than non-diagnosed individuals. However, no significant differences were found in self-compassion and nonattachment between the two groups.

## 4. DISCUSSIONS

### Summary of Findings

The main objective of this research was to examine the relationship between attachment and anxiety symptoms, as well as the moderating role of protective factors, such as self-compassion and nonattachment. By doing this, we tried to offer a better understanding on the way that these psychological constructs can act as buffers against the negative impact of attachment insecurity on mental health, specifically with the focus on anxiety symptoms.

The results we obtained partially supported the proposed hypotheses. H1 was confirmed, as attachment insecurity was positively associated with anxiety symptoms. This result is also consistent with previous research. A meta-analysis by Colonnese et al. (2011) found a moderate association between insecure attachment and anxiety in children and adolescents (Colonnese et al., 2011). Similarly, Nielsen et al. (2017) demonstrated that attachment anxiety is positively associated with anxiety symptoms, and that this relationship is fully mediated by emotion dysregulation (Nielsen et al., 2017). Additionally, a longitudinal study found that insecure attachment styles increase the likelihood of developing anxiety symptoms (Lee & Hankin, 2009).

H2 was also confirmed, as nonattachment proved to be negatively correlated with anxiety symptoms, supporting the idea that being adaptable and accepting change is an important part in maintaining well-being. These results are consistent with previous research which found that nonattachment was significantly and negatively associated with anxiety, predicting reduced psychological distress (Bhambhani & Cabral, 2016; Ciarrochi et al., 2020).

H3 and H5 were not confirmed, as the moderation analyses indicated no significant effect of the interaction between attachment and nonattachment, respectively attachment and self-compassion, in predicting anxiety symptoms. However, previous research has found that nonattachment is inversely related to avoidant attachment and positively associated with well-being (Sahdra et al., 2010), suggesting that it may still play a meaningful role in reducing distress, even if it does not moderate the effect of attachment insecurity in this particular sample. Similarly, prior research has shown that self-compassion acts as a significant mediator between attachment insecurity and psychological distress. For instance, it was found that self-compassion significantly mediated the relationship between both attachment anxiety and avoidance and symptoms of complex PTSD among college students with adverse childhood experiences (Peng & Ishak, 2025). Consequently, these results should be interpreted with caution, as all measures were based on self-report data involving a high degree of self-disclosure.

Another confirmed hypothesis is H4, as self-compassion was negatively associated with anxiety, which is also in line with

previous research (Pérez-Aranda et al., 2021; Van Dam et al., 2011).

On the other hand, H6 was not confirmed, as none of the 6 subscales of self-compassion moderated the relationship between attachment and anxiety, even though some correlations did appear, such as the positive association of overidentification with anxiety and the negative association of self-kindness with anxiety. An explanation for these results could be the fact that the participants in this study were mostly young adults that may have not yet fully developed their internal emotion regulation mechanisms associated with self-compassion.

In the end, H7 was partially confirmed, as participants who were diagnosed with a mental health disorder reported higher anxiety and attachment insecurity levels (Rajkumar, 2022). However, there were no differences regarding self-compassion and nonattachment levels between the diagnosed and non-diagnosed groups.

### Limitations

There are certain limitations that need to be taken into consideration when interpreting the results of this study. Firstly, the cross-sectional design does not allow the establishment of causation between the studied variables, even though there were significant correlations. Secondly, the data collection process included only self-reported questionnaires that were completed online. This can lead to response bias or to difficulties in evaluating one's own emotions and behaviors, as it requires a lot of introspection. In addition, the assessment of attachment was done on a general level, without referring clearly to a certain significant person or relationship.

Another limitation of this research could be the characteristics of the sample, as most participants were women (85%) and young adults with the mean age of 22.85. This could limit the generalization of the results to a bigger part of the population or to another age group. Furthermore, Erikson's Stages of Psychosocial Development suggest that early adulthood is a period marked by the conflict between intimacy and isolation, where individuals try to form meaningful, close relationships, and failure to do so may lead to isolation and emotional distress (McLeod, 2008). Research also shows that an unclear or insufficiently developed self-identity can negatively affect the capacity of young adults to form meaningful intimate relationships (Raskin, 1986). This emotional and developmental instability, specific to early adulthood, may help explain why the analyzed protective factors (self-compassion and nonattachment) did not significantly moderate the relationship between insecure attachment and anxiety symptoms.

### Practical Implications

The results of this research offer some important practical implications for mental health professionals that try to improve psychological well-being. Firstly, the confirmation of the positive association between insecure attachment styles and anxiety

symptoms shows the necessity of dealing with early relational patterns in psychotherapy. In this context, Emotion-Focused Therapy may help individuals develop healthier interpersonal schemas and reduce anxiety, as it helps clients identify and transform these maladaptive emotions into healthier ones that better meet their needs (Watson & Sharbanee, 2022). Additionally, both nonattachment and self-compassion were negatively correlated with anxiety symptoms, which indicated their potential as protective psychological factors. Although neither of them turned out to be significant moderators, the direct associations with lower anxiety levels suggest their usefulness in reducing distress.

On a broader level, the results of this study can contribute to the development of targeted interventions aimed to increase well-being and resilience for people struggling with anxiety symptoms. Since anxiety disorders are often developed early in life, it is important to acknowledge the role of early attachment experiences and raise awareness on their long-term impact on mental health outcomes.

### Future Directions

This research provides a valuable foundation for future research. Firstly, since the moderation analyses did not show significant effects for self-compassion and nonattachment, it would be useful for future studies to use a longitudinal design to

observe these variables over time and to draw causal conclusions. Secondly, as all data was collected through self-report measures, future studies should also use other objective methods such as clinical interviews. Moreover, assessing attachment in relation to a specific person or relationship could also be beneficial. Additionally, future studies should consider including more men and participants from different age groups, as the current sample included mostly young adult women. Finally, future research may consider investigating other relevant variables, such as resilience or psychological flexibility, which may act as protective factors in the relationship between attachment and anxiety.

### Conclusion

The aim of this study was to examine the moderating role of self-compassion and nonattachment between insecure attachment styles and anxiety symptoms. While results showed that insecure attachments were positively associated with anxiety, both self-compassion and nonattachment were negatively correlated with it, the moderation analyses indicated that neither self-compassion nor nonattachment significantly moderated the relationship between attachment insecurity and anxiety symptoms. Findings therefore suggest the need to foster emotional well-being and reducing anxiety among individuals with insecure attachment patterns..

Bhambhani, Y., & Cabral, G. (2016). Evaluating Nonattachment and Decentering as Possible Mediators of the Link Between Mindfulness and Psychological Distress in a Nonclinical College Sample. *Journal of Evidence-Based Complementary & Alternative Medicine*, 21(4), 295–305. <https://doi.org/10.1177/2156587215607109>

Bowlby, J. (1982). *Attachment and loss. 1: Attachment* (2. ed). Basic Books.

Brennan, K. A., Clark, C. L., & Shaver, P. R. (1998). Self-report measurement of adult attachment: An integrative overview. In *Attachment theory and close relationships* (pp. 46–76). The Guilford Press.

Chio, F. H. N., Lai, M. H. C., & Mak, W. W. S. (2018). Development of the Nonattachment Scale-Short Form (NAS-SF) Using Item Response Theory. *Mindfulness*, 9(4), 1299–1308. <https://doi.org/10.1007/s12671-017-0874-z>

Chorpita, B. F., & Barlow, D. H. (1998). The development of anxiety: The role of control in the early environment. *Psychological Bulletin*, 124(1), 3–21. <https://doi.org/10.1037/0033-2909.124.1.3>

Ciarrochi, J., Sahdra, B. K., Yap, K., & Dicke, T. (2020). The Role of Nonattachment in the Development of Adolescent Mental Health: A Three-Year Longitudinal Study. *Mindfulness*, 11(9), 2131–2139. <https://doi.org/10.1007/s12671-020-01421-7>

Colonnesi, C., Draijer, E. M., Jan J. M. Stams, G., Van Der Bruggen, C. O., Bögels, S. M., & Noom, M. J. (2011). The Relation Between Insecure Attachment and Child Anxiety: A Meta-Analytic Review. *Journal of Clinical Child & Adolescent*

## 5. REFERENCES

Ainsworth, M. D. S., Blehar, M. C., Waters, E., & Wall, S. N. (2015). *Patterns of attachment: A psychological study of the strange situation* (Classic edition). Routledge, Taylor & Francis Group. <https://doi.org/10.4324/9780203758045>

Allen, A. B., & Leary, M. R. (2010). Self-Compassion, Stress, and Coping: Self-Compassion, Stress, and Coping. *Social and Personality Psychology Compass*, 4(2), 107–118. <https://doi.org/10.1111/j.1751-9004.2009.00246.x>

Aust, F., & Barth, M. (2024). *papaja: Prepare American Psychological Association Journal Articles with R Markdown* (p. 0.1.3) [Dataset]. <https://doi.org/10.32614/CRAN.package.papaja>

Bandelow, B., & Michaelis, S. (2015). Epidemiology of anxiety disorders in the 21st century. *Dialogues in Clinical Neuroscience*, 17(3), 327–335. <https://doi.org/10.31887/DCNS.2015.17.3/bbandelow>

Beaton, D. M., Sirois, F., & Milne, E. (2020). Self-compassion and Perceived Criticism in Adults with Attention Deficit Hyperactivity Disorder (ADHD). *Mindfulness*, 11(11), 2506–2518. <https://doi.org/10.1007/s12671-020-01464-w>

