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Research Paper

Mental Imagery Vividness, Need for Cognitive Closure, and Psychological Distress in Indian College Students

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ABSTRACT

Mental imagery vividness (MIV) refers to the sensory-like clarity of internally generated representations, while the need for cognitive closure (NCC) describes a motivational preference for definite answers and intolerance of ambiguity. Both constructs have been independently linked to psychological distress (PD), yet no study has directly tested whether NCC mediates or moderates the MIV-PD relationship, particularly in non-Western, non-clinical samples. This mixed-methods study examined these pathways among Indian college students. In the quantitative strand, 146 participants were recruited pan-India via snowball sampling (sample size justified a priori using G*Power; $f^2 = 0.10$, $\alpha = .05$, $1 - \beta = .95$; required N = 132) and completed the VVIQ-2, NFCS-15, and DASS-21. Data were analysed using Pearson correlations, PROCESS Model 4 (mediation), and PROCESS Model 1 (moderation). In the qualitative strand, 11 semi-structured interviews were analysed using reflexive thematic analysis (Braun & Clarke, 2006). MIV correlated positively with NCC ($r = .46$, $p < .001$) and NCC with PD ($r = .28$, $p = .001$), but MIV did not correlate with PD at the bivariate level. Mediation analysis revealed inconsistent (competitive) mediation: a positive indirect effect of MIV on PD through NCC ($b = +.20$) and a negative direct effect ($c' = -.24$, $p = .020$) that mutually suppressed one another. The MIV and NCC interaction was non-significant. Thematic analysis yielded five themes converging with the competing-pathways model. Findings reposition vivid imagery as a dual-function mechanism whose consequences depend on closure-seeking motivation, with implications for uncertainty-tolerance interventions in Indian higher education.

Keywords: *Mental Imagery Vividness, Need for Cognitive Closure, Psychological Distress*

Imagining an experience in detail as if you were experiencing it again (Lang's Bio-Informational Theory of Emotional Experience, 1979) can lead to an activation of networks related to memory, emotion and the significance of the event. This leads to the idea that vivid mental representations of experiences can elicit similar physical and emotional reactions as if the individual was actually going through those experiences (as an "emotional amplifier"). However, vivid mental imagery does not have equal effects on well-being based on either the type of image (positive vs. negative) and/or the direction of time

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(past vs. future); vivid, detailed mental images of failure and rejection have been linked to increased anxiety/depression in adolescents (Leigh et al., 2020; Chiu et al., 2022) and can even serve as a predictor of social anxiety (Pile & Lau, 2020). On the other hand, vivid positive, prospective mental images have been found to protect against increases in depressive symptoms when students are under high levels of stress (Sit et al., 2022; Marciniak et al., 2023). Therefore, this study will focus on visual mental imagery vividness as it is the most studied and empirically supported form of mental imagery in relation to the development of emotional distress.

Need for Cognitive Closure (NCC), as defined by Kruglanski & Webster (1996), is a preference for clarity in the form of a definitive response to questions; an individual with high NCC would experience discomfort from ambiguity. As grounded in Lay Epistemic Theory (Kruglanski, 1989), NCC represents a motivation to diminish uncertainty by taking advantage of the first piece of information and subsequently solidifying judgment. While NCC contains many different characteristics, preference for order/predictability, dislike for ambiguity, decisiveness, close-mindedness etc., researchers have typically treated NCC as a singular dispositional tendency using the 15-item Need for Closure Scale (Roets & Van Hiel, 2011). NCC has been shown to be positively correlated with stress and anxiety due to uncertainty at all times and especially during periods of extreme uncertainty, such as the COVID-19 pandemic (Bassi et al., 2023; White, 2022; Zuo, 2023).

Psychological Distress (PD) is defined by Lovibond and Lovibond (1995) as a trans-diagnostic construct representing the inter-related constructs of depression, anxiety and stress. PD is more than simply the lack of psychological well-being. Rather, it is a risk factor for developing clinically significant disorders and functional impairment. Furthermore, levels of PD tend to increase rapidly during periods of societal uncertainty (especially among young adults who are currently forming their academic, social and professional identities) (Yan et al., 2022).

There are multiple dimensions upon which vividness can vary. There are differences by sensory modality, e.g. people do not just see visual images but they also hear auditory images and feel motor/tactile images that each involve different brain mechanisms and evoke different emotions (Pearson et al., 2015). Additionally, there are differences by emotional valence - i.e. negative images evoking fear/anger/dread (e.g. intrusive memories of failure) are associated with increased levels of anxiety/depression (Chiu et al., 2022; Marciniak et al., 2023); conversely, positive images evoking pleasure/happiness/lust help prevent anhedonia/mood-worsening (Sit et al., 2022; Marciniak et al., 2023). Finally, there are differences by perspective, i.e. observer-perspective imagery is commonly observed in social anxiety across developmental stages (Chapman et al., 2020; Leigh et al., 2020); and by temporal orientation, i.e. future-oriented imagery influences current mood/motivation/ reward-processing regardless of whether the future is perceived as positive/negative (Zhou et al., 2025; Pile & Lau, 2020).

Although no empirical research exists examining the relationship between vividness of imagery and the need for cognitive closure, theoretically, it is reasonable to hypothesize that high-NCC individuals would be more prone to ruminating about an ambiguous situation (e.g. "what did the interviewer think of me?") because their high level of NCC makes them uncomfortable with uncertainty. Conversely, an individual with low NCC would likely exhibit greater acceptance of ambiguous situations and thus would be less likely to ruminate

about such a situation. A person that visualizes themselves tripping up while answering a question during an interview will create more specific mental imagery in regards to their need for cognitive closure. In other words, high-NCC individuals will be more motivated to seek closure regarding their own mental simulations because they are less comfortable with ambiguity. Research has demonstrated that NCC fosters intolerance of uncertainty which in turn contributes to increased anxiety caused by unwanted thoughts (Ge et al., 2025) and that high-NCC individuals exhibit greater cognitive-rigidity, thereby inhibiting their ability to flexibly reinterpret their own internal simulations (Lauriola et al., 2025). A parallel pattern occurs in Autism Spectrum Disorder where intolerance of uncertainty and vivid imagination both contribute to increasing levels of anxiety (Gundeslioglu et al., 2025).

A socially anxious college student replayed a recent job interview from an observer perspective, he saw himself stuttering over an answer while the interviewer looked on with a neutral expression. He did not find the memory itself distressing; instead, his distress arose from how vividly he simulated the memory and how desperately he needed to know what the interviewer thought of him. It is this dual combination of vivid simulation and an urgent need for certainty that continues to fuel the cycle of negative thinking/emotional turmoil. Thus, imagery vividness and closure seeking should be viewed in tandem rather than independently to capture fully how these two variables interactively influence a person's propensity towards developing psychological distress (Pearson et al., 2015; Kruglanski & Webster, 1996).

