

The Psychological Impact of Positive Thinking on Reducing Cognitive Extremism in Adolescents

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Abstract:

Introduction: Adolescence is a pivotal phase characterized by cognitive and emotional development. It can also be marked by cognitive rigidity and the emergence of extremist attitudes. This study examines the impact of a counseling program designed to enhance positive thinking and reduce intellectual extremism in adolescents.

Methods: Employing a quasi-experimental design, this research encompasses pre- and post-intervention assessments, complemented by a 1.5-month follow-up period.

Results: The intervention immediately enhances positive thinking, encompassing dimensions like cognitive flexibility, optimism, positive self-acceptance, and acceptance of differences. Furthermore, it significantly reduces intellectual extremism among participants.

Conclusion: This study contributes to our understanding of adolescent cognitive development and the potential of counseling programs to shape healthier cognitive patterns. The findings underscore the need for extended follow-up research to assess the lasting impact of interventions on adolescent cognition.

Keywords: Adolescents, counseling program, positive thinking, intellectual extremism, cognitive change, psychological impact, cognitive rigidity, open-mindedness, follow-up study.

Introduction

Adolescence is a pivotal phase in cognitive and emotional maturation, distinguished by actively exploring one's identity, values, and beliefs. While this particular stage brings significant opportunities for individual development and exploration of one's identity, it also poses difficulties related to cognitive extremity (Pfeifer & Berkman, 2018). Within the confines of this specific investigation, the term "cognitive extremism" pertains to the inclination towards inflexible, dichotomous, and unwavering cognitive processes, often exhibiting a lack of tolerance, radicalism, and a reluctance to entertain opposing viewpoints (Silvers, 2022).

The increasing prevalence of cognitive extremism among teenagers is a growing concern in contemporary society. The proliferation of social media platforms and the establishment of echo chambers have played a significant role in the polarization of opinions among teenagers, rendering them more vulnerable to embracing extreme ideas due to the distribution of biased information (Jiang et al., 2021). This phenomenon poses a risk to an individual's mental well-being and a potential danger to maintaining societal peace and democratic principles (Jiang et al., 2021).

Conversely, positive thinking is a psychological concept comprising a spectrum of attitudes and beliefs that prioritize optimism, resilience, and the capacity to see positive aspects under challenging circumstances (Taherkhani et al., 2023). Numerous studies have provided substantial evidence to support the manifold advantages of adopting a positive mental health mindset, including reduced stress levels, heightened adaptive strategies, and augmented general state of wellness. Although the benefits of this phenomenon have been extensively studied, more investigation is needed to understand its capacity for reducing cognitive extremism in teenagers (Ozbay et al., 2007).

The primary objective of this study is to examine the psychological ramifications of positive thinking in mitigating cognitive extremism among a cohort of teenagers. By conducting an extensive examination of the current body of research, this study aims to identify the existing gaps in knowledge, elucidate the underlying processes involved, and explore the potential implications for promoting better cognitive habits among teenagers (Eagleson et al., 2016).

The phenomenon of cognitive extremism among teenagers is a complex one that has significant implications. The phenomenon often arises due to cognitive biases, peer effects, and a shortage of exposure to various opinions(Orchard & Reynolds, 2018). During adolescence, individuals often display a heightened susceptibility to embracing extreme perspectives as they navigate the process of identity formation and endeavor to establish a sense of belonging within their social circles. The propensity for extremism may be seen across several areas, including politics, religion, and social matters(Wolfowicz et al., 2021).

The ramifications of cognitive extremism in teenagers are significant. Social polarization may arise as a consequence, impeding the potential for productive discourse and collaboration among persons who hold divergent opinions(Zmigrod et al., 2019). The phenomenon of polarization not only serves to sustain ideological divisions but also plays a role in elevating stress levels, diminishing empathetic tendencies, and fostering heightened intolerance among the teenage population. In addition, it is essential to note that cognitive extremism has the potential to impede the development of critical thinking abilities in teenagers, rendering them more vulnerable to manipulation by extreme ideas and propaganda(Zmigrod, 2023).

Positive thinking refers to a collection of cognitive and emotional mechanisms that aid in developing resilience when confronted with challenging circumstances. The process encompasses maintaining a positive perspective, actively pursuing problem-solving strategies, and directing attention toward individual strengths and possibilities for personal development. Adolescents with good cognitive patterns are likelier to experience improved mental well-being outcomes, such as decreased worry and despair(Tugade & Fredrickson, 2004).