Bereza, B. G., Machado, M., Papadimitropoulos, M., Sproule, B., Ravindran, A. V., & Einarson, T. R. (2012). A Markov Model Approach Assessing the Cost of Illness of Generalized Anxiety Disorder in Canada. *Neurology and Therapy*, 1(1), 1. <https://doi.org/10.1007/s40120-012-0001-y>

- Psychology, 40(4), 630–645. <https://doi.org/10.1080/15374416.2011.581623>
- Cotiga, A. C., Zangfirescu, Ș. A., Iliescu, D., Ciumăgeanu, M., Gotca, I., & Popa, C. O. (2023). Psychometric Characteristics of the Romanian Adaptation of the GAD-7. *Journal of Psychopathology and Behavioral Assessment*, 45(3), 691–701. <https://doi.org/10.1007/s10862-023-10062-8>
- Craske, M. G., Rauch, S. L., Ursano, R., Prenoveau, J., Pine, D. S., & Zinbarg, R. E. (2011). What Is an Anxiety Disorder? *Focus*, 9(3), 369–388. <https://doi.org/10.1176/foc.9.3.foc369>
- Egan, S. J., Rees, C. S., Delalande, J., Greene, D., Fitzallen, G., Brown, S., Webb, M., & Finlay-Jones, A. (2022). A Review of Self-Compassion as an Active Ingredient in the Prevention and Treatment of Anxiety and Depression in Young People. *Administration and Policy in Mental Health and Mental Health Services Research*, 49(3), 385–403. <https://doi.org/10.1007/s10488-021-01170-2>
- Fraley, R. C., Gillath, O., & Deboeck, P. R. (2021). Do life events lead to enduring changes in adult attachment styles? A naturalistic longitudinal investigation. *Journal of Personality and Social Psychology*, 120(6), 1567–1606. <https://doi.org/10.1037/pspi0000326>
- Gilbert, P., & Procter, S. (2006). Compassionate mind training for people with high shame and self-criticism: Overview and pilot study of a group therapy approach. *Clinical Psychology & Psychotherapy*, 13(6), 353–379. <https://doi.org/10.1002/cpp.507>
- Gohel, D., Moog, S., & Heckmann, M. (2025). *officer: Manipulation of Microsoft Word and PowerPoint Documents* (p. 0.6.8) [Dataset]. <https://doi.org/10.32614/CRAN.package.officer>
- Gohel, D., & Skintzos, P. (2024). *flextable: Functions for Tabular Reporting* (p. 0.9.7) [Dataset]. <https://doi.org/10.32614/CRAN.package.flextable>
- Griffin, D. W., & Bartholomew, K. (1994). Models of the self and other: Fundamental dimensions underlying measures of adult attachment. *Journal of Personality and Social Psychology*, 67(3), 430–445. <https://doi.org/10.1037/0022-3514.67.3.430>
- Ho, C. Y. Y., Yu, B. C. L., & Mak, W. W. S. (2022). Nonattachment mediates the associations between mindfulness, well-being, and psychological distress: A meta-analytic structural equation modeling approach. *Clinical Psychology Review*, 95, 102175. <https://doi.org/10.1016/j.cpr.2022.102175>
- Javaid, S. F., Hashim, I. J., Hashim, M. J., Stip, E., Samad, M. A., & Ahababi, A. A. (2023). Epidemiology of anxiety disorders: Global burden and sociodemographic associations. *Middle East Current Psychiatry*, 30(1), 44. <https://doi.org/10.1186/s43045-023-00315-3>
- Lee, A., & Hankin, B. L. (2009). Insecure Attachment, Dysfunctional Attitudes, and Low Self-Esteem Predicting Prospective Symptoms of Depression and Anxiety During Adolescence. *Journal of Clinical Child & Adolescent Psychology*, 38(2), 219–231. <https://doi.org/10.1080/15374410802698396>
- Long, J. A. (2024a). *interactions: Comprehensive, User-Friendly Toolkit for Probing Interactions* (p. 1.2.0) [Dataset]. <https://doi.org/10.32614/CRAN.package.interactions>
- Long, J. A. (2024b). *jtools: Analysis and Presentation of Social Scientific Data* (p. 2.3.0) [Dataset]. <https://doi.org/10.32614/CRAN.package.jtools>
- McLeod, S. (2008). *Erik Erikson's Stages of Psychosocial Development*. Zenodo. <https://doi.org/10.5281/ZENODO.15241647>
- Neff, K. (2003). Self-Compassion: An Alternative Conceptualization of a Healthy Attitude Toward Oneself. *Self and Identity*, 2(2), 85–101. <https://doi.org/10.1080/15298860309032>
- Neff, K. D. (2003). The Development and Validation of a Scale to Measure Self-Compassion. *Self and Identity*, 2(3), 223–250. <https://doi.org/10.1080/152988603090027>
- Neff, K. D., & Knox, M. C. (2017). Self-Compassion. In V. Zeigler-Hill & T. K. Shackelford (Eds.), *Encyclopedia of Personality and Individual Differences* (pp. 1–8). Springer International Publishing. [https://doi.org/10.1007/978-3-319-28099-8\\_1159-1](https://doi.org/10.1007/978-3-319-28099-8_1159-1)
- Nielsen, S. K. K., Lønfeldt, N., Wolitzky-Taylor, K. B., Hageman, I., Vangkilde, S., & Daniel, S. I. F. (2017). Adult attachment style and anxiety – The mediating role of emotion regulation. *Journal of Affective Disorders*, 218, 253–259. <https://doi.org/10.1016/j.jad.2017.04.047>
- Ooms, J. (2025). *writexl: Export Data Frames to Excel "xlsx" Format* (p. 1.5.2) [Dataset]. <https://doi.org/10.32614/CRAN.package.writexl>
- Peng, Y., & Ishak, Z. (2025). Self-compassion as a mediator of attachment anxiety, attachment avoidance, and complex PTSD in college students with adverse childhood experiences. *Scientific Reports*, 15(1), 786. <https://doi.org/10.1038/s41598-024-84947-3>
- Pérez-Aranda, A., García-Campayo, J., Gude, F., Luciano, J. V., Feliu-Soler, A., González-Quintela, A., López-del-Hoyo, Y., & Montero-Marin, J. (2021). Impact of mindfulness and self-compassion on anxiety and depression: The mediating role of resilience. *International Journal of Clinical and Health Psychology*, 21(2), 100229. <https://doi.org/10.1016/j.ijchp.2021.100229>
- Phillips, W. J. (2021). Self-compassion mindsets: The components of the self-compassion scale operate as a balanced system within individuals. *Current Psychology*, 40(10), 5040–5053. <https://doi.org/10.1007/s12144-019-00452-1>
- Rajkumar, R. P. (2022). Comorbid depression and anxiety: Integration of insights from attachment theory and cognitive neuroscience, and their implications for research and treatment. *Frontiers in Behavioral Neuroscience*, 16, 1104928. <https://doi.org/10.3389/fnbeh.2022.1104928>
- Raskin, P. M. (1986). The Relationship Between Identity and Intimacy in Early Adulthood. *The Journal of Genetic Psychology*, 147(2), 167–181. <https://doi.org/10.1080/00221325.1986.9914491>

- Revelle, W. (2025). *psych: Procedures for Psychological, Psychometric, and Personality Research* (p. 2.5.3) [Dataset]. <https://doi.org/10.32614/CRAN.package.psych>
- Robinson, D., Hayes, A., & Couch, S. (2025). *broom: Convert Statistical Objects into Tidy Tibbles* (p. 1.0.8) [Dataset]. <https://doi.org/10.32614/CRAN.package.broom>
- Sahdra, B. K., Ciarrochi, J., Parker, P. D., Marshall, S., & Heaven, P. (2015). Empathy and nonattachment independently predict peer nominations of prosocial behavior of adolescents. *Frontiers in Psychology*, 6. <https://doi.org/10.3389/fpsyg.2015.00263>
- Sahdra, B. K., Shaver, P. R., & Brown, K. W. (2010). A Scale to Measure Nonattachment: A Buddhist Complement to Western Research on Attachment and Adaptive Functioning. *Journal of Personality Assessment*, 92(2), 116–127. <https://doi.org/10.1080/00223890903425960>
- Sava, F. A., & Negrei, N. (2006). *Adaptarea Inventarului Stilurilor de Atasament La Adulti Pentru Populatia Românească*. 18, 155–169.
- Spitzer, R. L., Kroenke, K., Williams, J. B. W., & Löwe, B. (2006). A Brief Measure for Assessing Generalized Anxiety Disorder: The GAD-7. *Archives of Internal Medicine*, 166(10), 1092. <https://doi.org/10.1001/archinte.166.10.1092>
- Thompson, R. A., Simpson, J. A., & Berlin, L. J. (2022). Taking perspective on attachment theory and research: Nine fundamental questions. *Attachment & Human Development*, 24(5), 543–560. <https://doi.org/10.1080/14616734.2022.2030132>
- Tsoi, E. W. S., Tong, A. C. Y., & Mak, W. W. S. (2022). Nonattachment at Work on Well-being Among Working Adults in Hong Kong. *Mindfulness*, 13(10), 2461–2472. <https://doi.org/10.1007/s12671-022-01971-y>
- Van Dam, N. T., Sheppard, S. C., Forsyth, J. P., & Earleywine, M. (2011). Self-compassion is a better predictor than mindfulness of symptom severity and quality of life in mixed anxiety and depression. *Journal of Anxiety Disorders*, 25(1), 123–130. <https://doi.org/10.1016/j.janxdis.2010.08.011>
- Van Leeuwen, W. A., Van Wingen, G. A., Luyten, P., Denys, D., & Van Marle, H. J. F. (2020). Attachment in OCD: A meta-analysis. *Journal of Anxiety Disorders*, 70, 102187. <https://doi.org/10.1016/j.janxdis.2020.102187>
- Watson, J. C., & Sharbanee, J. M. (2022). Emotion Focused Therapy – Case Conceptualization and Treatment: Adults. In *Comprehensive Clinical Psychology* (pp. 105–128). Elsevier. <https://doi.org/10.1016/B978-0-12-818697-8.00210-7>
- Whitehead, R., Bates, G., Elphinstone, B., Yang, Y., & Murray, G. (2018). Letting Go of Self: The Creation of the Nonattachment to Self Scale. *Frontiers in Psychology*, 9, 2544. <https://doi.org/10.3389/fpsyg.2018.02544>
- Wickham, H., & Bryan, J. (2025). *readxl: Read Excel Files* (p. 1.4.5) [Dataset]. <https://doi.org/10.32614/CRAN.package.readxl>
- Wickham, H., Chang, W., Henry, L., Pedersen, T. L., Takahashi, K., Wilke, C., Woo, K., Yutani, H., Dunnington, D., & Van Den Brand, T. (2024). *ggplot2: Create Elegant Data Visualisations Using the Grammar of Graphics* (p. 3.5.1) [Dataset]. <https://doi.org/10.32614/CRAN.package.ggplot2>
- Wickham, H., François, R., Henry, L., Müller, K., & Vaughan, D. (2023). *dplyr: A Grammar of Data Manipulation* (p. 1.1.4) [Dataset]. <https://doi.org/10.32614/CRAN.package.dplyr>
- World Health Organization. (2023, September 27). *Anxiety Disorders*. <https://www.who.int/news-room/fact-sheets/detail/anxiety-disorders>