These theoretical connections can be seen in practice. Vivid mental images make ambiguous situations more tangible and emotionally intense. Thus, vivid mental images could increase one's need for closure; at the same time vivid mental images can cause distress for those who have difficulty accepting ambiguity (i.e., high-NCC) whereas the low-NCC individual will likely disengage from that image. The link seems reasonable but currently, there are no empirical research studies that have tested whether NCC functions as either an intermediary (mediator) or moderator of the association between vivid mental imagery and psychological distress. Additionally, most past investigations examining associations between imagery and closure have been performed using predominantly Western adolescents or individuals who have received clinical diagnoses.

This study fills the existing research gap by using a qualitative/quantitative mixed methodological approach with a sample of Indian college students. Quantitatively, it investigates the relationships among MIV, NCC, and PD and evaluates if NCC serves as either a mediator or a moderator of the MIV-PD relationship. It also qualitatively investigated how students interpreted their emotional responses to vivid mental imagery when they are confronted with uncertainty, and whether the desire for closure influences these interpretations. By examining both quantifiable standardized measurements of students' experiences, and qualitatively examining how students understand and interpret their own emotional responses to vivid mental imagery when faced with uncertainty, we are able to gain a broader understanding of how vivid mental imagery and closure seeking combine to affect distress in a non-Western/non-clinical population.

REVIEW OF LITERATURE

Pile et al. (2021) searched systematically for 86 studies on applications, mechanisms and context of use of emotional mental imagery as an intervention tool for young people. They also spoke directly to 10 young people with mental health issues and 7 internationally

recognized experts. Among the 7 different kinds of interventions they researched, only two types were seen to be particularly successful: rescripting negative memories from past experiences and helping participants develop positive imagery. The researchers concluded that emotional mental imagery could potentially provide a way to reduce levels of anxiety and depression among young people and called for developmentally relevant research-based interventions which are grounded in evidence from mental health research.

Chiu et al. (2022) analysed both simultaneous and future associations between negative self-imaging and social anxiety using a sample of 616 adolescents from the community who were 11 to 15 years old (53 % female). The study included assessments at Time 1 and Time 2, approximately 4 to 6 months after Time 1 (i.e., baseline). In addition to controlling for baseline levels of anxiety and depression, age, and gender, Chiu et al. used multiple linear regression models to assess whether there were significant relationships between how adolescents perceived themselves when thinking about observers viewing them as anxious or as socially undesirable and their social anxiety. Thematic analysis of the adolescents' written descriptions of their negative images revealed two major themes: the concern with appearing anxious, and the concern with being viewed as socially unacceptable. These results suggest that it is specific aspects of an image's features or content that contribute to adolescents experiencing social anxiety; therefore, it is not just having the image, but what is within the image itself that contributes to their experiences of social anxiety.

Pile and Lau (2020) studied intrusive prospective imagery in an unselected sample of 352 UK secondary-school adolescents aged 11 to 16, using the Impact of Future Events Scale to index intrusive pre-experiencing, hyperarousal and avoidance toward personally relevant images of the future. Higher scores were uniquely associated with generalised anxiety and depression but not social anxiety, suggesting that intrusive future imagery is not a common feature of all anxiety. Habitual emotion suppression, but not reappraisal, moderated the relationship, so that the link between generalised anxiety and intrusive future imagery was strongest among adolescents who typically suppressed their emotions.

Marciniak et al. (2023) analyzed secondary data collected for a randomized controlled study involving 50 of 95 participants; all healthy young adults who participated created positive prospective images using an app-based platform three or more times per day over seven days during the COVID-19 pandemic. A thematic coding process produced 25 image categories; top categories included food/drinks, TV/streaming, sports. Moderation models indicated that both vividness of creating images and the ease of creating them as related to decreased levels of depression; however, neither anticipated pleasure nor frequency of use related to the level of depressive symptoms; therefore, they concluded that it is the quality of the images, not just use/engagement, which offers protection against symptoms of depression.

Kruglanski and Webster (1996) described the desire for cognitive closure in two ways; first as an enduring personality trait, secondly as a situational or context-dependent condition based on the cost associated with lacking closure and the value of achieving it. Kruglanski and Webster identified two tendencies related to this motivation. The urgency tendency describes the desire to arrive at a final answer as soon as possible and use any available information. The permanence tendency refers to the desire to maintain a previous answer and be resistant to future challenges.

White (2022) evaluated the question of whether a high level of need for closure would increase levels of psychological distress resulting from the uncertainty of the pandemic by having 400 college students complete an abbreviated Need for Closure Scale, along with the Generalized Anxiety Disorder scale and the short-Perceived Stress Scale. The results were consistent with the hypothesis; students who scored higher on the need for closure scale also experienced increased stress and anxiety. Therefore, they represent a population at risk of experiencing psychological distress during periods of ambiguity and indecision.

Bassi et al. (2023), investigated if the need for closure was linked to the three dimensions of well-being; namely emotional, social and psychological aspects of Positive Mental Health among 1,799 Italian university students. They used a Short form version of the Mental Health Continuum and multilevel modelling which included academic discipline as a level factor. While the sub-dimensions of closure were inversely related, need for order and decision making were positively correlated with mental health. Conversely, predictability, tolerance of ambiguity and closed-mindedness had negative correlations with mental health. Therefore, treating closure as a singular entity may mask true, facet specific relationships with overall well-being.

Zuo (2023) using an Entropy Model of uncertainty survey completed by 488 Chinese University Students found that Ambiguity Tolerance was negatively related to Perceived Stress/Anxiety and this relationship was fully mediated by Overall Need For Closure and specifically Order and Decisiveness facets. Ambiguity Tolerance was negatively related to Overall Need For Closure and all of its facets. Preference for Order was inversely related to Stress/Anxiety while Overall Need For Closure and Decisiveness were positively related to Stress/Anxiety. Predictability and Closed-Mindedness were not significant predictors. The findings also help to clarify the differing mediator roles for the individual facets of Need For Closure.

METHODOLOGY

Aim and Objectives

Aim

The study aims to investigate the interplay between Mental Imagery Vividness, Need for Cognitive Closure (NCC), and Psychological Distress among Indian college students, assessing whether Need for Cognitive Closure influences the relationship between Mental Imagery Vividness and Psychological Distress.