Many scholarly investigations have examined the effects of positive thinking on several dimensions of mental health, underscoring its significance in fostering overall wellness and managing stress. Nevertheless, the impact of positive thinking in mitigating cognitive extremism in teenagers is a relatively unexplored domain in psychology(Poulios et al., 2021).

Although there is less research on the correlation between positive thinking and cognitive extremism in teenagers, a theoretical basis exists to propose that positive thinking might safeguard against extremist ideas. The cultivation of positive thinking promotes qualities such as open-mindedness, flexibility, and a willingness to entertain various perspectives, all of which are in direct opposition to cognitive extremism. Enhancing emotional control and lowering stress levels are potential strategies by which positive thinking may mitigate cognitive extremism. Adolescents who engage in positive thinking have enhanced abilities to effectively navigate emotional discomfort, reducing the likelihood of resorting to extreme ideas or acts as coping strategies. Emotional resilience might act as a protective factor against the appeal of extremist ideologies, which often exploit people's dynamic susceptibilities(Waters et al., 2022).

Furthermore, positive thinking can enhance cognitive flexibility, which refers to an individual's capacity to modify their thoughts and viewpoints in light of new knowledge. Adolescents with a propensity for positive thinking may be more inclined towards engaging in constructive discourse and using critical thinking skills. Consequently, this cognitive disposition may render them less vulnerable to succumbing to the allure of inflexible extreme beliefs. Individuals are inclined to participate in constructive dialogues and actively pursue areas of agreement, diminishing the probability of radicalization(Yin, 2019).

Furthermore, it has been suggested that cultivating a positive mindset might augment an individual's empathy capacity and ability to engage in perspective-taking. Adolescents with a positive mentality demonstrate an increased propensity to empathize with others from various backgrounds and be willing to consider their viewpoints. Empathy can mitigate the dehumanization and cognitive extremism often linked to the "us versus them" mindset. The study aims to answer the following main questions.

1. Is it possible to cultivate positive thinking among secondary school adolescents through a guidance program?
2. Does the cultivation of positive thinking decrease the severity of intellectual extremism among secondary school adolescents?

Study Hypotheses

1. In the experimental group, there is a statistically significant difference between pre-and post-test mean scores on the positive thinking scale, with a trend toward higher scores in the post-test. The intellectual extremism scale's pre-test reveals the same distinction.
2. There is a statistically significant difference in favor of the experimental group When comparing post-test ratings on the positive thinking scale between the experimental and control groups. On the other hand, a statistically significant difference favoring the control group is shown on the intellectual extremism scale.
3. After the counseling program was directly implemented and after a follow-up period of 1.5 months, there was no statistically significant difference between the mean scores of the experimental group participants on the positive thinking scale and the intellectual extremism scale.

Methodology

Study Design:

A quasi-experimental design was employed for the current study, deemed suitable for the research's nature and objectives.

Sample:

The study's sample was made up of two different demographics. The first set consisted of (138) male and female high school students from the Ain Shams Educational Administration's Ibn Khaldoun and Halimiya Al-Zaitoun schools in Cairo. The average age of the participants was 16.147, and the standard deviation was 0.662%. Using this sample, the study instruments' ability to collect data reliably and consistently was evaluated.

The second group, which was the major focus of the research, consisted of (45) male and female high school students from the same two institutions who exhibited significant levels of intellectual extremism throughout the course of the academic year (2021-2022). Their ages varied from (16) to (17), with (16.400) as the mean and (0.495) as the standard deviation. Students were split into an experimental group of (23) male and female students, and a control group of (22), male and female. Age, IQ, family socioeconomic level, positivity, and intellectual radicalism were meticulously balanced and homogenized factors between the two groups. According to the calculated "U" values, these variables had no statistically significant differences at the (0.01, 0.05) significance level.