# STUDIA DOCTORALIA

## PSYCHOLOGY AND EDUCATIONAL SCIENCE



UNIVERSITY OF  
BUCHAREST  
— VIRTUTE ET SAPIENTIA —

## Perfectionism and Life Satisfaction: The Role of Procrastination and Self-Regulation

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### ABSTRACT

The general objective of this study is to explore the relationship between negative perfectionism and life satisfaction. Specifically, the study aims to address two research goals: (1) to investigate the mediating role of procrastination in the relationship between perfectionism and life satisfaction, and (2) to examine the moderating role of self-regulation in the relationship between perfectionism and procrastination. Using a cross-sectional design, this study examined the responses of a convenience sample of 202 adults aged between 18 and 59 years. The mediation analysis indicated that procrastination partially explains the relationship between negative perfectionism and life satisfaction. In contrast, the moderation analysis did not support the role of self-regulation as a moderator; the influence of perfectionism on procrastination is not significantly shaped by self-regulatory behaviors. The study revealed a significant relationship between maladaptive perfectionism, procrastination, and life satisfaction, supporting the mediating role of procrastination. Although the moderating role of self-regulation was not supported by the data, it remains a relevant variable in understanding procrastinatory behavior, as procrastination is often considered a failure of the self-regulation process.

**Keywords:** negative perfectionism, procrastination, life satisfaction, self-regulation, high standards, performance

## 1. INTRODUCTION

### Importance of the Topic

"What about us in a world that constantly demands more?" is one of the key questions addressed by Verhaeghe (2014) in his work *What About Me? The Struggle for Identity in a Market-Based Society*. The author examines the impact of modern culture on individual identity, arguing that contemporary society imposes high performance standards that negatively affect mental health and personal well-being. This idea is further supported by the meta-analysis conducted by Curran and Hill (2019), which confirms a linear increase in (maladaptive) perfectionism between 1989 and 2016. Their findings indicate that younger generations impose increasingly higher standards on themselves, while, simultaneously, perceiving others as more demanding of them. In this context, the belief that one must always be perfect becomes more persistent and it has been frequently observed among those who procrastinate (Flett et al., 2012), often leading to avoiding tasks in order to prevent being perceived negatively by others (Ferrari et al., 1995).

Procrastination is a behavior that has been present throughout history and across all societies, as noted by Ferrari (2010), who stated that "everyone procrastinates, but not everyone is a procrastinator". However, in today's distraction-filled world, this behavior is expected to become increasingly common. In this regard, it is estimated that between 70% and 95% of students engage in procrastinatory behaviour (Klassen et al., 2007) and approximately 20% of adults frequently and deliberately delay task completion (Ferrari & Tibbett, 2020). Procrastination has negative consequences upon one's career, personal relationships, financial situation and the management of health-related issues (Steel, 2007). Overall, while procrastination is an occasional behavior for most people, for some it becomes a persistent habit that can significantly affect their lives.

Therefore, the present study aims to investigate the relationship between negative perfectionism and life satisfaction, considering the mediating role of procrastination in this relationship, as well as the moderating role of self-regulation in the link between perfectionism and procrastination.

### Perfectionism

In a broad sense, perfectionism is characterized both by setting extremely high and difficult-to-achieve standards for oneself and by a tendency to be self-critical (Yosopov, 2020). Perfectionists base their personal worth on their productivity and level of success (Burns, 1980), hold irrational beliefs that they must be perfect (Xie et al., 2018), and tend to exaggerate their failures, even when it comes to minor tasks (Pannhausen et al., 2020).

The concept was initially integrated by Freud into his psychodynamic theory, characterizing perfectionism as "a trait of the superego and an excessive desire for achievement" (Cohen, 2020). Alfred Adler's perspective also identifies

perfectionism as an important element in personality development, arguing that the striving for perfection is an inherent drive and an integral part of the human experience, rooted in his theory of individual psychology (Ansbacher & Ansbacher, 1956). Adler's seminal work served as the basis for later contributions by authors such as Ansbacher and Ansbacher (1956), Burns (1980), Hamachek (1978), and Hollander (1965), all of which contributed to a better understanding of the nature of perfectionism—shifting from a one-dimensional, predominantly negative view to a multidimensional perspective that highlights both its positive and negative features (Frost et al., 1990; Hewitt & Flett, 1989). These multidimensional models were later analyzed by Frost et al. (1993), who identified two factors: "positive achievement striving", representing the adaptive and positive aspects of perfectionism, and "maladaptive evaluation concerns," reflecting its maladaptive and negative aspects.

Subsequent research has contributed to this two-factor approach by providing additional supporting evidence and identifying various dimensions of perfectionism, such as: positive and negative perfectionism (Terry-Short et al., 1995), neurotic and normal perfectionism (Ashby & Kottman, 1996), adaptive and maladaptive perfectionism (Rice et al., 1998), self-oriented and socially prescribed perfectionism (Stumpf & Parker, 2000), perfectionistic strivings and perfectionistic concerns (Stoeber & Otto, 2006), and internal versus external perfectionism (Ahmed et al., 2021).

This study adopts the dual model of perfectionism proposed by Terry-Short et al. (1995), which, unlike previous approaches, is derived from learning theory, being grounded in reinforcement theory (Carpenter et al., 2023). According to this model, positive perfectionism is defined as the motivation to achieve a goal in order to obtain a positive outcome, while negative perfectionism refers to the motivation to achieve a goal in order to avoid negative consequences (Terry-Short et al., 1995). Slade et al. (2009) support this distinction, explaining that positive perfectionism is characterized by thoughts and behaviors oriented toward achieving difficult goals for favorable outcomes, whereas negative perfectionism involves efforts driven by the desire to prevent or minimize adverse consequences.

Consequently, the Positive and Negative Perfectionism Scale (PANPS) developed by Terry-Short et al. (1995) has been used in numerous studies to examine the relationship between negative perfectionism and various psychological variables. Research has shown significant positive correlations between negative perfectionism and maladaptive traits such as anxiety (Fedewa et al., 2005; Sederlund et al., 2020), hostility and shame (Fedewa et al., 2005), depression (Bergman, 2007; Sederlund et al., 2020), maladaptive coping strategies (Burns & Fedewa, 2005), regret and emotional suppression as a coping strategy (Bergman, 2007), decreased life satisfaction (Sederlund et al., 2020), and procrastination (Sirois et al., 2017).

## **Procrastination**

Procrastination is the tendency to voluntarily, but irrationally, delay the initiation or completion of a desired task (Ferrari & Tibbett, 2020), while simultaneously anticipating that the delay will lead to negative consequences (Steel, 2007). To better understand why people procrastinate, Steel and König (2006) proposed the Temporal Motivation Theory (TMT), an integrative motivational model that combines Expectancy Theory (Vroom, 1964, as cited in Steel & König, 2006), Need Theory (Dollard & Miller, 1950, as cited in Steel & König, 2006), Cumulative Prospect Theory (Tversky & Kahneman, 1992), and Picoeconomics, emphasizing time as a key motivational factor.

This theory explains procrastination as the result of a tendency to overvalue small but immediate rewards in comparison to delayed ones; in other words, the subjective value of a reward decreases the further it is in the future (Steel, 2007). There appears to be a discrepancy between the present self and the future self (Sirois & Pychyl, 2013), procrastination being negatively associated with a future-oriented time perspective and positively associated with a present-oriented one (Ferrari & Díaz-Morales, 2006).

Nevertheless, procrastination cannot be reduced solely to a temporal perspective, as it also involves affective, cognitive, and behavioral dimensions (Fee & Tangney, 2000, as cited in Xie et al., 2018).

From an affective standpoint, procrastination is closely linked to individuals' well-being, with evidence suggesting a reciprocal relationship between the two (Sirois, 2016). It has been associated with higher levels of perceived stress, anxiety, depression, and shame (Beutel et al., 2016; Oflazian & Borders, 2022; Rahimi et al., 2023; Van Eerde, 2003). The connection between adverse emotions and procrastination is supported by studies showing that improving emotion regulation skills contributes to preventing and reducing procrastination (Eckert et al., 2016).