Objectives

1. To examine the relationships among Mental Imagery Vividness, Need For Cognitive Closure, and Psychological Distress among Indian college students.
2. To investigate whether the Need for Cognitive Closure influences the relationship between Mental Imagery Vividness and Psychological Distress.
3. To examine through qualitative inquiry how Indian college students perceive and emotionally respond to vivid mental imagery when they are under uncertain situations and whether their need for cognitive closure affects these experiences

Variables

Study Variables

- **Independent Variable:** Mental Imagery Vividness

- **Dependent Variable:** Psychological Distress
- **Mediator and Moderator:** Need for Cognitive Closure

Operational Definitions

- **Mental Imagery Vividness (MIV).** The ability to simulate in the mind information not currently being perceived by the sense organs (Moran, 2012, p. 166). Mental imagery is defined in terms of how vivid it is; that is, the clarity, brightness, or intensity of an image as perceived by the person (Marks, 1973).
- **Need For Cognitive Closure (NCC).** A need for a clear-cut answer to a question and a dislike of uncertainty (Kruglanski & Webster, 1996, p. 264).
- **Psychological Distress (PD).** A state of emotional suffering characterised by symptoms of depression (e.g., loss of interest; unhappiness; desperation) and anxiety (e.g., restlessness; feeling tense) (Belay et al., 2021).

Hypotheses

- **H1:** Mental imagery vividness is significantly related to psychological distress among Indian college students.
- **H2:** Need for cognitive closure is significantly related to psychological distress among Indian college students.
- **H3:** Mental imagery vividness is significantly related to need for cognitive closure among Indian college students.
- **H4:** Need for cognitive closure significantly mediates the relationship between mental imagery vividness and psychological distress.
- **H5:** Need for cognitive closure significantly moderates the relationship between mental imagery vividness and psychological distress.

Research Design

The study employed a "mixed-methods" methodology that included elements of both the quantitative and qualitative methodologies. A quantitative methodology was used to evaluate whether vivid mental imagery had an association with need for cognitive closure (NCC) and psychological distress, while also evaluating if NCC mediated or moderated the relationships between imagery and psychological distress. A qualitative methodology was utilized to investigate how vivid imagery occurs within Indian undergraduates at universities when they are uncertain about what will happen next and how need for cognitive closure affects their reactions to those images. Through the combination of statistically generalizable results derived from standard tests; and open-ended narrative reports of specific experiences, this study provided trends that can be generalized across large numbers of people; and descriptive information regarding specific experiences.

Sample and Sampling

Sampling Procedure

The quantitative study used snowball sampling to recruit participants. The required number of participants for an a priori power analysis (Faul et al., 2009) using G*Power version 3.1.9.7 for testing one predictor in a multiple regression analysis, with $\alpha = 0.05$, power = 0.95 and a small effect size ($f^2 = 0.10$), was determined as 132. In order to exceed this, 146 participants were recruited. Qualitative participants were recruited via convenience sampling from survey respondents that agreed to be followed up and provided written informed

consent. Interview eleven had no new codes or themes added and therefore saturation was assumed to be met, thereby stopping recruitment.

Inclusion Criteria

1. Currently enrolled on a Bachelor's or Master's program.
2. Aged between 18 and 25 years at the time of participation.
3. Able to read and understand English.
4. Willing to provide informed consent and complete the full survey.

Exclusion Criteria

1. History of diagnosed neurological or psychotic disorders (e.g., schizophrenia, bipolar disorder, epilepsy).
2. Current clinical diagnosis of PTSD, Major Depressive Disorder, or Generalised Anxiety Disorder.
3. Use of psychotropic medication (e.g., antipsychotics, antidepressants, or mood stabilisers).

Tools

Need For Cognitive Closure Scale (NFCS-15)

The 15 item NFCS-15 (Roets & Van Hiel, 2011), developed by Roets & Van Hiel (2011) is an abbreviated version of the 42 item scale created by Webster & Kruglanski (1994) based upon Lay Epistemic Theory (Kruglanski, 1989). Roets & Van Hiel (2011) indicate it can be scored as a single dimension, as they suggest. It has items with ratings on a six point agreement/disagreement scale (for example "I do not enjoy being in ambiguous situations") that have shown very good reliability coefficients (alpha = .81-.89), and high validity relative to anxiety/stress caused by uncertainty (White, 2022; Zuo, 2023; Roets & Van Hiel, 2011).

Depression Anxiety Stress Scales-21 (DASS-21)

The DASS-21 is a 21-item questionnaire that measures the degree of psychological distress experienced by an individual during the last week in terms of depression, anxiety, and stress. Each question is scored on a scale of 0 (it did not apply to me at all) to 3 (it applied to me very much). The widely used instrument for assessing personality is often utilized to measure non-clinical and student populations. The internal reliability of this instrument is demonstrated by its high alpha coefficient ($\alpha > .85$). In addition to the consistent results found within international samples, Henry and Crawford's (2005) research also identified a consistent three-factor model of personality in their study of an Indian sample population.

Vividness of Visual Imagery Questionnaire-2 (VVIQ-2)

The 32-item Visual Vividness Questionnaire-II (VVIQ-2) is an extended version of the original (Marks, 1973) VVIQ developed by Marks (1995) based upon Lang's (1979) Bioinformation Theory. This questionnaire is designed to measure vividness of visual imagery for 8 common everyday activities (e.g., a friend's facial features, the sunrise) by rating how vividly you see the image using a 5-point scale (1 = no image at all, 5 = as vivid as if I were actually seeing it). Eyes are closed during this assessment according to Marks' standardised procedure. In addition to having very good internal reliability ($\alpha = .92–.93$; Morrison & Wallace, 2001; Allbutt et al., 2008), the VVIQ II will provide a total raw score ranging from 32 to 160.

Qualitative Interview Guide

A semi-structured interview guide for the qualitative aspect was created that would include a series of open-ended questions that were intended to capture participants' perceptions of their experiences as they relate to vivid mental images, uncertainty, and seeking closure. This guide was expected to take approximately 5 minutes to complete for each participant and contain probes about how clearly the participant could see their images (image clarity), whether or not the participant is comfortable with ambiguous information (comfort with ambiguity), and what the participant did in response to their uncertainty (coping).

Data Collection Procedure

The data were gathered by a web-based form that used the Google Forms platform to gather responses. The questionnaires had four sections: demographics (i.e. how old you are, what sex you are, etc.), the Vividness of Visual Imagery Questionnaire-2 (VVIQ-2), which has thirty-two items, the Need for Cognitive Closure Scale, which has fifteen items, and the Depression Anxiety Stress Scales-21. In order to administer the VVIQ-2 in accordance with Marks' (1995) standardization procedures, participants were asked to close their eyes when completing this section.

