

# Psychometric Evaluation of the Cognitive Fusion Questionnaire Among Malaysia University Students

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Dihantar: 12.12.25 / Diterima:

12.12.25Received date: yyy / Accepted

date: 30.12.25

**Abstrak** The Cognitive Fusion Questionnaire (CFQ) is designed to assess individuals' tendency to become entangled with their thoughts and the extent to which such cognitive fusion influences their behaviour. The original CFQ consists of 42 self-report items assessing daily thinking patterns and emotional experiences, although only the short version of seven items CFQ have been consistently supported by previous validation studies. The current study aimed to evaluate the psychometric properties of the short version 7-items CFQ among Malaysian university students. Using convenience sampling, a total of 343 students from five universities in Malaysia participated by completing the CFQ through Microsoft Forms and Google Forms. Results indicated acceptable internal consistency, with a Cronbach's alpha of .70. Item analysis showed strong item-total correlations ( $r = .633$  to  $r = .766$ ). Evidence of convergent validity was demonstrated through a strong positive correlation ( $r = .760$ ) with the Acceptance and Action Questionnaire-II (AAQ-II) score. Concurrent validity was supported by a significant negative correlation with the Positive Mental Health Scale (PMHS;  $r = -.401$ ). Overall, the findings provide preliminary support for the reliability and validity of the CFQ in assessing cognitive fusion among Malaysian university students.

**Keywords:** Cognitive Fusion Questionnaire, reliability, validity, psychometric evaluation.

**Abstract** The Cognitive Fusion Questionnaire (CFQ) *Cognitive Fusion Questionnaire, CFQ* direka bentuk untuk menilai tahap kecenderungan individu untuk terperangkap atau terikat dengan pemikiran mereka serta sejauh mana fusi kognitif mempengaruhi tingkah laku mereka. CFQ asal adalah instrumen laporan kendiri yang mengandungi 42 item untuk menilai corak pemikiran harian dan pengalaman emosi individu, namun versi pendek yang mengandungi hanya tujuh item telah menunjukkan bukti kesahan yang konsisten dengan versi asal instrumen ini. Kajian ini bertujuan menilai sifat psikometrik CFQ versi pendek tujuh item dalam kalangan pelajar universiti di Malaysia. Menggunakan persampelan mudah, seramai 343 pelajar dari lima buah universiti di Malaysia telah mengambil bahagian dengan melengkapkan CFQ melalui Microsoft Forms dan Google Forms. Keputusan menunjukkan konsistensi dalam yang boleh diterima, dengan nilai Cronbach's alpha .70. Analisis item menunjukkan korelasi item keseluruhan yang baik ( $r = .633$  hingga  $r = .766$ ). Bukti validiti konvergen ditunjukkan melalui korelasi positif yang kuat ( $r = .760$ ) dengan skor instrumen Acceptance and Action Questionnaire-II (AAQ-II). Validiti serentak turut disokong melalui korelasi negatif yang signifikan dengan Skala Kesihatan Mental Positif (PMHS;  $r = -.401$ ). Secara keseluruhannya, dapatan kajian ini memberikan sokongan awal terhadap reliabiliti dan validiti CFQ dalam menilai fusi kognitif dalam kalangan pelajar universiti di Malaysia.

**Kata kunci:** Cognitive Fusion Questionnaire, reliabiliti, validiti, penilaian psychometrik.

Cognitive fusion is a central construct within Acceptance and Commitment Therapy (ACT) and refers to a psychological process in which individuals become overly entangled with their thoughts, emotions, and internal experiences (Donati et al., 2021). When cognitively fused, individuals treat their private experiences as literal truths, making it difficult to separate themselves from these internal events. This often leads to rigid behavioural patterns, impaired decision-making, and heightened emotional reactivity. To assess this construct, the Cognitive Fusion Questionnaire (CFQ) was developed as a self-report instrument that measures the extent to which individuals are dominated by their thoughts across various contexts (Gillanders et al., 2014).