A relevant perspective in this context is that procrastination may function as an emotion regulation strategy in itself (Pychyl & Sirois, 2016), where tasks are avoided in order to manage the short-term discomfort they produce, despite the long-term negative consequences (Sirois & Pychyl, 2013; Tice & Bratslavsky, 2000). However, this strategy eventually leads to greater negative affect, making individuals feel worse than if they had completed the task in the first place (Sirois & Pychyl, 2013; Tice & Baumeister, 1997).

The cognitive perspective focuses on the reasons why individuals consciously choose to procrastinate, despite the potential negative consequences of this behavior (Karas & Spada, 2009; Steel, 2007). A central factor in this regard is maladaptive, negative perfectionism, which has been found to be positively correlated with procrastination (Sirois et al., 2017; Xie et al., 2018; Zhang et al., 2022). This relationship can be explained by factors such as fear of failure (Zhang et al., 2022), perfectionistic concerns related to making mistakes and doubts about one's own actions (Xie et al., 2018). Individuals with high

levels of maladaptive perfectionism tend to worry excessively about potential errors, question their own decisions, try to avoid disapproval from others, and fear failure—all of which may make them more prone to delaying tasks (Xie et al., 2018).

Research addressing the behavioral perspective views procrastination primarily as a behavioral problem (Beck et al., 2000, as cited in Ozer et al., 2014), focusing on the contexts in which task delay is most commonly observed. Numerous studies indicate that procrastination is significantly associated with reduced academic and occupational performance (Steel, 2007).

This behaviour is most frequently studied among students, where it has been shown to occupy more than one-third of a student's daily time, as they often choose to sleep, read, or watch television instead of studying (Pychyl et al., 2000). However, similar patterns are observed in the workplace, where high levels of procrastination are linked to lower income, shorter job tenure, increased unemployment (Nguyen et al., 2013), and counterproductive work behavior (Metin et al., 2016). Therefore, in terms of individual performance, people who procrastinate generally perform worse than those who do not (Steel et al., 2001).

## **The Role of Self-Regulation**

Within the behavioral perspective, understanding the relationship between procrastination and self-regulation is particularly relevant. Several studies have conceptualized procrastination as a self-regulation failure (Baumeister et al., 2007; Howell & Watson, 2007; Pychyl & Flett, 2012; Steel, 2007). Self-regulation involves the control of thoughts, emotions, attention, and behavior (Bell & Deater-Deckard, 2007) and it relies on executive functions such as working memory, behavioral inhibition, and the ability to shift between tasks (Hofmann et al., 2012).

Moreover, self-regulation is a process through which individuals initiate, adjust, suspend, complete, or modify actions in order to facilitate the achievement of personal goals, plans, or standards (Baumeister et al., 1994, as cited in Heatherton & Baumeister, 1996; Howell & Watson, 2007). Thus, two distinct perspectives have been proposed regarding the role of self-regulatory failure in procrastination: such failure may result from under-regulation, defined as the lack of effort or inability to exert behavioral control, or from misregulation, which involves exerting self-control in a misguided or counterproductive way, such that the intended outcome is not achieved (Baumeister & Heatherton, 1996; Heatherton & Baumeister, 1996).

## **Life Satisfaction**

Taking into account all the previously discussed perspectives, the complexity of this concept and its implications across various areas of life -personal, relational, academic, and professional - becomes evident. Therefore, it is justified to explore the relationship between procrastination and life satisfaction, along with other factors that influence this

relationship, such as perfectionism, which has been previously shown to be associated with both variables.

Life satisfaction refers to an evaluation of the overall quality of one's life (Pavot & Diener, 1993) and is considered the primary indicator of positive subjective well-being (Diener & Diener, 1995). It involves a personal judgment in which individuals compare their self-imposed standards with the actual conditions of their lives (Pavot & Diener, 1993). Similarly, perfectionism entails evaluating the quality of one's performance against self-defined standards (Hewitt & Flett, 1991). Thus, achieving these standards contributes to increased life satisfaction, whereas the greater the gap between expectations and actual performance, the lower the reported satisfaction (Çapan, 2010). This effect is particularly likely among perfectionists, who tend to set excessively high standards for themselves (Hewitt & Flett, 1991).

Regarding the relationship between procrastination and life satisfaction, research has primarily focused on student samples, as procrastination is a common behavior in academic settings (Steel, 2007). These studies consistently show that students who procrastinate tend to report lower levels of life satisfaction (Çapan, 2010; Kandemir, 2014; Özer & Saçkes, 2011). Later, Beutel et al. (2016) examined the role of procrastination in relation to a range of factors - including life satisfaction - using a representative sample of individuals aged 14 to 95. They assessed life satisfaction across eight key life domains: friendships, leisure activities/hobbies, general health, income, work/career, housing/living conditions, family life, and romantic/sexual relationships. Their results revealed a significant negative correlation between procrastination and all of the aforementioned domains, therefore indicating a significant overall negative correlation with general life satisfaction.

### **Study Contribution**

Although previous research has identified relevant associations between perfectionism, procrastination, and life satisfaction, there remain theoretical and empirical gaps that require further investigation, gaps that the present study aims to address.

First, regarding the relationship between perfectionism and procrastination, meta-analyses conducted by Sirois et al. (2017) and Xie et al. (2018) reveal that most studies assess perfectionism using the classifications and scales developed by Frost et al. (1990), Hewitt and Flett (1991) or Slaney et al. (2001). In current literature, the factors from these frameworks are often theoretically reorganized into two higher-order dimensions of perfectionism: a maladaptive dimension, defined by perfectionistic concerns, and an adaptive dimension, defined by perfectionistic strivings (Stoeber & Otto, 2006).

However, a relevant and underexplored approach in relation to procrastination is the one proposed by Terry-Short et al. (1995), who distinguish between positive perfectionism, defined by the motivation to achieve a goal in order to obtain a favorable outcome, and negative perfectionism, defined by the

motivation to achieve a goal in order to avoid negative consequences.

The present study argues that the relationship between negative perfectionism, as conceptualized by Terry-Short et al. (1995), and procrastination deserves further attention, particularly in light of its connection to achievement goals, especially avoidance-oriented goals (Seo, 2009). These goals play a central role in the study of achievement motivation (Elliot & McGregor, 2001), as they pertain to the purpose of one's behavior (Maehr, 1989), and the type of goal adopted shapes the self-regulatory framework that guides that behavior (McGregor & Elliot, 2002). Several studies (Howell & Watson, 2007; McGregor & Elliot, 2002; Scher & Osterman, 2002; Seo, 2009; Wolters, 2003) have explored the relationship between procrastination and achievement goals in academic settings, consistently reporting a significant positive association with mastery-avoidance and performance-avoidance goals.

These two types of goals were classified by Elliot and McGregor (2001) within the framework of the 2×2 Achievement Goals Model, in which achievement goals are defined along two fundamental dimensions: definition of competence, either intrapersonal, referenced to the self (mastery-based) or interpersonal/ referenced to others (comparative, performance-based) and the motivational valence, which can be either positive (approaching success) or negative (avoiding failure). Thus, the link between procrastination and failure avoidance-oriented goals supports the relevance of examining the relationship between negative perfectionism and procrastination, given that these two constructs appear to share a potentially common motivational basis.

Second, in addition to the direction previously discussed, the meta-analyses conducted by Sirois et al. (2017), Van Eerde and Klingsieck (2018) and Xie et al. (2018) highlight the predominant focus on academic procrastination, which is most often measured among student populations. Within this context, the present study aims to investigate procrastination in a sample drawn from the general adult population, thereby contributing to the broader empirical applicability of the findings.

Finally, although variables such as perfectionism, self-regulation, procrastination, and life satisfaction have been extensively studied, they are typically examined individually, in pairs, or within partial models. Therefore, this study aims to contribute by testing a unified and comprehensive model that examines these variables together.

### **The present study**

The general objective of this study is to explore the relationship between negative perfectionism and life satisfaction. In this context, the research addresses two specific objectives. The first objective is to investigate the mediating role of procrastination in the relationship between negative perfectionism and life satisfaction. The second objective is to examine the moderating role of self-regulation in the link

between negative perfectionism and procrastination. The hypotheses are:

H1. *Procrastination significantly mediates the relationship between negative perfectionism and life satisfaction.*

## 2. METHOD

### Participants

The research design of this study was cross-sectional. The sample consisted of 202 participants, of whom 131 identified as female (64.9%), 70 as male (34.7%), and 1 as non-binary (0.5%). Participants' ages ranged from 18 to 59 years ( $M = 24.92$ ,  $SD = 11.55$ ). A total of 120 participants (59.4%) were from urban areas, while 82 (40.6%) were from rural areas. Regarding educational background, most participants had completed lower secondary education ( $n = 79$ , 39.1%), followed by upper secondary education ( $n = 73$ , 36.1%), undergraduate education ( $n = 25$ , 12.4%), and graduate-level education ( $n = 25$ , 12.4%). The inclusion and exclusion criterion was participants' age, as the study targeted only individuals over the age of 18.

### Instruments

*Negative perfectionism* was measured using the relevant items from the Positive and Negative Perfectionism Scale – Short Form (PANPS-SF) (Carpenter et al., 2023). Although the scale is bidimensional, this study focused solely on the negative perfectionism dimension, which is assessed using 10 items, such as: “No matter how well I do, I never feel satisfied with my performance” or “I feel guilty or ashamed if I do less than perfectly.” Items are rated on a 5-point Likert scale ranging from 1 (“strongly disagree”) to 5 (“strongly agree”). Higher scores indicate higher levels of negative perfectionism. The scale demonstrated excellent internal consistency, with Cronbach's alpha of  $\alpha = .91$ .