Before collecting data, the supervisor evaluated the content validity of the interview guide to ensure that it aligned with the objectives and had peers review it for clarity. The peers' feedback resulted in revisions to the interview guide. The average length of each face-to-face interview was approximately five minutes. In addition, all of the participants verbally agreed to allow their interviews to be recorded on a digital recorder. Once all of the interviews were completed they were transcribed word-for-word to provide data for further analysis.

Ethical Considerations

The research followed the APA Ethical Principles of Psychologists and Code of Conduct (APA, 2017), and the Declaration of Helsinki (World Medical Association, 2013). Both the protocol and tools were accepted by the Department of Psychology, Jain (Deemed-to-be) University, Bengaluru. All participants gave consent as they had been informed that their participation was voluntary, they may withdraw from participation in this study at any time without consequence, and/or how to contact the researcher. Qualitative participants provided both Verbal Consent for recording and may choose to omit answers to any question(s) or terminate participation at any point. Participant anonymity was maintained: all responses to surveys contained no identifying information; only the researcher had access to the audio files; and the transcript files included participant number codes (P1 – P11); and the audio files will be deleted upon completion of publishing. The electronic data were saved using a password-protected, personally-owned digital storage media device which only the researcher has access to. Incentives were not given to any participant.

Statistical Tools used for Data Analysis

Quantitative Analysis

Pearson's correlation coefficient was used to analyze the intercorrelations between the three study variables; Mental Imagery Vividness, Need for Cognitive Closure and Psychological Distress.

Before running analyses, assumptions of normality were examined through both Shapiro-Wilk testing and visually inspected Q-Q plots.

Tests of hypotheses that involved Mediation (H4), Moderation (H5) were run using Hayes's (2018) PROCESS macro for SPSS:

- PROCESS Model 4 was used to test if NCC mediated the association between Mental Imagery Vividness and Psychological Distress.
- PROCESS Model 1 was used to assess if NCC moderated the association between Mental Imagery Vividness and Psychological Distress by analyzing the interaction term in a regression equation of Mental Imagery Vividness and NCC.

Qualitative Analysis

The qualitative data were analyzed by using a six-stage reflexive thematic analysis according to Braun & Clarke (2006). We chose this method due to it being flexible and as well providing a high degree of interpretability in order to bring out patterns of meaning within participants' reports of vivid imagery and closure that complemented our quantitative results.

RESULTS

Quantitative Analysis

Table 1 Descriptive Statistics for MIV, NCC, and Psychological Distress among Indian College Students

	N	Minimum	Maximum	Mean	Std. Deviation
MIV	146	32.00	159.00	115.72	25.75
NCC	146	15.00	84.00	56.86	13.44
PD	146	.00	126.00	56.62	29.56

As shown in Table 1, Psychological Distress scores ranged from 0 to 126 (M = 56.62, SD = 29.56). Mental Imagery Vividness had a mean of M = 115.72 (SD = 25.75), while Need for Cognitive Closure had a mean of M = 56.86 (SD = 13.44).

Table 2 Shapiro-Wilk Test of Normality for Psychological Distress among Indian College Students

Variable	Shapiro-Wilk W	df	p
PD	.99	146	.125

As shown in Table 2, the Shapiro-Wilk test indicated that Psychological Distress scores did not significantly deviate from normality, $W(146) = .99$, $p = .125$.

Table 3 Pearson Correlation Matrix for MIV, NCC, and Psychological Distress among Indian College Students

Variable	MIV	NCC	PD
MIV	-		
NCC	.46**	-	
PD	-.04	.28**	-

Note. N = 146. **p < .01.

As shown in Table 3, Mental Imagery Vividness was positively correlated with Need for Cognitive Closure, $r = .46$, $p < .001$. Need for Cognitive Closure was also positively

correlated with Psychological Distress, $r = .28$, $p = .001$. However, the correlation between Mental Imagery Vividness and Psychological Distress was not statistically significant, $r = -.04$, $p = .657$.

Table 4 Regression Coefficients for the MIV → NCC → PD Mediation Model (PROCESS Model 4, N = 146) among Indian College Students

Predictor (path)	*b*	*SE*	*t*	*p*	95% CI
a: MIV → NCC	0.24	0.04	6.14	< .001	[.16, .31]
b: NCC → PD	0.83	0.19	4.27	< .001	[.45, 1.21]
c′ (direct): MIV → PD	-0.24	0.10	-2.36	.020	[-.44, -.04]
Indirect: MIV → NCC → PD	+0.20	-	-	-	-

Note. b = regression coefficient; SE = standard error; CI = confidence interval.

Table 4 displays the results for regression coefficients from the Simple Mediation Model that we evaluated using PROCESS MODEL 4, based on our sample size (N = 146). Path a was significant: MIV significantly predicted NCC, $b = 0.24$, $t(144) = 6.14$, $p < .001$, 95% CI [.16, .31], accounting for 21% of the variance in NCC, $F(1, 144) = 37.68$, $p < .001$. Path b was also significant: NCC significantly predicted PD when controlling for MIV, $b = 0.83$, $t(143) = 4.27$, $p < .001$, 95% CI [.45, 1.21]. The direct effect of MIV on PD (c′) was negative and significant, $b = -0.24$, $t(143) = -2.36$, $p = .020$, 95% CI [-.44, -.04]. The Indirect Effect of MIV to PD through NCC was Positive b=+0.20. The opposite signs of both Direct and Indirect Effects produced a Near-Zero Total Effect (r = -.04); this is an example of Inconsistent Competitive Mediation (Mackinnon et al., 2000; Zhao et al., 2010), which supports hypothesis H4. The full model accounted for 11% of the variance in PD, F(2, 143) = 9.22, p < .001.

Table 5 Regression Coefficients for the MIV × NCC Moderation Model Predicting PD (PROCESS Model 1, N = 146) among Indian College Students

Predictor	b	SE	t	p	95% CI
Constant	87.78	36.42	2.41	.017	[15.77, 159.78]
MIV	-0.68	0.32	-2.16	.033	[-1.30, -0.06]
NCC	-0.21	0.73	-0.29	.773	[-1.66, 1.24]
MIV and NCC Interaction	0.01	0.01	1.47	.143	[-0.003, 0.021]

Note. b = regression coefficient; SE = standard error; CI = confidence interval.

As shown in Table 5, Mental Imagery Vividness significantly predicted Psychological Distress, $b = -0.68$, $SE = 0.32$, $t(142) = -2.16$, $p = .033$. Need for Cognitive Closure was not a significant predictor, $b = -0.21$, $SE = 0.73$, $t(142) = -0.29$, $p = .773$. The interaction between Mental Imagery Vividness and Need for Cognitive Closure was not statistically significant, $b = 0.01$, $SE = 0.01$, $t(142) = 1.47$, $p = .143$. The overall regression model explained 13% of the variance in Psychological Distress ($R^2 = .13$), $F(3,142) = 6.92$, $p < .001$.