The CFQ has been widely used in both clinical and non-clinical populations and has shown strong psychometric

properties across cultures and contexts (Donati et al., 2021; Ruiz et al., 2016). However, little is known about its performance among university students in Malaysia. Examining cognitive fusion among university students is important because this population is highly vulnerable to cognitive and emotional challenges, particularly in the context of academic stress, identity formation, and environmental transitions. Prior research has shown that cognitive fusion was positively associated with negative affect, while lower levels of fusion facilitate mindfulness processes that reduced emotional distress (Pux et al., 2022). Individuals with lower CFQ scores demonstrated greater cognitive defusion, an ability to observe thoughts without automatically reacting to them which enhances awareness, psychological clarity, and intentional behaviour (Larsson et al., 2016).

The CFQ is also closely related to the broader framework

of psychological flexibility, the ability to adapt to situational demands while remaining open to personal experiences (McCracken et al., 2014). Psychological flexibility is a core component of ACT and is widely recognised as a protective factor for mental health and well-being. Lower cognitive fusion contributes to higher psychological flexibility, which in turn supports emotional regulation, resilience, and meaningful action. Research further suggested that cognitive fusion and experiential avoidance may increase vulnerability to distress, negative thinking, and even the outcomes such as suicidal ideation among adolescents (Wang et al., 2024).

Given its relevance to emotional well-being, cognitive functioning, and mental health outcomes, assessing the psychometric properties of the CFQ in Malaysian university students is essential. A reliable and valid measure will facilitate future research on cognitive processes and support psychological interventions for the maladaptive thinking patterns. Psychometric analyses that included reliability testing, item analysis, and validity assessments were crucial in evaluating the CFQ's consistency, dimensionality, and construct accuracy. Such evaluations also ensure that the instrument can be applied in Malaysia contexts.

Therefore, the present study aimed to examine the reliability, item analysis, and validity of the Cognitive Fusion Questionnaire (CFQ) among university students in Malaysia. Establishing the CFQ's psychometric properties in this context will strengthen its applicability in Malaysian populations and contribute to a deeper understanding of cognitive fusion and psychological flexibility in Malaysian university students.

## Methods

### Respondents

A total of 343 undergraduate students (201 female and 142 male) from five universities in Malaysia participated in this study. Respondents were recruited using a convenience sampling method, which enabled data collection from students who were readily accessible during the study period. The sample comprised students aged 19 to 24 years ( $M = 21.79$ ,  $SD = 1.05$ ). Respondents were selected across different years of study, including 39 first-year students (11.4%), 77 second-year students (22.4%), 202 third-year students (58.9%), and 25 fourth-year students (7.3%). Data on household income was also collected. A total of 196 participants (57.1%) reported a household income below RM4,849; 100 participants (29.7%) reported income between RM4,850 and RM10,959; and 45 participants (13.1%) reported income above RM10,960. The sample reflected a diverse ethnic composition, 34.4% of Malay, 24.5% of Kadazandusun, 8.2% of Bajau, 7.9% Chinese, 7.3% of Indian, and 14.7% from other ethnic backgrounds. Regarding religion, most participants were Muslim ( $n = 214$ , 62.4%), followed by Christian ( $n = 89$ , 25.9%), Hindu ( $n = 21$ , 6.1%), and Buddhist ( $n = 19$ , 5.5%).

### Instrument

#### Cognitive Fusion Questionnaire (CFQ)

The Cognitive Fusion Questionnaire (CFQ) was originally developed by Gillanders et al. (2014) as a measure of cognitive fusion, a process in which individuals become overly entangled with their thoughts, resulting in reduced psychological flexibility. The instrument assessed the extent

to which individuals perceived their thoughts as literal truths that guide their behaviour rather than as transient mental events. The CFQ originally consisted of 42 items, however, was later refined into a widely used 7-item unidimensional measure, supported by psychometric evidence indicated that all items loaded onto a single latent construct of cognitive fusion (Trindade et al., 2018). The items were rated on a 7-point rating that ranged from 1 (never true) to 7 (always true). Higher scores indicated greater cognitive fusion, that refer to the respondent being more likely to perceive their thoughts as dominating or controlling their actions. Conversely, lower scores reflect stronger cognitive defusion, where individuals viewed their thoughts as separate from reality and were able to act more consistently with personal values.