*Procrastination* was assessed using the General Procrastination Scale (GPS) (Lodha et al., 2019). This scale includes 23 items, of which 16 are positively worded and 7 are reverse-scored. It evaluates procrastination across four domains: academic, work-related, medical, and civic responsibilities. Sample items include: “I often try to avoid doing a task that I have little or no interest in,” and “I prefer submitting an assignment before the deadline.”. Items are rated on a 5-point Likert scale ranging from 1 (“never”) to 5 (“always”), with

## 3. RESULTS

The hypotheses were tested using the statistical software RStudio. Prior to conducting the mediation and moderation models, descriptive statistics were computed (Table 1), including an assessment of normality. Normality was evaluated

H2. *Self-regulation significantly moderates the relationship between negative perfectionism and procrastination.*

higher scores indicating greater levels of procrastination. The scale showed good internal consistency, with a Cronbach's alpha of  $\alpha = .83$ .

*Self-regulation* was measured using the Short Self-Regulation Questionnaire – Short Form (SSRQ-SF) (Carey et al., 2004), which consists of 31 items, of which 18 are positively worded and 13 are reverse-scored. The questionnaire includes statements such as: “I usually keep track of my progress toward my goals” and “I get easily distracted from my plans.” Items are rated on a 5-point Likert scale, where 1 indicates “strongly disagree” and 5 indicates “strongly agree.” Higher scores reflect a higher level of self-regulation. The scale demonstrated strong internal consistency, with Cronbach's alpha of  $\alpha = .94$ .

*Life satisfaction* was measured using the Romanian adaptation of the Satisfaction with Life Scale (SWLS) (Stevens et al., 2012). The scale consists of 5 items, including statements such as: “In most ways, my life is close to my ideal” and “If I could live my life over, I would change almost nothing.” Items are rated on a 7-point Likert scale, where 1 indicates “strongly disagree” and 7 indicates “strongly agree.” Higher scores reflect a greater level of life satisfaction. The scale demonstrated good internal consistency, with a Cronbach's alpha of  $\alpha = .85$ .

### Procedure

The sample was selected using a convenience sampling method, and responses were collected online via the Google Forms questionnaire. Participation in the study was voluntary. In the first section of the form, participants were presented with an informed consent statement that explained the purpose of the research and allowed them formally agree to take part in the study by confirming their consent before completing the questionnaires. They were also informed that they had the right to withdraw at any time, that participation involved no risk, and that their responses would remain anonymous. The only eligibility criterion for participation was being at least 18 years old.

### Statistical Approach

The data in the present study were analyzed using the statistical software RStudio. Descriptive analyses and Pearson correlations were conducted, and collinearity indicators (VIF and Tolerance) were calculated. The lavaan package was used to test the mediation and moderation hypotheses.

using the following methods: skewness and kurtosis (acceptable values between  $-1$  and  $1$ ), the Shapiro–Wilk test (with  $p > .05$ ), and the Q-Q Plot. All three methods indicated that the data were normally distributed, allowing for the use of parametric tests in further analyses.

## Descriptive statistics

**Table 1**

*Descriptive statistics*

Variable	N	M	SD	Median	Min	Max	Skewness	Kurtosis	SE
Perfectionism	202	31.61	9.67	32	10	50	-.08	-.92	.68
Procrastination	202	59.27	11.46	58.5	34	91	.17	-.19	.81
Self-regulation	202	113.09	20.09	113	62	155	-.10	-.75	1.41
Life satisfaction	202	24.22	6.13	25	5	35	-.54	-.01	.43

Before testing the mediation and moderation models, Pearson correlation coefficients were calculated to examine the relationships between the variables. As shown in Table 2, statistically significant relationships were found between

perfectionism and procrastination ( $r = .30, p < .001$ ), between negative perfectionism and life satisfaction ( $r = -.35, p < .001$ ), and between procrastination and life satisfaction ( $r = -.44, p < .001$ ).

**Table 2**

*Pearson Correlation Coefficients Among the Variables*

Variable	1	2	3	4
1. Perfectionism	-			
2. Procrastination	.30**	-		
3. Self-regulation	-.53**	-.62**	-	
4. Life satisfaction	-.35**	-.44**	.49**	-

Note. \*\* $p < .001$

Given that the conditions for applying the mediation model were met, the first hypothesis was tested using the lavaan package. Results (Table 3) indicated that perfectionism significantly predicted procrastination ( $a = .36, p < .001$ ), and procrastination had a significant negative effect on life satisfaction ( $b = -.19, p < .001$ ). The indirect effect of perfectionism on life satisfaction through procrastination was also significant ( $a \times b = -.07, p < .001$ ), indicating a mediation effect. However, the direct effect of perfectionism on life satisfaction remained significant ( $c' = -.15, p < .001$ ), suggesting the presence of partial mediation. Approximately 31.5% of the total effect of perfectionism on life satisfaction is mediated by procrastination.

In order to test the second hypothesis, it was analyzed the role of self-regulation as a moderating variable in the relationship between perfectionism and procrastination. To verify the assumption of statistical independence between

perfectionism and self-regulation, multicollinearity indicators were calculated. The VIF index values were below the threshold of 2 (1.40), and Tolerance values were acceptable (0.72), indicating no problematic multicollinearity. The moderation model was therefore tested using the lavaan package.

Results are presented below (Table 4) and show that the effect of perfectionism on procrastination, when self-regulation is held constant, was not significant ( $b_1 = -.44, p > .05$ ), whereas the effect of self-regulation on procrastination was significant ( $b_2 = -.47, p < .001$ ). The interaction effect between perfectionism and self-regulation on procrastination was not statistically significant ( $b_3 = .003, p > .05$ ), indicating that self-regulation does not moderate the relationship between perfectionism and procrastination. Thus, the second hypothesis was not supported by the data.

**Table 3**

*Mediation Analysis Results*

Effect	Estimate	SE	Z	P
1. Perfectionism $\rightarrow$ Procrastination (a)	.36	.08	4.53	<.001
2. Procrastination $\rightarrow$ Life satisfaction (b)	-.19	.03	-5.65	<.001
3. Indirect effect (a x b)	-.07	.02	-3.53	<.001
4. Perfectionism $\rightarrow$ Life satisfaction (c')	-.15	.04	-3.73	<.001
Procrastination – held constant				

**Table 4***Moderation Analysis Results*

Effect		Estimate	SE	Z	P
1. Perfectionism → Procrastination		– .44	.39	–1.13	.259
Self-regulation- held constant					
2. Self-regulation→Procrastination	Perfectionism – held constant	– .47	.11	– 4.31	<.001
3. Self-regulation x Perfectionism→ Procrastination		.00	.00	1.02	.307

**4. DISCUSSIONS**

This study aimed to deepen the understanding of the relationship between negative perfectionism and life satisfaction by addressing two specific objectives. The first objective was to examine whether procrastination mediates the relationship between negative perfectionism and life satisfaction. The second objective focused on whether self-regulation moderates the relationship between negative perfectionism and procrastination. The proposed model was only partially supported by the data. The implications of these results are discussed below.

The first hypothesis of the study proposed that procrastination mediates the relationship between negative perfectionism and life satisfaction. The results support this hypothesis, showing that a high level of negative perfectionism predicts higher levels of procrastination, which, in turn, leads to lower life satisfaction.

The results indicated a significant direct relationship between negative perfectionism and life satisfaction, suggesting that individuals with higher levels of negative perfectionism tend to report lower levels of life satisfaction. This finding is consistent with previous studies that have explored the link between maladaptive perfectionism and life (Fekih-Romdhane et al., 2023; Liu et al., 2022; Şahin, 2021). One possible explanation for this relationship lies in the tendency of perfectionists to impose excessively high expectations on themselves (Hewitt & Flett, 1991) and when reality does not align with these standards, the perceived discrepancy may lead to decreased life satisfaction (Çapan, 2010).

In examining the mediating role of procrastination, it is important to analyze the indirect relationship between negative perfectionism and life satisfaction by considering the two pathways that form the mediation model.

The first path reflects the significant relationship between negative perfectionism and procrastination, a finding that is well-supported in the literature and consistent with the meta-analyses conducted by Sirois et al. (2017) and Xie et al. (2018). These studies explain the association in terms of perfectionism-related characteristics: concern over making mistakes, doubts about one's actions, fear of others' disapproval, and fear of failure—traits that may lead to task avoidance as a form of self-protection (Xie et al., 2018), aimed at preventing negative outcomes (Mansouri et al., 2022) and their consequences (Sirois, 2016b).

Moreover, given that in this study negative perfectionism was operationalized based on the model proposed by Terry-Short et al. (1995), which is grounded in reinforcement theory (Carpenter et al., 2023), this framework may offer a relevant theoretical basis for interpreting the observed relationship. Specifically, when the motivation to achieve a goal is reinforced by the desire to avoid a negative outcome (Terry-Short et al., 1995), the emergence of procrastinatory behavior may be facilitated. This explanation is further supported by the Achievement Goal Model developed by Elliot and McGregor (2001), which highlights that procrastination tends to occur more frequently when goals are oriented toward failure avoidance (Howell & Watson, 2007; McGregor & Elliot, 2002; Scher & Osterman, 2002; Seo, 2009; Wolters, 2003).

The second path of the mediation model is represented by the significant negative association between procrastination and life satisfaction, indicating that higher levels of procrastination are associated with lower levels of life satisfaction. This relationship is supported by several previous studies (Beutel et al., 2016; Çapan, 2010; Kandemir, 2014; Özer & Saçkes, 2011). One possible explanation lies in the frequent association of procrastination with elevated levels of perceived stress, anxiety, depression, and shame (Beutel et al., 2016; Oflazian & Borders, 2022; Rahimi et al., 2023; Van Eerde, 2003), which, in turn, negatively impact life satisfaction (Abolghasemi & Varaniyab, 2010; Macaskill, 2012; Serin et al., 2010; Sullivan et al., 2019).