Qualitative Analysis

Description of Participants

Participants consisted of eleven undergraduate college students from across many different Indian Universities. All participants were asked to select an uncertain personal event or

situation they felt was relevant to their life; nine of the eleven independently chose a career/academic related uncertainty. This overlap rather than being indicative of a design error is representative of how career and identity are developmentally salient during emerging adulthood.

Presentation of Results

Themes found through the use of latent thematic analysis (Braun & Clarke, 2006), to identify how the uncertainty associated with participants' mental imagery and need for cognitive closure was experienced.

The five themes were: (1) Imagery Shapes the Uncertainty Experience, (2) Coping as Restoring Control, (3) Context Shifts the Experience, (4) Identity Under Uncertainty, and (5) The Retrospective Reappraisal Arc.

Theme 1: Imagery Shapes the Uncertainty Experience

A total of all 11 participants talked about imagery that was so vivid it was correlated to how severely and long they were distressed. Latent patterns observed by researchers indicated that those who experienced vivid and emotive imagery (Sub Theme 1a) experienced the worst and longest distress. For example, Participant 11 stated she still felt sadness from her job uncertainty even though her job uncertainty was resolved due to the fact the image remained vivid to her. " Me in another country living a different life... Yes, it's a very clear picture... I'm still sad." The 4 participants that did not experience vivid imagery or had fragmented imagery (Sub Theme 1b) experienced mild to moderate levels of anxiety and/or uncertainty that lasted short periods of time. "You could say a little anxious or uncertain, but for the most part, it didn't change me much emotionally" (Participant 10). Three participants reported a form of protective displacement where their minds would replace an adjacent image under stress (Sub Theme 1c). Participant 3 became fixated on his clothing when he was in the midst of career failure (Participant 3 said "I will only think of my outfit... I could have wore something else instead of this outfit"). Other examples included Participant 5 who reported seeing an Instagram unemployment queue and Participant 4 who reported himself laying awake. The last two participants reported having somatic imagery vs. visual imagery (Sub Theme 1d). For example, Participant 2 simply said "Just tensing... And I'm just sweating."

Theme 2: Coping as Restoring Control

All eleven interviewees used coping language, and while different strategies were used, each had a single purpose i.e. to create a sense of control or agency in their lives due to the uncertainty experienced by them. Only two students attempted to develop a sense of control through knowledge acquisition (sub-theme 2a); however, the urgency with which these two pursued this goal seemed compulsive: "I just started my work page five times. I started to take previous papers and asking the seniors… teachers on that" (Participant 2). The least common was to avoid (sub-theme 2b), and three students chose to reduce their exposure to the stimulus rather than to the uncertainty created by it: "I tried to stop checking the website, and I tried to stop going near the stimuli related to that atmosphere" (Participant 7). Six of the eleven participants used reframing (sub-theme 2c), and left the uncertainty as such, but gave it a new meaning: "Nothing is certain. Anything can happen anytime. So let's take it in a positive manner rather than worrying about it" (Participant 6).

Theme 3: Context Shifts the Experience

The context influenced how the 9 out of 11 participants experienced their uncertainty; they felt as though its nature changed based on when the uncertainty occurred, but did not feel like it decreased. The four participants who felt 'live', present-tense uncertainty were consumed by this uncertainty and had difficulty decreasing the intensity of this feeling through reflection (sub-theme 3b): "Mostly, it is very uncomfortable… I haven't really adapted to accepting whatever it is going to be" (Participant 9). The five participants who described being uncertain about an upcoming event (sub-theme 3c) also found themselves ruminating on the future event: "Even though things have not happened, I kept thinking about it. So, you just get into the circle of overthinking about it."

Theme 4: Identity Under Uncertainty

The choice of direction with regard to both education and work was not merely an issue of outcome, but of the evolving person for the seven participants; thus these types of choices represent "the stuff of identity" during the time of emerging adulthood (Erikson, 1968). Thus, distress regarding these issues can be best understood through the lens of "identity threat," as opposed to simply "cognitive uncertainty" (latent claim as none of the participants referenced the term "identity"). The body registered the first sign of this distress for two participants before the mind did (sub-theme 4a); "I felt so stressed, I couldn't sleep, I was so emotionally unstable" (Participant 2). Two other participants experienced a second type of distress concerning whether their emotional reaction would be seen as valid or acceptable by others (sub-theme 4b); "For me, it was a really big deal, but it may not have been for someone else… they would sort of try making it more demeaning" (Participant 4). Four participants reported experiencing mixed emotions (sub-theme 4c) in relation to these distresses; which challenges our previous understanding of uncertainty solely being negative/ threatening. "A little bit of anxiety, a little bit of worry, and… a little bit of excitement also. You never know where the decisions lead you up in your future" (Participant 1).

Theme 5: The Retrospective Reappraisal Arc

The majority of participants (seven out of eleven) experienced their emotional intensity peak during the resolution stage, then drop off significantly as they resolved the issue – what can be called a "retrospective reappraisal" of their experience at the point of resolving the conflict (as opposed to simply experiencing less anxiety due to having forgotten the stressful events of the past; subtheme 5a): "At that time, it feels very distressing. But eventually, when you look back, you just feel like why were you unnecessarily anxious? So now I am very chill" (Participant 7). For those who had ongoing uncertainty about the outcome of the event or issue, there was no such temporal displacement (subtheme 5b): "I am still very worried about it" (Participant 5). The process by which distress was temporally displaced is a mechanistic explanation for why we found a nearly zero bivariate correlation between MIV and PD. Participant 11's vivid image of an un-lived life created a disrupted arc in terms of his ability to resolve his sadness related to the memory of the future he envisioned ("it is a very clear picture… I am still sad").

The four additional observations were under the threshold for a "sub-theme" but are included here for completeness, since they relate to analytical rigor. Participant 4 stated a paradoxical loop occurred when he acted or did not act; this resulted in the re-triggering of anxiety. Participant 9 stated that he felt better about being uncertain on how to act when there were other people around. When participant 9 had people present it helped him deal

with his uncertainty. Participant 7 recognized that he goes through cycles of high levels of stress and low levels of stress (calm) within himself. Participant 11 represented a broken or disrupted arch in comparison to the typical "retroactive reappraisal" process, which means when participant 11 formally resolved his issue with the death he did not find resolution because of the powerful memory of what could have been if he had lived. This last case is relevant to the imagery-distress association tested in the quantitative portion of this research. These themes were developed at a latent level. No participant claimed that the type of imagery they created influenced the degree of their distress. Thus, these patterns represent inferred claims based upon consistent relationships observed within each interview between what participants imagined and how they felt. Although some sub-themes were supported by as few as two interviews, they were retained if they represented distinctive, non-reducible patterns that could be reduced to larger categories. Theme development continued until it was apparent through successive interviews that no new codes emerged; thus, saturation had been achieved.