Data collection tools:

1- the Cattell Intelligence Test was developed and published in 2005 by Egyptian researchers Foad Abu Hotb, Amal Sadik, and Mustafa Abdelaziz. In this evaluation, we made use of the third picture scale ("B"), which is designed for students in their medium to late teens. This tool was used to evaluate the similarity between the test and control groups. In this research, we utilized Amad Ahmed's (2014) continuous colored matrices test to assess the validity of the test by comparing the results to the features of the sample that had been previously analyzed using the Cattell Intelligence Test's third picture scale ("B"). The dependability of the test is shown by a high correlation value of (0.80) between the sample characteristics' scores on the two scales. The first method used in this research to determine reliability was the "split-half" method, in which the test was only used to analyze the characteristics of half of the sample; the correlation coefficient between this "reliability coefficient" and the other half of the test was (0.72), indicating a high-reliability coefficient. The "test-retest" method entails performing the test twice on the sample characteristics, with one week in between each application.

2- Second, Abdulaziz Al-Shakhs's (2013) Family Economic and Social Level Scale. Authors define Economic Social Level as "the degree that determines the family's status in relation to the general level of Egyptian families (study sample)." In this study, the test homogeneity value for the scale was calculated by calculating the correlation coefficient between the degree of each item and the total degree of the scale to determine the expected validity coefficient (construct validity) of the scale. At the (0.01) level, all of the coefficients obtained, (0.75), (0.81), (0.89), (0.74), and (0.83), are significant. Furthermore, the reliability of the scale was calculated using the Alpha Cronbach method in this study, and was found to be satisfactory at.(0.83)

3- Before creating the positive thinking scale for secondary school students, the current researcher evaluated the theoretical framework, studies, and research on positive thinking. The scale's 20 questions are equally distributed among four dimensions (five items each) that assess adaptability, optimism, self-acceptance, and openness to others' diversity. A high score indicates the student has a positive outlook on life, whereas a low score indicates the opposite. The researcher conducted an inter-rater reliability test and found that all items on the scale had an agreement rate of at least 90% using Cooper's equation before applying it to the basic sample to ensure its accuracy and stability. The t-test for independent samples showed that the mean score on the scale was significantly higher in the experimental group than in the control group, indicating that the scale was credible and could differentiate between the two groups. Moreover, Cronbach's alpha validated the scale's internal consistency and determined it to be 0.84. Students from two Cairo schools affiliated with the Ain Shams Educational Administration made up the study's main sample, and their answers were utilized to create the scale.

Results:

Table 1 reveals noteworthy results across several study variables. In the domains of Positive Thinking, Optimism and Positive Expectations, Positive Self-Acceptance, and the capacity to Accept Differences with Others, no negative outcomes were observed (Negative Ranks), indicating a prevalence of positive results. In each of these categories, there were 23 instances of positive outcomes (Positive Ranks). These findings are accompanied by substantial Level of Statistical Significance values of 0.87 or 0.88, indicating strong statistical relationships between these positive psychological factors and the observed outcomes. The Effect Size measurements for these variables are also substantial, ranging from 0.87 to 0.88, indicating a considerable impact of these positive attributes on the results. Conversely, Intellectual Extremism displayed a contrasting pattern, with 23 cases of negative outcomes (Negative Ranks) and no instances of positive outcomes (Positive Ranks). Nevertheless, the Level of Statistical Significance remained high at 0.87, suggesting a robust statistical association between Intellectual Extremism and the observed negative outcomes. These results collectively underscore the significance of positive psychological factors in influencing favorable outcomes while highlighting the adverse impact of Intellectual Extremism in the context of this study.

Table 1. Relationship Between Psychological Variables and Outcomes in the Study

Study Variables	Differences	n	Medium Level	Level "T"	Level "Z"	Level of Statistical Significance	Effect Size
Cognitive flexibility	Negative Ranks	zero	zero	zero	zero	-4.209	Significant
	Positive Ranks	23	12	276			
	Neutral	zero					
	Total	23					
Optimism and Positive Expectations	Negative Ranks	zero	zero	zero	zero	-4.221	Significant
	Positive Ranks	23	12	276			
	Neutral	zero					
	Total	23					
Positive Self-Acceptance	Negative Ranks	zero	zero	zero	zero	-4.224	Significant
	Positive Ranks	23	12	276			
	Neutral	zero					
	Total	23					
Accept Differences with Others	Negative Ranks	zero	zero	zero	zero	-4.210	Significant
	Positive Ranks	23	12	276			
	Neutral	zero					
	Total	23					
Overall Score	Negative Ranks	zero	zero	zero	zero	-4.208	Significant

	Positive Ranks	23	12	276			
	Neutral	zero					
	Total	23					
Intellectual Extremism	Negative Ranks	23	12	276	zero	-4.204	Significant
	Positive Ranks	zero	zero	zero			
	Neutral	zero					
	Total	23					

In relation to the first hypothesis, "there is a statistically significant difference between pre-and post-test mean scores on the positive thinking scale, with a trend toward higher scores in the post-test. The intellectual extremism scale's pre-test reveals the same distinction:" Positive ranks and substantial effect sizes associated with these variables indicate that a positive mindset, optimism, self-acceptance, and willingness to accept differences with others are indeed linked to positive outcomes. This aligns with your hypothesis of a positive relationship between these psychological factors and desired results.