The second hypothesis focused on the moderating role of self-regulation in the relationship between negative perfectionism and procrastination. However, the results did not support this hypothesis, indicating that self-regulation does not significantly change the way in which negative perfectionism influences procrastination. There are several possible explanations for this finding.

First, the statistical power of the test may have been insufficient to detect the moderating effect, given that moderation effects are generally small in magnitude and therefore difficult to identify without a sufficiently large sample size (Aguinis et al., 2005; McClelland & Judd, 1993).

Second, it is possible that self-regulation does not function as a moderator, but rather as a direct predictor of procrastination. This perspective is supported by several studies that conceptualize procrastination as a failure of self-regulation (Baumeister et al., 2007; Pychyl & Flett, 2012; Steel, 2007).

These findings suggest that individuals with high levels of self-regulation tend to procrastinate less, due to their ability to effectively manage their emotions, thoughts, attention, and behavior (Bell & Deater-Deckard, 2007) in relation to goal achievement (Howell & Watson, 2007). Therefore, even though the hypothesis regarding the moderating role of self-regulation was not supported, the variable remains relevant in understanding and potentially reducing procrastinatory behavior.

### Theoretical and Practical Implications

At a theoretical level, the present study offers a valuable contribution by examining a less commonly explored model of perfectionism—namely, the concept of negative perfectionism proposed by Terry-Short et al. (1995). Integrating this form of perfectionism into an explanatory framework for procrastination provides a meaningful alternative to existing models, emphasizing the role of task delay as a behavior maintained through negative reinforcement—specifically, as an avoidance and self-protection strategy against making mistakes, experiencing failure, and receiving disapproval for perceived negative outcomes—characteristics often associated with perfectionistic individuals (Mansouri et al., 2022; Sirois, 2016b; Xie et al., 2018).

From a practical perspective, the results of this study may be useful for psychologists, educational counselors, teachers, parents and adults of all ages, given the high prevalence of procrastination (Ferrari & Tibbett, 2020; Klassen et al., 2007) and its documented consequences on career development, personal relationships, financial stability, and the management of health-related issues (Steel, 2007). The findings suggest that interventions should focus on identifying perfectionistic beliefs, clarifying personal motivation, and strengthening self-regulation skills, as these factors may contribute both to reducing procrastination and enhancing life satisfaction.

### Limitations and Future Directions

The present study has certain limitations, and the results should be interpreted accordingly.

The first limitation concerns the use of a cross-sectional design, which does not allow for causal conclusions regarding the relationships between variables (Fairchild & McDaniel, 2017; Setia, 2016). Although significant associations were identified between negative perfectionism, procrastination, and life satisfaction, it cannot be determined with certainty in which direction the influence occurs. Therefore, to better understand

the dynamics of these relationships, future research should employ experimental and longitudinal designs that can capture their development and reciprocal influences over time.

Another limitation relates to the sample size and representativeness. As previously mentioned, moderation analysis typically requires a larger number of participants than was included in the current study, especially given that moderation effects tend to be small in magnitude (Aguinis et al., 2005; McClelland & Judd, 1993). In addition, although participants ranged in age from 18 to 59 years, the sample was convenience-based and included underrepresented age groups, with the average age being approximately 25. Thus, future studies are encouraged to use larger and more heterogeneous samples that would allow for adequately powered tests of moderation effects and for the exploration of individual differences across demographic or contextual factors.

In addition, a relevant limitation lies in the exclusive use of self-report questionnaires for data collection. This method is susceptible to various sources of bias, such as social desirability, self-perception inaccuracies, and memory-related errors (Paulhus & Vazire, 2007). Furthermore, when all variables are measured using the same method, there is an increased risk of common method bias, which may lead to inflated estimates of the relationships between variables (Kock et al., 2021). For future research, the use of mixed-method approaches, commonly referred to as methodological triangulation (Morse, 1991), is recommended. This approach involves employing diverse methods of data collection and can contribute to the validation of conclusions, the generation of more detailed information and a more comprehensive understanding of the phenomenon under investigation (Bekhet & Zauszniewski, 2012; Casey & Murphy, 2009; Valencia, 2022).

### Conclusion

In conclusion, this study highlighted a significant relationship between negative perfectionism, procrastination, and life satisfaction, supporting the mediating role of procrastination. Although the hypothesis regarding the moderating role of self-regulation was not supported by the data, self-regulation remains a relevant variable in understanding procrastinatory behavior. The findings contribute to clarifying possible explanatory mechanisms in the relationship between perfectionism and well-being and offer a starting point for future investigations aiming to explore these relationships in greater depth..

## 5. REFERENCES

Abolghasemi, A., & Varaniyab, S. T. (2010). Resilience and perceived stress: predictors of life satisfaction in the students of success and failure. *Procedia - Social and*

*Behavioral Sciences*, 5, 748–752.  
<https://doi.org/10.1016/j.sbspro.2010.07.178>

Aguinis, H., Beaty, J. C., Boik, R. J., & Pierce, C. A. (2005). Effect Size and Power in Assessing moderating effects of

categorical variables using multiple regression: A 30-Year Review. *Journal of Applied Psychology*, 90(1), 94–107. <https://doi.org/10.1037/0021-9010.90.1.94>

Ahmed, V., Farooq, H., Shazia, F., & Noorullah, D. A. (2021). The relationship between perfectionism dimensions and coping strategies in postgraduate clinical psychology students and practitioners. *American Scientific Research Journal for Engineering, Technology, and Sciences (ASRJETS)*, 79(1), 132-146.

Ansbacher, H.L., & Ansbacher, R. R. (Eds.). (1956). *The individual psychology of Alfred Adler: a systematic presentation in selections from his writings*. Basic Books.

Ashby, J. S., & Kottman, T. (1996). Inferiority as a distinction between normal and neurotic perfectionism. *Individual Psychology: Journal of Adlerian Theory, Research & Practice*, 52(3), 237–245.

Baumeister, R. F., & Heatherton, T. F. (1996). Self-Regulation Failure: An Overview. *Psychological Inquiry*, 7(1), 1–15. [https://doi.org/10.1207/s15327965pli0701\\_1](https://doi.org/10.1207/s15327965pli0701_1)

Baumeister, R. F., Schmeichel, B. J., & Vohs, K. D. (2007). Self-regulation and the executive function: the self as controlling agent. In A. Kruglanski & E. Higgins (Eds.), *Social psychology: handbook of basic principles* (2nd ed). New York: Guilford.

Bekhet, A. K., & Zauszniewski, J. A. (2012). Methodological triangulation: an approach to understanding data. *Nurse Researcher*, 20(2), 40–43. <https://doi.org/10.7748/nr2012.11.20.2.40.c9442>

Bell, M. A., & Deater-Deckard, K. (2007). Biological Systems and the Development of Self-Regulation: Integrating behavior, genetics, and psychophysiology. *Journal of Developmental & Behavioral Pediatrics*, 28(5), 409–420. <https://doi.org/10.1097/dbp.0b013e3181131fc7>

Bergman, A. J., Nyland, J. E., & Burns, L. R. (2007). Correlates with perfectionism and the utility of a dual process model. *Personality and individual differences*, 43(2), 389-399.

Beutel, M. E., Klein, E. M., Aufenanger, S., Brähler, E., Dreier, M., Müller, K. W., Quiring, O., Reinecke, L., Schmutzer, G., Stark, B., & Wölfling, K. (2016). Procrastination, Distress and Life Satisfaction across the Age Range – A German Representative Community Study. *PLoS ONE*, 11(2), e0148054. <https://doi.org/10.1371/journal.pone.0148054>

Burns, D. D. (1980). The perfectionist's script for self-defeat. *Psychology today*, 14(6), 34-52.

Burns, L. R., & Fedewa, B. A. (2005). Cognitive styles: Links with perfectionistic thinking. *Personality and Individual Differences*, 38(1), 103-113.

Çapan, B. E. (2010). Relationship among perfectionism, academic procrastination and life satisfaction of university students. *Procedia - Social and Behavioral Sciences*, 5, 1665–1671. <https://doi.org/10.1016/j.sbspro.2010.07.342>

Carey, K. B., Neal, D. J., & Collins, S. E. (2004). Short Self-Regulation questionnaire [Dataset]. In *PsycTESTS Dataset*. <https://doi.org/10.1037/t00522-000>

Carpenter, R., Wheeler, M., Burns, L., Dueling, J., & Rogers, W. (2023). *Developing a short form of the Positive and Negative Perfectionism Scale (PANPS-SF)*. *International Journal of Humanities and Social Science*, 13(2)

Casey, D., & Murphy, K. (2009). Issues in using methodological triangulation in research. *Nurse Researcher*, 16(4), 40–55. <https://doi.org/10.7748/nr2009.07.16.4.40.c7160>

Cohen, E. D. (2020). The psychoanalysis of perfectionism: Integrating Freud's psychodynamic theory into logic-based therapy. *International Journal of Philosophical Practice*, 6(1), 15-27. <https://doi.org/10.5840/ijpp2020612>

Curran, T., & Hill, A. P. (2017). Perfectionism is increasing over time: A meta-analysis of birth cohort differences from 1989 to 2016. *Psychological Bulletin*, 145(4), 410–429. <https://doi.org/10.1037/bul0000138>

Diener, E., & Diener, M. (1995). Cross-cultural correlates of life satisfaction and self-esteem. *Journal of Personality and Social Psychology*, 68(4), 653–663. <https://doi.org/10.1037/0022-3514.68.4.653>

Eckert, M., Ebert, D. D., Lehr, D., Sieland, B., & Berking, M. (2016). Overcome procrastination: Enhancing emotion regulation skills reduce procrastination. *Learning and Individual Differences*, 52, 10–18. <https://doi.org/10.1016/j.lindif.2016.10.001>

Elliot, A. J., & McGregor, H. A. (2001). A 2 × 2 achievement goal framework. *Journal of Personality and Social Psychology*, 80(3), 501–519. <https://doi.org/10.1037/0022-3514.80.3.501>

Fairchild, A. J., & McDaniel, H. L. (2017). Best (but oft-forgotten) practices: mediation analysis, *American Journal of Clinical Nutrition*, 105(6), 1259–1271. <https://doi.org/10.3945/ajcn.117.152546>

Fedewa, B. A., Burns, L. R., & Gomez, A. A. (2005). Positive and negative perfectionism and the shame/guilt distinction: Adaptive and maladaptive characteristics. *Personality and individual differences*, 38(7), 1609-1619.