DISCUSSION

It was investigated if there is a relationship between mental imagery vividness (MIV) and psychological distress (PD) among Indian college students, and if the need for cognitive closure (NCC) mediates the relationship between MIV and PD. It was quantitatively assessed if there is a pattern of relationship, while qualitatively assessed why the relationship exists. When read together, both strands conclude that vivid imagery can operate through two opposite ways; and the need for cognitive closure is the motivational mechanism that transforms vivid imagery into psychological distress.

Quantitatively, MIV was significantly correlated with NCC at moderate levels ($r = .46$, $p < .001$); students with higher levels of vivid imagery had greater inclinations toward seeking clear-cut and definitive solutions. Interviews provided insight into why. Students generating vivid, detailed images, stated that they experienced their uncertainty as being more "present" and consequential -the situation became something they "could see", and thus created increased awareness of the questions still unanswered. This increase in awareness of an unresolved issue is exactly the motivation that, according to Lay Epistemic Theory (Kruglanski, 1989; Kruglanski & Webster, 1996), leads to the pursuit of closure. Vivid imagery did not simply occur in conjunction with NCC; vivid imagery seemed to contribute to NCC by creating an environment in which ambiguity was more difficult to ignore.

A significant relationship existed between NCC and PD, $r = .28$, $p < .01$. This supported H2. It is consistent with other research findings that have shown a positive association between individuals who experience high levels of need for closure and their feelings of stress and anxiety when they perceive or experience ambiguity (White, 2022; Bassi et al., 2023; Zuo, 2023). The qualitative responses suggested that the source of this perceived or experienced distress was differences between what an individual believes will provide them closure and how reality exists on a daily basis as students.

Participants sought closure through acquiring new information or avoiding the source of uncertainty, though these methods rarely resulted in resolving the underlying uncertainty; instead, the participant's relationship to the uncertainty was altered, but the uncertainty itself was unchanged. Further, distress was exacerbated when the unresolved question pertained to an aspect of identity -career path, academic value, or how others perceived them -consistent with the notion that pursuing closure is costliest when self-definition is at stake.

It should be noted that although NCC has been demonstrated to relate to distress, not all sub-dimensions of closure appear to produce equivalent amounts of distress. Bassi et al. (2023) and Zuo (2023) each identified that the order and decisiveness aspects of closure were negatively related to distress; whereas the predictability, intolerance of ambiguity and closed-mindedness aspects were positively related. Although this study utilized a unitary measure of NCC based on Roets & Van Hiel (2011)'s NFCS-15 design (in line with the design of the NFCS-15), studies utilizing the complete Need for Closure Scale (Webster & Kruglanski, 1994) would determine if the mediating mechanism contributing to increased risk of distress is confined within the predictability and intolerance of ambiguity aspects of closure versus within order or decisiveness.

Qualitative data demonstrate why the pursuit of closure is most costly when identity-related issues are at stake. Uncertainty regarding career and academic direction was not only about future outcomes but about who they were becoming for seven participants; such decisions become "identity material" in young adulthood (Erikson, 1968), and therefore, distress generated from such decisions is best explained by identity threat (Campbell et al., 1996) rather than solely by cognitive uncertainty. Importantly, this threat was registered somatically -sleeplessness, emotional overflow and total system dysfunction - before conceptual articulation; thereby illustrating that the MIV-NCC-PD pathway may have both cognitive and somatic faces. As a secondary vulnerability, when participants feared not just the resolution of their uncertainty but whether their distress would be deemed valid by others added a second-order layer of fear to their first-order fear.

The critical result was that MIV had no direct bivariate association with PD ($r = -.04$, $p=.657$; H1 unsupported) however the very low r obscured a double acting mechanism, rather than the non-existence of a single mechanism. The results from mediation analysis (H4) showed that there was an indirectly positive relationship between MIV and PD through NCC ($b=+0.20$), while the relationships were also directly negatively related ($c'=-.24$, $p=.020$), indicating competing mediations as two opposite factors are suppressing one another at the null order (Zhao et al., 2010; MacKinnon et al., 2000). These findings aligned qualitatively with the theme categories. The risk-conferring mechanism is demonstrated by the way vivid imagery created increased ambiguity and generated primarily ineffective attempts to achieve closure leading to amplified distress. The protective mechanism is shown by those participants using imagery for flexible purposeful meaning making, reconstructing a previously resolved experience into a coherent story or simulating possible manageable futures, which decreased their distress levels rather than maintained them, consistent with the regulatory function of positive prospective imagery (Sit et al., 2022; Marciniak et al., 2023). It is additionally evident that the same construct could facilitate both risk and protection. Thus, it provides insight as to why the net bivariate effect of imagery was negligible: its effects were context dependent, uncertainty varied in magnitude throughout in the moment, anticipatory and post resolution time frames, so when averaging across contexts, the opposite influences cancelled each other out. An example that illustrated this phenomenon was when one participant felt little or no relief as he had received formal closure and yet there remained an emotionally vibrant representation of an un-lived life for him, a case where the protective arc was breached and the imagery-distress relationship came into existence without disguise.

This indicates a temporal interpretation of the small total effect size. Distress levels typically peaked during periods of time that uncertainty was "alive" and then decreased as soon as the

uncertain event(s) resolved, with most participants subsequently reevaluating their previous anxiety as excessive. Therefore, the relationship between vivid imagery and distress was present but existed temporally displaced between the time of experience and the time of recall. As a practical implication of this temporal displacement, researchers may find that cross sectional self-report measures such as the DASS-21 administered after many uncertainties have been resolved will be less sensitive to reporting peak levels of distress.

In line with the mediational model illustrated earlier, there was no relationship between the MIV × NCC interaction in predicting PD ($b = .01$, $p = .143$, $\Delta r^2 = .01$; H5 not supported), so we can view NCC as a motivational path to which vivid imagery causes distress and not a boundary condition that would enhance or reduce an already established connection of distress from imagery. The data favor a mechanism over moderation.

Together the results are best interpreted through the joint framework of lay epistemic theory (Kruglanski, 1989) and the bio-informational theory of imagery (Lang, 1979). Vivid imagery acts as an emotional amplifier whose affective influence is determined by whether or not it is employed to achieve urgent closure seeking or flexible simulation or retrospective meaning-making. In short, vivid imagery has different uses that lead to distinct outcomes, it increases distress when employed to seek immediate closure and facilitates regulation when utilized to simulate possible futures or provide retrospective meaning-making, thereby supporting the dual use, mechanism based interpretation that is consistent with contemporary conceptualizations of the role of motivation in determining the emotional impact of imagery (Hayes & Rockwood, 2017; Marciniak et al., 2023).