The results presented in the table align closely with the first hypothesis, which posits a positive impact of interventions designed to enhance positive psychological attributes on cognitive extremism among adolescents. Notably, in the experimental group, all positive psychological variables, including Cognitive Flexibility, Optimism, Positive Self-Acceptance, and Acceptance of Differences with Others, exhibit statistically significant improvements in pre- and post-test mean scores. This finding resonates with a body of literature that underscores the positive influence of these attributes on well-being and cognitive patterns (Schotanus-Dijkstra et al., 2015). The absence of negative ranks and the consistently significant Level of Statistical Significance and substantial Effect Sizes underscore the efficacy of interventions targeting these positive attributes. These results strongly support the notion that nurturing positive thinking, optimism, self-acceptance, and openness to differences can lead to constructive changes in adolescents' cognitive patterns, potentially reducing cognitive extremism. Additionally, the decrease in intellectual extremism scores among the experimental group further supports the hypothesis that interventions focused on reducing cognitive extremism can indeed have a significant impact (van Prooijen & Douglas, 2018). However, it is imperative to interpret these findings cautiously and substantially Effect Establishes causality definitively and accounts for potential confounding variables.

The second hypothesis:

The results presented in Table 2 offer valuable insights into the significance of differences between the experimental and control groups in post-measurements across various study variables. Notably, interventions targeting positive psychological attributes, such as cognitive flexibility, optimism, positive self-acceptance, and acceptance of differences with others, have produced a strikingly higher average rank in the experimental group (cognitive flexibility: 33.78, optimism: 34.00, positive self-acceptance: 34.00, acceptance of differences with others: 33.83) compared to the control group (cognitive flexibility: 11.73, optimism: 11.50, positive self-acceptance: 11.50, acceptance of differences with others: 11.68). These differences are not only statistically significant, as indicated by the "Z" values (cognitive flexibility: -5.668, optimism: -5.773, positive self-acceptance: -5.788, acceptance of differences with others: -5.725), but also practically substantial, with effect sizes ranging from 0.84 to 0.86. These findings underscore the effectiveness of these interventions in promoting positive cognitive patterns among adolescents, aligning closely with the first hypothesis. Conversely, intellectual extremism exhibits a notable reduction in the experimental group (12.00), signifying the success of interventions aimed at mitigating extremist thinking compared to the control group (34.50). These outcomes collectively emphasize the potential of interventions focused on enhancing positive attributes and curbing extremism to foster healthier cognitive patterns among adolescents, offering promising avenues for psychological intervention and development.

Table 2: Significance of Differences Between Experimental and Control Groups on Post-Measurement

Study Variables	Group	N	Average Ranks	Total Ranks	Minimum "U" Value	"Z"	Level of Statistical Significance	Effect Size
Cognitive Flexibility	Experimental	23	33.78	777	5	-5.668	Significant	0.84
	Control	22	11.73	258				
Optimism and Positive Expectations	Experimental	23	34.00	782	0	-5.773	Significant	0.86
	Control	22	11.50	253				
Positive Self-Acceptance	Experimental	23	34.00	782	0	-5.788	Significant	0.86
	Control	22	11.50	253				
Accept Differences with Others	Experimental	23	33.83	778	4	-5.725	Significant	0.85
	Control	22	11.68	257				
Overall Score	Experimental	23	34.00	782	0	-5.761	Significant	0.85
	Control	22	11.50	253				
Intellectual Extremism	Experimental	23	12.00	276	0	-5.772	Significant	0.86
	Control	22	34.50	759				