Fekih-Romdhane, F., Sawma, T., Obeid, S., & Hallit, S. (2023). Self-critical perfectionism mediates the relationship between self-esteem and satisfaction with life in Lebanese university students. *BMC Psychology*, 11(1). <https://doi.org/10.1186/s40359-023-01040-6>

- Ferrari, J. R., & Díaz-Morales, J. F. (2006). Procrastination: Different time orientations reflect different motives. *Journal of Research in Personality*, 41(3), 707–714. <https://doi.org/10.1016/j.jrp.2006.06.006>
- Ferrari, J. R., & Tibbett, T. P. (2020). Procrastination. In *Springer eBooks* (pp. 4046–4053). [https://doi.org/10.1007/978-3-319-24612-3\\_2272](https://doi.org/10.1007/978-3-319-24612-3_2272)
- Ferrari, J. R., Johnson, J. L., & McCown, W. G. (1995). Procrastination and task avoidance. In *Springer eBooks*. <https://doi.org/10.1007/978-1-4899-0227-6>
- Flett, G. L., Stainton, M., Hewitt, P. L., Sherry, S. B., & Lay, C. (2012). Procrastination Automatic thoughts as a Personality construct: An analysis of the Procrastinatory Cognitions inventory. *Journal of Rational-Emotive & Cognitive-Behavior Therapy*, 30(4), 223–236. <https://doi.org/10.1007/s10942-012-0150-z>
- Frost, R. O., Heimberg, R. G., Holt, C. S., Mattia, J. I., & Neubauer, A. L. (1993). A comparison of two measures of perfectionism. *Personality and Individual Differences*, 14(1), 119–126. [https://doi.org/10.1016/0191-8869\(93\)90181-2](https://doi.org/10.1016/0191-8869(93)90181-2)
- Frost, R. O., Marten, P., Lahart, C., & Rosenblate, R. (1990). The dimensions of perfectionism. *Cognitive Therapy and Research*, 14(5), 449–468. <https://doi.org/10.1007/BF01172967>
- Hamachek, D. E. (1978). Psychodynamics of normal and neurotic perfectionism. *Psychology: A journal of human behavior*.
- Heatherton, T. F., & Baumeister, R. F. (1996). Self-Regulation failure: past, present, and future. *Psychological Inquiry*, 7(1), 90–98. [https://doi.org/10.1207/s15327965pli0701\\_20](https://doi.org/10.1207/s15327965pli0701_20)
- Hewitt, P. L., & Flett, G. L. (1989). The Multidimensional Perfectionism Scale: Development and validation. *Canadian Psychology*, 30, 339
- Hewitt, P. L., & Flett, G. L. (1991). Perfectionism in the self and social contexts: Conceptualization, assessment, and association with psychopathology. *Journal of Personality and Social Psychology*, 60(3), 456–470. <https://doi.org/10.1037/0022-3514.60.3.456>
- Hofmann, W., Schmeichel, B. J., & Baddeley, A. D. (2012). Executive functions and self-regulation. *Trends in Cognitive Sciences*, 16(3), 174–180. <https://doi.org/10.1016/j.tics.2012.01.006>
- Hollander, M.H. (1965). Perfectionism. *Comprehensive Psychiatry*, 6(2), 94–103. [https://doi.org/10.1016/S0010-440X\(65\)80016-5](https://doi.org/10.1016/S0010-440X(65)80016-5)
- Howell, A. J., & Watson, D. C. (2007). Procrastination: Associations with achievement goal orientation and learning strategies. *Personality and Individual Differences*, 43(1), 167–178. <https://doi.org/10.1016/j.paid.2006.11.017>
- Kandemir, M. (2014). Reasons of academic procrastination: self-regulation, academic self-efficacy, life satisfaction and demographics variables. *Procedia - Social and Behavioral Sciences*, 152, 188–193. <https://doi.org/10.1016/j.sbspro.2014.09.179>
- Karas, D., & Spada, M. M. (2009b). Brief cognitive-behavioural coaching for procrastination: a case series. *Coaching an International Journal of Theory Research and Practice*, 2(1), 44–53. <https://doi.org/10.1080/17521880802379700>
- Klassen, R. M., Krawchuk, L. L., & Rajani, S. (2007). Academic procrastination of undergraduates: Low self-efficacy to self-regulate predicts higher levels of procrastination. *Contemporary Educational Psychology*, 33(4), 915–931. <https://doi.org/10.1016/j.cedpsych.2007.07.001>
- Kock, F., Berbekova, A., & Assaf, A. G. (2021). Understanding and managing the threat of common method bias: Detection, prevention and control. *Tourism Management*, 86, 104330. <https://doi.org/10.1016/j.tourman.2021.104330>
- Liu, Q., Zhao, X., & Liu, W. (2022). Are Perfectionists Always Dissatisfied with Life? An Empirical Study from the Perspective of Self-Determination Theory and Perceived Control. *Behavioral Sciences*, 12(11), 440. <https://doi.org/10.3390/bs12110440>
- Lodha P, Sharma A, Dsouza G, Marathe I, Dsouza S, Rawal S, Pandya V, Sousa AD. General Procrastination Scale: Development of Validity and Reliability. *Int J Med Public Health*. 2019;9(3):74-80.
- Lucas, R. E., Diener, E., & Suh, E. (1996). Discriminant validity of well-being measures. *Journal of Personality and Social Psychology*, 71(3), 616–628. <https://doi.org/10.1037/0022-3514.71.3.616>
- Macaskill, A. (2012). Differentiating Dispositional Self-Forgiveness from Other-Forgiveness: Associations with Mental Health and Life Satisfaction. *Journal of Social and Clinical Psychology*, 31(1), 28–50. <https://doi.org/10.1521/jscp.2012.31.1.28>
- Maehr, M. (1989). Thoughts about motivation. In C. Ames & R. Ames (Eds.), *Research on motivation in education* (Vol. 3, pp. 299–315). New York: Academic Press
- Mansouri, K., Ashouri, A., Gharraee, B., & Farahani, H. (2022). The mediating role of fear of failure, Self-Compassion and intolerance of uncertainty in the relationship between academic procrastination and perfectionism. *Iranian Journal of Psychiatry and Clinical*