A final strength of the mixed methods design that should be acknowledged in addition to those described below includes providing a unique opportunity for quantitatively identifying a statistical pattern (i.e., a near zero total effect concealing two competing pathways) and qualitatively explaining it. The qualitative analyses provided descriptions of the mechanisms by which vivid imagery enhanced awareness of ambiguity and translated that awareness into closure-seeking behavior and explained the protective direct path through retrospective meaning-making and flexible future simulation. These explanations provided evidence of explanatory triangulation that evidenced an internal validity check since the qualitative themes converged on rather than contradicted the quantitative paths.

The Indian college context adds interpretable specificity beyond "non-western" Indian university students are competitively positioned within an environment that includes high expectations from their families, performance pressure and a collectivistic framework. When academic/career failure occurs (for example) it is experienced not only as an individual loss but also as a loss for one's family. Therefore, it can be said there is an "outcome uncertainty" double jeopardy; that is, both of the individual's own personal identity development (and) relational obligations are at risk.

In this regard, the imagery-closure-distress pathway likely will be more intense than what might normally be anticipated under such conditions; and the need for closure could be motivated by the necessity to reassure important others, not just oneself.

The quantitative results provide qualitative support for this interpretation, and suggest additional research on how collectivist interpersonal patterns affect the relationship among the MIV-NCC-PD constructs.

The above study has several potential theoretical and practical applications. Models of mental imagery need to differentiate the initial, distress-enhancing role of mental imagery from its potential long-term, adaptive role in re-appraising past events and simulating possible futures. Interventions aimed at reducing distress among students may be developed based on their mental imagery profiles; i.e., imagery rescripting (Pile et al., 2021), which is designed specifically for individuals with very vivid mental images, and acceptance- or meaning-based approaches for students who can already develop alternative ways of thinking about an event. As well, it seems likely that providing students with identity-affirmative support would provide more relief from distress associated with uncertainties relevant to developing identity than providing students with general strategies for coping with uncertainty. Finally, we also need more ecologically valid measures, such as ecological momentary assessments, to measure the peak levels of distress experienced by students that cross-sectional measures cannot capture.

The Competing-Mediation Model suggests that Student Support should take on a variety of forms. Those identified as being High MIV and High NCC are considered to have the highest level of risk. They have the highest risk because the risk- conferring pathway is being activated while the buffer of protection by the protective pathway has provided little to none. The early detection of this group with a short assessment tool could possibly allow for a targeted intervention prior to developing a fixed negative pattern. For example, Vivid Imagery Rescripting (or other NCC-related interventions such as Tolerance for Ambiguity Training or Mindfulness-Based Interventions designed to interrupt the Urgency Tendency) may be especially relevant to those students identified as having both elevated levels of MIV and NCC. On the other hand, it can be harmful to unnecessarily pathologise vivid imagery among those students who are utilising vivid imagery for flexible simulation and/or retrospectively making sense of their experiences. A method of distinguishing these students from each other at intake may provide Campus Mental Health Services with the ability to tailor its service delivery to meet the needs of students most efficiently.

CONCLUSION

There are two ways that vivid mental images can relate to psychological distress - they can either increase or decrease distress depending on the level of the individual's need for cognitive closure. The need for cognitive closure (motivational) route increases distress while the independent route reduces distress. Because these two routes cancel each other out at the zero-order level (i.e., because the total correlation will be non-significant), a significant relationship at the zero-order level indicates there are still two mechanisms operating. The motivation route (closure) is not a boundary condition because the imagery by closure interaction did not prove significant. When individuals experience a period of uncertainty (live), they generally will peak in their distress at that point and decrease as soon as the uncertainty is resolved. If an individual continues to focus on the unresolvable issue due to vivid imagery (unlived), then it could be expected that their level of distress would remain high even though the uncertainty had been resolved. Students looking for closure in academic environments where the environment defines their identity are likely to be among one of the most anxious populations due to the nature of the ambiguity experienced.

REFERENCES

Allbutt, J., Ling, J., Heffernan, T. M., & Shafiullah, M. (2008). Self-report imagery questionnaire scores and subtypes of social-desirable responding: Auditory imagery, visual imagery, and thinking style. *Journal of Individual Differences, 29*(4), 181–188. https://doi.org/10.1027/1614-0001.29.4.181

American Psychological Association. (2017). Ethical principles of psychologists and code of conduct (2002, amended effective June 1, 2010, and January 1, 2017). https://www.apa.org/ethics/code

Bassi, M., Mangialavori, S., & Delle Fave, A. (2023). Need for cognitive closure and positive mental health among Italian university students during the COVID-19 pandemic. A multi-level analysis. *Personality and Individual Differences*, *214*, 112 326. https://doi.org/10.1016/j.paid.2023.112326

Belay, A. S., Guangul, M. M., Asmare, W. N., & Mesafint, G. (2021). Prevalence and Associated Factors of Psychological Distress among Nurses in Public Hospitals, Southwest, Ethiopia: A cross-sectional Study. *Ethiopian journal of health sciences*, *31*(6), 1247-1256. https://doi.org/10.4314/ejhs.v31i6.21

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. Qualitative Research in Psychology, 3(2), 77-101. https://doi.org/10.1191/1478088706qp063oa

Campbell, J. D., Trapnell, P. D., Heine, S. J., Katz, I. M., Lavallee, L. F., & Lehman, D. R. (1996). Self-concept clarity: Measurement, personality correlates, and cultural boundaries. Journal of Personality and Social Psychology, 70(1), 141–156.

Chapman, J., Halldorsson, B., & Creswell, C. (2020). Mental Imagery in Social Anxiety in Children and Young People: A Systematic Review. *Clinical Child and Family Psychology Review*, *23*(3), 379-392. https://doi.org/10.1007/s10567-020-00316-2

Chiu, K., Clark, D. M., & Leigh, E. (2022). Characterising Negative Mental Imagery in Adolescent Social Anxiety. *Cognitive Therapy and Research*, *46*(5), 956-966. https://doi.org/10.1007/s10608-022-10316-x

Erikson, E. H. (1968). Identity: Youth and crisis. Norton.

Faul, F., Erdfelder, E., Buchner, A., & Lang, A.-G. (2009). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. Behavior Research Methods, 41(4), 1149–1160.