The results presented in Table 2 offer compelling support for the second hypothesis, which posits significant differences between the experimental and control groups in post-test ratings on the positive thinking and intellectual extremism scales. These findings align with previous research emphasizing the malleability of cognitive patterns and the effectiveness of targeted interventions. Notably, interventions aimed at enhancing positive psychological attributes, including positive thinking, have yielded substantial improvements in the experimental group, as indicated by significantly higher average ranks (34.00) than the control group (11.50). This finding resonates with the broader literature on positive psychology interventions, which have demonstrated their efficacy in fostering optimism and positive thinking (Fredrickson, 2001). Conversely, the control group significantly reduces post-test ratings on the intellectual extremism scale, reflecting the success of interventions designed to mitigate extremist thinking. This outcome aligns with research on reducing extremism, underscoring the importance of interventions promoting tolerance and open-mindedness (Holmer, 2013). These results collectively highlight the potential of tailored interventions to bring about positive changes in cognitive patterns while curbing extremism among adolescents, offering promising avenues for psychological development and intervention.

The third hypothesis

Table 3 presents a comprehensive analysis of the differences in dimensional and follow-up measurements for the experimental group regarding positive thinking and cognitive extremism, offering valuable insights into the lasting impact of interventions. Notably, the results reveal that for all positive thinking dimensions—Cognitive Flexibility, Optimism, Positive Self-Acceptance, Acceptance of Differences with Others, and the Overall Score—no statistically significant differences exist between the experimental group's post-intervention measurements and the follow-up assessments. The "Z" values, ranging from approximately -1.0 to -1.890, and the associated non-significance levels ($p > 0.05$) indicate that the effects of the interventions applied during the experimental phase did not result in statistically significant and sustained changes in these facets of positive thinking during the follow-up period. Similarly, in the context of cognitive extremism, specifically Intellectual Extremism, the findings show no statistically significant differences between the measurements taken at the end of the experimental phase and those at the follow-up stage. The "Z" value, approximately -1.414, and the non-significance level suggest that interventions targeting cognitive extremism did not lead to statistically significant and enduring changes. These outcomes emphasize the need for further research to explore the longevity of intervention effects and refine strategies for sustaining positive changes in positive thinking and cognitive extremism among adolescents beyond the immediate post-intervention period.

Table 3: Significance of Differences in Dimensional and Follow-up Measurements for the Experimental Group

Study Variables	Differences	N	Medium Level	Total Level	"T"	"Z"	Level of Statistical Significance
Cognitive Flexibility	Negative Ranks	0	0	0	0	0	Non-significance
	Positive Ranks	1	1	1			
	Neutral	22					
	Total	23					
Optimism and Positive Expectations	Negative Ranks	0	0	0	0	0	Non-significance
	Positive Ranks	1	1	1			
	Neutral	22					
	Total	23					
Positive Self-Acceptance	Negative Ranks	0	0	0	0	-1.414	Non-significance
	Positive Ranks	2	1.50	3			
	Neutral	21					
	Total	23					
Accept Differences with Others	Negative Ranks	0	0	0	0	0	Non-significance
	Positive Ranks	1	1	1			
	Neutral	22					
	Total	23					
Overall Score	Negative Ranks	0	0	0	0	-1.890	Non-significance
	Positive Ranks	4	2.50	10			
	Neutral	19					
	Total	23					
Intellectual Extremism	Negative Ranks	2	1.50	3	0	-1.414	Non-significance
	Positive Ranks	0	0	0			
	Neutral	21					

	Total	23					
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Table 3 presents a comprehensive analysis in the context of the third hypothesis, which posits that following the direct implementation of a counseling program and a subsequent 1.5-month follow-up, there would be no statistically significant difference between the mean scores of the experimental group participants on the positive thinking scale and the intellectual extremism scale. These results evoke a nuanced discussion encompassing intervention durability, the complexities of cognitive change, and the significance of extended follow-up periods.

The findings in Table 3 align with the third hypothesis, revealing that the mean ranks of the experimental group participants on both the positive thinking and intellectual extremism scales did not exhibit statistically significant differences between the post-intervention measurements and those at the 1.5-month follow-up. The "Z" values, all approaching -1, and the non-significance levels ($p > 0.05$) indicate that the effects of the counseling program on these cognitive dimensions did not display substantial variations over this relatively short follow-up period.

These results resonate with previous research on the durability of intervention effects. Studies have shown that while interventions can often lead to immediate improvements in cognitive patterns, maintaining these changes over time can be challenging (Willis & Schaie, 2009). This phenomenon is particularly noteworthy in the context of adolescents, as dynamic changes characterize their cognitive and emotional development. The lack of sustained statistical significance in positive thinking and reduced intellectual extremism may suggest that booster sessions or longer-term follow-up assessments are needed to assess the persistence of intervention effects.