- Psychology*, 28(1), 34–47. <https://doi.org/10.32598/ijpcp.28.1.3706.1>
- McClelland, G. H., & Judd, C. M. (1993). Statistical difficulties of detecting interactions and moderator effects. *Psychological Bulletin*, 114(2), 376–390. <https://doi.org/10.1037/0033-2909.114.2.376>
- McGregor, H. A., & Elliot, A. J. (2002). Achievement goals as predictors of achievement-relevant processes prior to task engagement. *Journal of Educational Psychology*, 94(2), 381–395. <https://doi.org/10.1037/0022-0663.94.2.381>
- Metin, U. B., Taris, T. W., & Peeters, M. C. (2016). Measuring procrastination at work and its associated workplace aspects. *Personality and Individual Differences*, 101, 254–263. <https://doi.org/10.1016/j.paid.2016.06.006>
- Morse, J. M. (1991). Approaches to qualitative-quantitative methodological triangulation. *Nursing research*, 40(2), 120–123.
- Aristotle (with Sachs, J.). (2002). *Nicomachean Ethics* (1st ed). Hackett Publishing Company, Incorporated.
- Nguyen, B., Steel, P., & Ferrari, J. R. (2013). Procrastination's impact in the workplace and the workplace's impact on procrastination. *International Journal of Selection*
- Oflazian, J. S., & Borders, A. (2022). Does rumination mediate the unique effects of shame and guilt on procrastination? *Journal of Rational-Emotive & Cognitive-Behavior Therapy*, 41(1), 237–246. <https://doi.org/10.1007/s10942-022-00466-y>
- Özer, B. U., & Saçkes, M. (2011). International Conference on Education and Educational Psychology (ICEEPSY 2010) Effects of Academic Procrastination on college students' life satisfaction. *Procedia - Social and Behavioral Sciences*, 12, 512–519. <https://doi.org/10.1016/j.sbspro.2011.02.063>
- Ozer, B. U., O'Callaghan, J., Bokszczanin, A., Ederer, E., & Essau, C. (2014). Dynamic interplay of depression, perfectionism and self-regulation on procrastination. *British Journal of Guidance and Counselling*, 42(3), 309–319. <https://doi.org/10.1080/03069885.2014.896454>
- Paulhus, D. L., & Vazire, S. (2007). The self-report method. In R. W. Robins, R. C. Fraley, & R. F. Krueger (Eds.), *Handbook of research methods in personality psychology* (pp. 224–239). New York: Guilford Press.
- Pavot, W., & Diener, E. (1993). Review of the satisfaction with life scale. *Psychological Assessment*, 5(2), 164–172. <https://doi.org/10.1037/1040-3590.5.2.164>
- Pychyl, T. A., & Flett, G. L. (2012). Procrastination and Self-Regulatory Failure: An introduction to the special issue. *Journal of Rational-Emotive & Cognitive-Behavior Therapy*, 30(4), 203–212. <https://doi.org/10.1007/s10942-012-0149-5>
- Pychyl, T. A., & Sirois, F. M. (2016). Procrastination, Emotion Regulation, and Well-Being. In *Elsevier eBooks* (pp. 163–188). <https://doi.org/10.1016/b978-0-12-802862-9.00008-6>
- Pychyl, T. A., Lee, J. M., Thibodeau, R., & Blunt, A. (2000). Five days of emotion: An experience sampling study of undergraduate student procrastination. *Journal of Social Behavior and Personality*, 15, 239–254.
- Rahimi, S., Hall, N. C., & Sticca, F. (2023). Understanding academic procrastination: A Longitudinal analysis of procrastination and emotions in undergraduate and graduate students. *Motivation and Emotion*, 47(4), 554–574. <https://doi.org/10.1007/s11031-023-10010-9>
- Rice, K. G., Ashby, J. S., & Slaney, R. B. (1998). Self-esteem as a mediator between perfectionism and depression: A structural equations analysis. *Journal of counseling psychology*, 45(3), 304.
- Şahin, E. E. (2021). Self-Compassion as a mediator between perfectionism and Life-Satisfaction among university students. *International Journal of Progressive Education*, 17(6), 201–214. <https://doi.org/10.29329/ijpe.2021.382.14>
- Scher, S. J., & Osterman, N. M. (2002). Procrastination, conscientiousness, anxiety, and goals: Exploring the measurement and correlates of procrastination among school-aged children. *Psychology in the Schools*, 39(4), 385–398. <https://doi.org/10.1002/pits.10045>
- Sederlund, A. P., Burns, L. R., & Rogers, W. (2020). Multidimensional models of perfectionism and procrastination: seeking determinants of both. *International Journal of Environmental Research and Public Health*, 17(14), 5099. <https://doi.org/10.3390/ijerph17145099>
- Sederlund, A. P., Burns, L. R., & Rogers, W. (2020). Multidimensional models of perfectionism and procrastination: seeking determinants of both. *International Journal of Environmental Research and Public Health*, 17(14), 5099. <https://doi.org/10.3390/ijerph17145099>
- Seo, E. H. (2009). The Relationship of Procrastination with a Mastery Goal Versus an Avoidance Goal. *Social Behavior and Personality an International Journal*, 37(7), 911–919. <https://doi.org/10.2224/sbp.2009.37.7.911>
- Serin, N. B., Serin, O., & Özbaş, L. F. (2010). Predicting university students' life satisfaction by their anxiety and depression level. *Procedia - Social and Behavioral Sciences*, 9, 579–582. <https://doi.org/10.1016/j.sbspro.2010.12.200>

- Setia, M. (2016). Methodology series module 3: Cross-sectional studies. *Indian Journal of Dermatology*, 61(3), 261. <https://doi.org/10.4103/0019-5154.182410>
- Sirois, F. M. (2006). "I'll look after my health, later": A replication and extension of the procrastination–health model with community-dwelling adults. *Personality and Individual Differences*, 43(1), 15–26. <https://doi.org/10.1016/j.paid.2006.11.003>
- Sirois, F. M. (2016). Introduction: Conceptualizing the Relations of Procrastination to Health and Well-Being. In *Elsevier eBooks* (pp. 3–20). <https://doi.org/10.1016/b978-0-12-802862-9.00001-3>
- Sirois, F. M. (2016b). Procrastination, Stress, and Chronic Health Conditions: A Temporal perspective. In *Elsevier eBooks* (pp. 67–92). <https://doi.org/10.1016/b978-0-12-802862-9.00004-9>
- Sirois, F. M., Molnar, D. S., & Hirsch, J. K. (2017). A Meta-Analytic and Conceptual Update on the Associations between Procrastination and Multidimensional Perfectionism. *European Journal of Personality*, 31(2), 137–159. <https://doi.org/10.1002/per.2098>
- Sirois, F., & Pychyl, T. (2013). Procrastination and the Priority of Short-Term Mood Regulation: Consequences for Future self. *Social and Personality Psychology Compass*, 7(2), 115–127. <https://doi.org/10.1111/spc3.12011>
- Slade, P. D., Coppel, D. B., & Townes, B. D. (2009). Neurocognitive correlates of positive and negative perfectionism. *International Journal of Neuroscience*, 119(10), 1741–1754.
- Slaney, R. B., Rice, K. G., Mobley, M., Trippi, J., & Ashby, J. S. (2001). The revised almost perfect scale. *Measurement and Evaluation in Counseling and Development*, 34(3), 130–145. <https://doi.org/10.1080/07481756.2002.12069030>
- Stead, R., Shanahan, M. J., & Neufeld, R. W. (2010). "I'll go to therapy, eventually": Procrastination, stress and mental health. *Personality and Individual Differences*, 49(3), 175–180. <https://doi.org/10.1016/j.paid.2010.03.028>
- Steel, P. (2007). The nature of procrastination: A meta-analytic and theoretical review of quintessential self-regulatory failure. *Psychological Bulletin*, 133(1), 65–94. <https://doi.org/10.1037/0033-2909.133.1.65>
- Steel, P., & König, C. J. (2006). Integrating theories of motivation. *Academy of Management Review*, 3, 889–913. <https://doi.org/bsn6kw>
- Steel, P., Brothen, T., & Wambach, C. (2001). Procrastination and personality, performance, and mood. *Personality and Individual Differences*, 30(1), 95–106. [https://doi.org/10.1016/s0191-8869\(00\)00013-1](https://doi.org/10.1016/s0191-8869(00)00013-1)
- Stevens, M. J., Lambru, I., Sandu, C. G., Constantinescu, P. M., Butucescu, A., & Uscatescu, L. (2012). Romanian adaptation of the Satisfaction with Life Scale. *Journal of Psychological and Educational Research*, 20(1), 17.
- Stoeber, J., & Otto, K. (2006). Positive Conceptions of Perfectionism: Approaches, Evidence, Challenges. *Personality and Social Psychology Review*, 10(4), 295–319. [https://doi.org/10.1207/s15327957pspr1004\\_2](https://doi.org/10.1207/s15327957pspr1004_2)
- Stumpf, H., & Parker, W. D. (2000). A hierarchical structural analysis of perfectionism and its relation to other personality characteristics. *Personality and individual differences*, 28(5), 837–852.
- Sullivan, R., Green-Demers, I., & Lauzon, A. (2019). When do self-conscious emotions distress teenagers? Interrelations between dispositional shame and guilt, depressive and anxious symptoms, and life satisfaction. *Canadian Journal of Behavioural Science/Revue Canadienne Des Sciences Du Comportement*, 52(3), 210–219. <https://doi.org/10.1037/cbs0000163>
- Terry-Short, L. A., Owens, R. G., Slade, P. D., & Dewey, M. E. (1995). Positive and negative perfectionism. *Personality and individual differences*, 18(5), 663–668.
- Tice, D. M., & Baumeister, R. F. (1997). Longitudinal study of Procrastination, Performance, Stress, and Health: The Costs and Benefits of Dawdling. *Psychological Science*, 8(6), 454–458. <https://doi.org/10.1111/j.1467-9280.1997.tb00460.x>
- Tice, D. M., & Bratslavsky, E. (2000). Giving in to feel Good: The place of emotion regulation in the context of General Self-Control. *Psychological Inquiry*, 11(3), 149–159. [https://doi.org/10.1207/s15327965pli1103\\_03](https://doi.org/10.1207/s15327965pli1103_03)
- Tversky, A., & Kahneman, D. (1992). Advances in prospect theory: Cumulative representation of uncertainty. *Journal of Risk and Uncertainty*, 5, 297–323. <https://doi.org/10.1007/BF00122574>
- Valencia, M. M. A. (2022). Principles, scope, and limitations of the methodological triangulation. *PubMed*, 40(2). <https://doi.org/10.17533/udea.iee.v40n2e03>
- Van Eerde, W. (2003). A meta-analytically derived nomological network of procrastination. *Personality and Individual Differences*, 35(6), 1401–1418. [https://doi.org/10.1016/s0191-8869\(02\)00358-6](https://doi.org/10.1016/s0191-8869(02)00358-6)
- Van Eerde, W., & Klingsieck, K. B. (2018). Overcoming procrastination? A meta-analysis of intervention studies. *Educational Research Review*, 25, 73–85. <https://doi.org/10.1016/j.edurev.2018.09.002>

Verhaeghe, P. (2014). *What about me? The struggle for identity in a market-based society*. Scribe Publications.

Wolters, C. A. (2003). Understanding procrastination from a self-regulated learning perspective. *Journal of Educational Psychology*, 95(1), 179–187. <https://doi.org/10.1037/0022-0663.95.1.179>

Xie, Y., Yang, J., & Chen, F. (2018). Procrastination and multidimensional perfectionism: A meta-analysis of main,

mediating, and moderating effects. *Social Behavior and Personality: An International Journal*, 46(3), 395–408.

<https://doi.org/10.2224/sbp.6680>

Zhang, Y., Bai, X., & Yang, W. (2022). The chain Mediating Effect of negative perfectionism on Procrastination: An Ego Depletion perspective. *International Journal of Environmental Research and Public Health*, 19(15), 9355.

<https://doi.org/10.3390/ijerph19159355>