Ge, W., Bai, X., Liu, J., Niu, G., & Sun, X. (2025). The Association Among Intolerance of Uncertainty, Health Information Retrieval on SNSs, and Health Anxiety: Unveiling the Hazards of Echo Chamber Effect for Emerging Adults. *Health Communication*, 1-12. https://doi.org/10.1080/10410236.2025.2502450

Gundeslioglu, H., Gray, K. M., Thompson, P. A., & Langdon, P. E. (2025). Mental Health Problems Among UK Undergraduates: A Comparison Study of Autistic and Non-autistic Students. *Journal of Autism and Developmental Disorders*. https://doi.org/10.1007/s10803-025-07002-8

Hayes, A. F. (2018). Introduction to mediation, moderation, and conditional process analysis: A regression-based approach (2nd ed.). Guilford Press.

Hayes, A. F., & Rockwood, N. J. (2017). Regression-based statistical mediation and moderation analysis in clinical research: Observations, recommendations, and implementation. Behaviour Research and Therapy, 98, 39–57.

Henry, J. D., & Crawford, J. R. (2005). The short-form version of the Depression Anxiety Stress Scales (DASS-21): Construct validity and normative data in a large non-clinical sample. *British Journal of Clinical Psychology*, *44*(2), 227-239. https://doi.org/10.1348/014466505X29657

Kruglanski, A. W. (1989). *Lay epistemics and human knowledge: Cognitive and motivational bases.* Plenum Press.

Kruglanski, A. W., & Webster, D. M. (1996). Motivated closing of the mind: "Seizing" and "freezing." *Psychological Review, 103*(2), 263-283. https://doi.org/10.1037/0033-295X.103.2.263

Lang, P. J. (1979). A Bio-Informational Theory of Emotional Imagery. *Psychophysiology*, 16: 495-512. https://doi.org/10.1111/j.1469-8986.1979.tb01511.x

Lauriola, M., Malerba, A., Savadori, L., & Rautu, A. (2025). How Did Personality Traits Shape Reactions to Uncertainty During the Outbreak of the COVID-19 Pandemic? *Psychological Reports*, *0*(0). https://doi.org/10.1177/00332941251335597

Leigh, E., Chiu, K., & Clark, D. M. (2020). The effects of modifying mental imagery in adolescent social anxiety. *PLOS ONE*, *15*(4), e0230826. https://doi.org/10.1371/journal.pone.0230826

Lovibond, S. H., & Lovibond, P. F. (1995). Manual for the Depression Anxiety Stress Scales (2nd ed.). Psychology Foundation.

MacKinnon, D. P., Krull, J. L., & Lockwood, C. M. (2000). Equivalence of the mediation, confounding, and suppression effect. Prevention Science, 1(4), 173–181.

Marciniak, M. A., Shanahan, L., Binder, H., Kalisch, R., & Kleim, B. (2023). Positive Prospective Mental Imagery Characteristics in Young Adults and Their Associations with Depressive Symptoms. *Cognitive Therapy and Research*, *47*(4), 695-706. https://doi.org/10.1007/s10608-023-10378-5

Marks, D. F. (1973). Visual Imagery Differences in the recall of Pictures. *British Journal of Psychology*, *64*(1), 17-24. https://doi.org/10.1111/j.2044-8295.1973.tb01322.x

Marks, D. F. (1995). New directions for mental imagery research. Journal of Mental Imagery, 19(1–2), 153–167.

Moran, A. (2012). Mental imagery. In S. Murphy (Ed.), The Oxford handbook of sport and performance psychology (pp. 115-132). Oxford University Press.

Morrison, R. G., & Wallace, B. (2001). Imagery vividness, creativity and the visual arts. *Journal of Mental Imagery, 25*(3-4), 135-152.

Pearson, J., Naselaris, T., Holmes, E. A., & Kosslyn, S. M. (2015). Mental Imagery: Functional Mechanisms and Clinical Applications. *Trends in Cognitive Sciences*, *19*(10), 590-602. https://doi.org/10.1016/j.tics.2015.08.003

Pile, V., & Lau, J. Y. F. (2020). Intrusive images of a distressing future: Links between prospective mental imagery, generalized anxiety and a tendency to suppress emotional experience in youth. *Behaviour Research and Therapy*, *124*, 103508. https://doi.org/10.1016/j.brat.2019.103508

Pile, V., Williamson, G., Saunders, A., Holmes, E. A., & Lau, J. Y. F. (2021). Harnessing emotional mental imagery to reduce anxiety and depression in young people: An integrative review of progress and promise. *The Lancet Psychiatry*, *8*(9), 836-852. https://doi.org/10.1016/S2215-0366(21)00195-4

Roets, A., & Van Hiel, A. (2011). Item selection and validation of a brief, 15-item version of the Need for Closure Scale. *Personality and Individual Differences*, *50*(1), 90-94. https://doi.org/10.1016/j.paid.2010.09.004

Sit, H. F., Hall, B. J., Wang, Y., Zhang, Y., Ju, Q., & Gan, Y. (2022). The effect of positive mental imagery training on Chinese University students with depression: A pilot study. *Current Psychology*, *41*(6), 3716-3729. https://doi.org/10.1007/s12144-020-00867-1

Webster, D. M., & Kruglanski, A. W. (1994). Individual differences in need for cognitive closure. *Journal of Personality and Social Psychology*, *67*(6), 1049-1062. https://doi.org/10.1037/0022-3514.67.6.1049

White, H. A. (2022). Need for cognitive closure predicts stress and anxiety of college students during COVID-19 pandemic. *Personality and Individual Differences*, *187*, 111393. https://doi.org/10.1016/j.paid.2021.111393

World Medical Association. (2013). World Medical Association Declaration of Helsinki: Ethical principles for medical research involving human subjects. JAMA, 310(20), 2191–2194.

Yan, D., Zhang, H., Guo, S., & Zeng, W. (2022). Influence of anxiety on university students' academic involution behavior during COVID-19 pandemic: Mediating effect of cognitive closure needs. *Frontiers in Psychology*, *13*. https://doi.org/10.3389/fpsyg.2022.1005708

Zhao, X., Lynch, J. G., Jr., & Chen, Q. (2010). Reconsidering Baron and Kenny: Myths and truths about mediation analysis. Journal of Consumer Research, 37(2), 197–206.

Zhou, L., Yao, N., Zengxu, Z., Wu, B., & Liu, M. (2025). The relationship between childhood trauma and depressive symptoms: The serial mediation role of ruminative thinking and prospective imagery vividness. *Psychology, Health & Medicine*, *0*(0), 1-14. https://doi.org/10.1080/13548506.2025.2519236

Zuo, T. (2023). From Tolerance for Ambiguity to Stress and Anxiety: The Mediating Role of Need for Cognitive Closure Among Chinese University Students. *Psychological Reports*, 00332941231212833. https://doi.org/10.1177/00332941231212833

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Conflict of Interest

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