#### Acceptance and Action Questionnaire-II (AAQ-II)

The Acceptance and Action Questionnaire-II (AAQ-II) was developed by Bond et al. (2011) to measure psychological inflexibility, a core construct within the Acceptance and Commitment Therapy (ACT) framework. Psychological inflexibility was characterized by experiential avoidance, the attempt to avoid or suppress unpleasant internal experiences and cognitive fusion was the tendency to become entangled with one's thoughts. The AAQ-II consisted of 7 items; the items were rated on a 7-point rating from 1 (never true) to 7 (always true). Higher scores reflect greater psychological inflexibility and indicate difficulties in accepting distressing thoughts and emotions and a tendency toward avoidance-based behaviours. Lower scores represent higher psychological flexibility that reflected individuals can acknowledge internal experiences without letting them dictate their actions. The AAQ-II was well-established in literature and has been consistently validated across diverse populations (Bond et al., 2011). The AAQ-II was used in this study to provide convergent evidence of the CFQ.

#### Positive Mental Health Scale (PMH)

The Positive Mental Health (PMH) Scale was also used in this study to assess the concurrent validity of the CFQ. The PMH originally developed by Lutz et al. (1992) and later modified by Lukat et al. (2016), was developed to measure the positive dimensions of mental health. Unlike traditional measures that primarily assess psychological symptoms or deficits, the PMH focuses on emotional functioning, well-being, resilience, and life satisfaction. The PMH was a unidimensional measure consisting of nine items, and the items were rated using 4-point scale ranging from 0 (disagree) to 3 (agree). Higher scores indicate higher levels of positive mental health.

### Data Analysis

The data was analyzed using IBM SPSS Statistics Version 29.0. To assess the internal structure of the Cognitive Fusion Questionnaire (CFQ), factor analysis was performed. The reliability of the CFQ was assessed using internal consistency Cronbach's alpha method. A threshold of coefficient of  $\geq 0.70$  indicated an acceptable reliability and coefficient above 0.80 indicated good reliability (Gillanders et al., 2014) were used in the current study as an acceptable reliability criterion. To evaluate convergent validity, CFQ scores were correlated with the Acceptance and Action Questionnaire-II (AAQ-II) score, a widely used measure of psychological inflexibility on the basis that cognitive fusion was theorized as a core component

of psychological inflexibility, a strong positive association between the two instruments was expected (Faustino et al., 2021). Therefore, the analysis was supposed to demonstrate a significant positive correlation between CFQ and AAQ-II scores. Concurrent validity was examined by assessing the relationship between the CFQ and the Positive Mental Health (PMH) scale. Previous research indicated that higher levels of cognitive fusion were correlated with poorer mental health outcomes and greater psychological distress (Lv et al., 2023).

## Results

### Reliability of the Cognitive Fusion Questionnaire

The reliability of the Cognitive Fusion Questionnaire (CFQ) was evaluated using the internal consistency method with Cronbach's alpha. A threshold of  $\alpha \geq .70$  is generally considered acceptable for research purposes, indicated that an instrument demonstrates satisfactory internal reliability (Gillanders, 2014). The results revealed that the CFQ demonstrated excellent internal consistency in this study, with a Cronbach's alpha coefficient of  $\alpha = .896$ . This high alpha value indicated that the items consistently measure the underlying construct of cognitive fusion and reflect strong reliability of the instrument.

### Item Analysis: Item–Total Correlation of the Cognitive Fusion Questionnaire

Table 1 presented the corrected item–total correlation analysis and the Cronbach's alpha if each item were deleted. All seven items of CFQ demonstrated item–total correlation coefficients above the recommended criterion of  $\geq .30$ , which indicated that the items correlate well with the overall scale (Rauwenhoff et al., 2021). In the current study, item–total correlations ranged from .633 to .766, showed that each item of CFQ contributed meaningfully to the scale's measurement of cognitive fusion.