Furthermore, the outcomes underscore the complexity of cognitive change and the multifaceted nature of positive thinking and intellectual extremism. Positive thinking encompasses various dimensions, such as cognitive flexibility, optimism, positive self-acceptance, and acceptance of differences with others. Intellectual extremism involves a range of cognitive processes related to open-mindedness and tolerance. These multifaceted constructs may require extended and tailored interventions to induce lasting transformations (Whiting et al., 2017).

In terms of intellectual extremism, this result also highlights the challenges associated with reducing extremist thinking among adolescents, which can be deeply ingrained and resistant to change. It underscores the importance of exploring alternative intervention approaches or considering additional factors influencing extremist attitudes and beliefs (Al-Jubouri et al., 2021).

Conclusion

In conclusion, this study delved into the psychological impact of a counseling program focused on enhancing positive thinking and reducing intellectual extremism among adolescents. The research unfolded in phases, including the initial intervention, post-intervention assessments, and a 1.5-month follow-up period. The findings have illuminated several key insights.

Firstly, the study demonstrated the counseling program's effectiveness in promoting positive thinking among adolescents. Immediate post-intervention measurements revealed significant improvements in various dimensions of positive thinking, including cognitive flexibility, optimism, positive self-acceptance, and accepting differences with others. These changes underscore the program's potential to enhance the cognitive well-being of adolescents, aligning with the broader literature on positive psychology interventions.

Additionally, the research highlighted the program's efficacy in curbing intellectual extremism, a critical concern in contemporary society. The experimental group exhibited a notable reduction in extremist thinking immediately after the intervention, emphasizing the positive impact of interventions to foster open-mindedness and tolerance.

However, the study also underscored the challenges associated with the sustainability of these changes. The 1.5-month follow-up assessments indicated that the positive effects observed immediately after the intervention were not statistically significant during this later period. This prompts questions about the duration and reinforcement of intervention effects, suggesting the need for further research to explore the longer-term impact of such programs.

References:

1. Al-Jubouri, M. B., AL-Fayyadh, S., Jaafar, S. A., Alabdulaziz, H., Nashwan, A. J., Jahlan, I. O., & Shaban, M. (2021). Incivility among Arabic-speaking nursing faculty: testing the psychometric properties of the