**Table 1**  
*Item Total Correlation Analysis of The Cognitive Fusion Questionnaire*

Items	Item Total Correlation	Cronbach's Alpha if Item Deleted
CFQ_1	.717	.879
CFQ_7	.657	.886
CFQ_10	.766	.873
CFQ_14	.633	.889
CFQ_16	.707	.880
CFQ_17	.744	.876
CFQ_22	.672	.884

### Convergent Validity of the Cognitive Fusion Questionnaire

Convergent validity was examined by assessing the relationship between the Cognitive Fusion Questionnaire (CFQ) and the Acceptance and Action Questionnaire-II (AAQ-II), both of which measure core elements of psychological inflexibility. The results confirmed this expectation. Correlation analysis revealed a significant and strong positive correlation between CFQ score and AAQ-II

scores ( $r = .760, p < .001$ ). The results demonstrated that higher levels of cognitive fusion corresponded with greater psychological inflexibility. This strong correlation provided evidence of convergent validity for the CFQ.

### Concurrent Validity of the Cognitive Fusion Questionnaire

Concurrent validity of the Cognitive Fusion Questionnaire was assessed by examining the relationship between the CFQ score and the Positive Mental Health Scale (PMHS) score. Theoretically, individuals who experienced higher levels of cognitive fusion tend to report lower levels of psychological well-being. Therefore, a significant negative relationship between the two measures was expected. Consistent with this expectation, the results showed a significant and moderate negative correlation between CFQ and PMHS scores ( $r = -.401, p < .001$ ). This finding suggested that greater cognitive fusion was correlated with lower levels of positive mental health, thereby supporting the concurrent validity of the CFQ.

## Discussions

The present study examined the psychometric properties of the Cognitive Fusion Questionnaire (CFQ) among university students in Malaysia and provided further evidence supporting its reliability and validity. Existing literature has highlighted several limitations of earlier instruments used to assess cognitive fusion, such as the Cognitive Distortion Scale, which tended to lack precision in identifying specific cognitive fusion processes (Krafft et al., 2019). In contrast, the CFQ was specifically developed to measure the extent to which individuals become entangled with their thoughts, the essential construct within Acceptance and Commitment Therapy (ACT). The current study reinforced the usefulness of the CFQ as a concise, psychometrically robust assessment instrument especially in Malaysia context. Past research supported the equivalence of the shorter version CFQ to the longer form, the findings demonstrated comparable validity and reliability across different populations (Donati et al., 2021). The present findings aligned with this evidence, confirmed that the short version 7-item CFQ performs well among Malaysian university students.

The reliability analysis showed that the CFQ has excellent internal consistency with the Malaysian sample was consistent with findings from previous validations, such as the Korean version of the CFQ, which reported  $\alpha = .91$  among undergraduate samples (Kim & Cho, 2015). The results of item analysis that showed high item–total correlations demonstrated that each item of CFQ contributed meaningfully to the overall construct and that the items were conceptually cohesive. These results affirm that the CFQ reliably measures cognitive fusion in the student population.

The strong positive correlation between CFQ and AAQ-II score indicated excellent convergent validity. Since both instruments assess components of psychological inflexibility, specifically cognitive fusion and experiential avoidance (Bond et al., 2011). Conversely, the CFQ demonstrated a moderate negative correlation with positive mental health, supported its concurrent validity. Individuals with higher levels of cognitive fusion tend to report lower psychological well-being, consistent with previous findings where higher fusion was associated with higher depressive symptoms and lower functioning (Zacharia et al., 2021; Bodenlos et al., 2020).

These findings further supported CFQ's validity in capturing thought-related processes that influence overall psychological well-being. The findings also affirmed that cognitive fusion played a significant role in shaping mental well-being among young adults.

## Conclusion

This study examined the psychometric properties of the Cognitive Fusion Questionnaire (CFQ) among university students in Malaysia and provides strong evidence supported its psychometric properties. The CFQ demonstrated excellent internal consistency and strong item performance, indicated that its seven items consistently measured cognitive fusion. The CFQ also showed strong convergent validity through its positive correlation with the AAQ-II and concurrent validity through its negative correlation with the Positive Mental Health Scale. Overall, the CFQ is a reliable and valid instrument for assessing cognitive fusion among Malaysian university students. Future studies should broaden the population scope and consider qualitative or mixed methods of approaches to gain deeper insights into individuals' cognitive experiences. Continued research on the CFQ will enhance understanding of cognitive fusion and inform the development of effective psychological interventions within diverse cultural contexts. The limitation of this study was that the use of convenience sampling methods may introduce selection bias and potentially affect representativeness.

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