- Arabic version of incivility in nursing education-revised. *International Journal of Nursing Education Scholarship*, 18(1). <https://doi.org/10.1515/ijnes-2021-0020>
2. Eagleson, C., Hayes, S., Mathews, A., Perman, G., & Hirsch, C. R. (2016). The power of positive thinking: Pathological worry is reduced by thought replacement in Generalized Anxiety Disorder. *Behaviour Research and Therapy*, 78, 13–18. <https://doi.org/10.1016/j.brat.2015.12.017>
 3. Fredrickson, B. L. (2001). The role of positive emotions in positive psychology. The broaden-and-build theory of positive emotions. *The American Psychologist*, 56(3), 218–226. <https://doi.org/10.1037//0003-066x.56.3.218>
 4. Holmer, G. (2013). Countering Violent Extremism : A Peacebuilding Perspective. *United States Institute of Peace*, 1–8.
 5. Jiang, J., Ren, X., & Ferrara, E. (2021). Social Media Polarization and Echo Chambers in the Context of COVID-19: Case Study. *JMIRx Med*, 2(3), e29570. <https://doi.org/10.2196/29570>
 6. Orchard, F., & Reynolds, S. (2018). The combined influence of cognitions in adolescent depression: Biases of interpretation, self-evaluation, and memory. *British Journal of Clinical Psychology*, 57(4), 420–435. <https://doi.org/10.1111/bjc.12184>
 7. Ozbay, F., Johnson, D. C., Dimoulas, E., Morgan, C. A., Charney, D., & Southwick, S. (2007). Social support and resilience to stress: from neurobiology to clinical practice. *Psychiatry (Edgmont (Pa. : Township))*, 4(5), 35–40. <https://doi.org/20806028>
 8. Pfeifer, J. H., & Berkman, E. T. (2018). The Development of Self and Identity in Adolescence: Neural Evidence and Implications for a Value-Based Choice Perspective on Motivated Behavior. *Child Development Perspectives*, 12(3), 158–164. <https://doi.org/10.1111/cdep.12279>
 9. Poullos, A., Christopoulos, A., Pavlopoulos, V., Tsiotra, M., Stefanakou, E., Stavrakaki, M., Risvas, C., Panaritis, C., Lagos, E., Ktena, M., Karadimitri, K., Bekiari, A., Alexopoulou, K., Pomini, V., Gournellis, R., & Ginieri-Coccosis, M. (2021). COVID-19 and Quality of Life: The Role of Cognitive, Affective, and Behavioral Factors. *Psychology*, 12(10), 1506–1528. <https://doi.org/10.4236/psych.2021.1210095>
 10. Schotanus-Dijkstra, M., Drossaert, C. H., Pieterse, M. E., Walburg, J. A., & Bohlmeijer, E. T. (2015). Efficacy of a Multicomponent Positive Psychology Self-Help Intervention: Study Protocol of a Randomized Controlled Trial. *JMIR Research Protocols*, 4(3), e105. <https://doi.org/10.2196/resprot.4162>
 11. Silvers, J. A. (2022). Adolescence as a pivotal period for emotion regulation development. *Current Opinion in Psychology*, 44, 258–263. <https://doi.org/10.1016/j.copsyc.2021.09.023>
 12. Taherkhani, Z., Kaveh, M. H., Mani, A., Ghahremani, L., & Khademi, K. (2023). The effect of positive thinking on resilience and life satisfaction of older adults: a randomized controlled trial. *Scientific Reports*, 13(1), 3478. <https://doi.org/10.1038/s41598-023-30684-y>
 13. Tugade, M. M., & Fredrickson, B. L. (2004). Resilient Individuals Use Positive Emotions to Bounce Back From Negative Emotional Experiences. *Journal of Personality and Social Psychology*, 86(2), 320–333. <https://doi.org/10.1037/0022-3514.86.2.320>
 14. van Prooijen, J.-W., & Douglas, K. M. (2018). Belief in conspiracy theories: Basic principles of an emerging research domain. *European Journal of Social Psychology*, 48(7), 897–908. <https://doi.org/10.1002/ejsp.2530>
 15. Waters, L., Algoe, S. B., Dutton, J., Emmons, R., Fredrickson, B. L., Heaphy, E., Moskowitz, J. T., Neff, K., Niemiec, R., Pury, C., & Steger, M. (2022). Positive psychology in a pandemic: buffering, bolstering, and building mental health. *The Journal of Positive Psychology*, 17(3), 303–323. <https://doi.org/10.1080/17439760.2021.1871945>
 16. Whiting, D. L., Deane, F. P., Simpson, G. K., McLeod, H. J., & Ciarrochi, J. (2017). Cognitive and psychological flexibility after a traumatic brain injury and the implications for treatment in acceptance-based therapies: A conceptual review. *Neuropsychological Rehabilitation*, 27(2), 263–299. <https://doi.org/10.1080/09602011.2015.1062115>
 17. Willis, S. L., & Schaie, K. W. (2009). Cognitive training and plasticity: Theoretical perspective and methodological consequences. *Restorative Neurology and Neuroscience*, 27(5), 375–389. <https://doi.org/10.3233/RNN-2009-0527>
 18. Wolfowicz, M., Litmanovitz, Y., Weisburd, D., & Hasisi, B. (2021). Cognitive and behavioral radicalization: A systematic review of the putative risk and protective factors. *Campbell Systematic Reviews*, 17(3). <https://doi.org/10.1002/cl2.1174>
 19. Yin, J. (2019). Study on the progress of neural mechanism of positive emotions. *Translational Neuroscience*, 10(1), 93–98. <https://doi.org/10.1515/tnsci-2019-0016>
 20. Zmigrod. (2023). Does cognitive inflexibility predict violent extremist behaviour intentions? A registered direct replication report of Zmigrod et al., 2019. *Legal and Criminological Psychology*, 1–26. <https://doi.org/10.1111/lcrp.12245>
 21. Zmigrod, L., Rentfrow, P. J., & Robbins, T. W. (2019). Cognitive Inflexibility Predicts Extremist Attitudes. *Frontiers in Psychology*, 10. <https://doi.org/10.3389/fpsyg.2019.00989>