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Research Reports

Cross-Cultural Validation of the AAQ-II in Five Countries: A SEM and Psychometric Network Analysis Approaches

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Supplementary Materials: Code, Data, Materials [see Index of Supplementary Materials]

Abstract

Background: Experiential avoidance (EA) describes the tendency to evade negative internal experiences (e.g., distressing thoughts, emotions). EA is implicated across mental health conditions, positioning it as a central target for interventions like Acceptance and Commitment Therapy (ACT). The Acceptance and Action Questionnaire-II (AAQ-II) is widely employed to measure EA; however, its cross-cultural reliability and factorial stability have not been comprehensively validated across diverse contexts.

Aim: This study aimed to assess the cross-cultural validity and psychometric stability of the AAQ-II across five countries (Peru, Mexico, USA, Belgium, and Hungary) using Structural Equation Modeling (SEM) and network analysis.

Method: A sample of 3,719 adults, primarily female (63.65%), was collected from five countries. Data analysis included SEM to evaluate factorial structure and network analysis to examine item interrelationships, assessing Expected Influence (EI) as a centrality measure. Multiverse analysis using 5,000 bootstrap samples further evaluated network stability across samples.

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Results: SEM confirmed a unidimensional AAQ-II structure across all regions, indicating consistent factorial validity. Network analysis identified "Painful Memories" (AAQ4) and "Painful Experiences" (AAQ1) as central nodes across cultures, with regional variations in item relationships reflecting unique sociocultural influences. For instance, individualistic societies (e.g., USA) emphasized EA linked to achievement and competitive concerns, while collectivist countries (e.g., Peru, Mexico) associated EA with familial and social obligations. Multiverse analysis revealed stable EA constructs across samples.

Discussion: Results validate the cross-cultural applicability of the AAQ-II, with findings underscoring cultural impacts on EA manifestations. Network analysis provided nuanced insights into item interactions, showing that cultural factors, such as individualism, historical trauma, and social norms, shape EA expression differently across regions. This supports the use of culturally informed approaches in EA interventions.

Conclusion: The AAQ-II exhibits reliable cross-cultural validity, affirming its utility for assessing EA across diverse settings. These findings enhance the application of the tool in psychological therapies worldwide, suggesting that culturally tailored EA interventions may benefit from considering specific sociocultural factors influencing EA processes. Future research should investigate additional variables that may affect EA in different cultural contexts.

Keywords

Experiential Avoidance, Acceptance and Action Questionnaire-II (AAQ-II), Cross-Cultural Validation, Network Analysis, Structural Equation Modeling (SEM)

In recent years, there has been growing interest in research on experiential avoidance (EA), a concept addressing the reluctance or unwillingness to confront aversive private events such as thoughts, emotions, or physical sensations (Wang et al., 2024). This tendency often leads people to take measures to avoid, alter, or suppress these events (Gerhart et al., 2014; Hayes et al., 1996). From this perspective, EA is characterized as a transdiagnostic phenomenon because it can manifest as part of various psychological conditions, such as social anxiety (Asher et al., 2021), depression (Mellick et al., 2019), post-traumatic stress (Akbari et al., 2022), and obsessive-compulsive disorder (Angelakis & Pseftogianni, 2021; Xiong et al., 2021).

Different approaches have been proposed to describe and measure this concept, sparking debate and distinct lines of research (Hayes-Skelton & Eustis, 2020). Specifically, there has been discussion on the relationship between experiential avoidance and acceptance, as a positive depiction of the same phenomenon, as well as psychological inflexibility, a similar concept (Bond et al., 2011; S. Hayes et al., 2012; Hayes-Skelton & Eustis, 2020). In the ACT model, acceptance is defined as the willingness to experience unwanted internal events (S. C. Hayes et al., 1996; Hayes-Skelton & Eustis, 2020). This suggests that these concepts are interconnected (i.e., a treatment focused on increasing acceptance reduces experiential avoidance levels), allowing the AAQ-II to measure both concepts (Bond et al., 2011; Hayes-Skelton & Eustis, 2020).

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From a psychometric perspective, cross-cultural assessment of an instrument allows for determining the stability of its internal structure, as well as identifying potential variations in item behavior associated with linguistic, cultural, or contextual differences (Borsa et al., 2012). In this regard, psychometric research has been conducted in various countries, with some descriptive analyses of the AAQ-II reporting higher kurtosis for item AAQ4 ("My painful memories prevent me from having a fulfilling life") in Dutch and English samples (Monestès et al., 2016), a pattern also observed alongside greater skewness in Mexican (Mellin & Padrós, 2021) and Brazilian samples (Berta-Otero et al., 2023). Regarding the evaluation of the factorial structure of the AAQ-II, most studies—even in diverse contexts such as Europe, North America, and Latin America (Edwards & Vowles, 2020; Flynn et al., 2016; Mellin & Padrós, 2021; Monestès et al., 2016; Ruiz et al., 2016)—have shown that the seven-item unidimensional model provides the best fit, consistent with its original validation (Bond et al., 2011). Additionally, it is important to consider variability in the translation of the scale across evaluated contexts; thus, the original items from Bond's study have been used to standardize reports across psychometric research.

Regarding factor loadings, items AAQ5 ("Emotions cause problems in my life") and AAQ4 ("My painful memories prevent me from having a fulfilling life") demonstrated higher factor loadings across studies conducted with samples from Belgium, Cyprus, Spain, France, Italy, the Netherlands, the United Kingdom, and Mexico (Mellin & Padrós, 2021; Monestès et al., 2016). Additionally, item AAQ7 ("Worries get in the way of my success") showed higher factor loadings in two studies from Colombia and Norway (Ruiz et al., 2016; Østergaard et al., 2020). Item AAQ3 ("I worry about not being able to control my worries and feelings") also showed high factor saturation in studies conducted in Hungary and the United States (Edwards & Vowles, 2020; Eisenbeck & Szabó-Bartha, 2018).

Residual correlation has been applied between items AAQ1 ("My painful experiences and memories make it difficult for me to live a life that I would value") and AAQ4 ("My painful memories prevent me from having a fulfilling life") in most studies as suggested by Bond et al. (2011) and Hayes-Skelton and Eustis (2020), to achieve a better model fit, given that both items use the term "painful" (Edwards & Vowles, 2020; Eisenbeck & Szabó-Bartha, 2018; Flynn et al., 2016; Østergaard et al., 2020). Additionally, other studies used residual correlation between items AAQ2 ("I'm afraid of my feelings") and AAQ3 ("I worry about not being able to control my worries and feelings") in European countries (Norway, Hungary, and Greece), suggesting that as consecutive items sharing "my feelings," they introduced possible redundancy in measuring the variable (Eisenbeck & Szabó-Bartha, 2018; Karekla & Michaelides, 2017). Similarly, residual correlation was used between items AAQ3 and AAQ7 in the U.S. context (Flynn et al., 2016) since they both include the term "worry" in their statements.

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Another relevant finding from Item Response Theory (IRT) analysis indicated that item AAQ6 ("It seems like most people are handling their lives better than I am") exhibited the lowest discriminative capacity compared to other items, suggesting that it measures a general life stress situation rather than an unsatisfactory internalizing experience (Langer et al., 2024).

In the past decade, psychometric network analysis has emerged as one of the most suitable methodologies for conducting detailed cross-cultural comparisons, including the examination of relationships between items and the structures these relationships form (Knefel et al., 2020; Wüsten et al., 2018). Although studies on EA have employed systemic approaches in different countries, they have yet to provide a detailed analysis that identifies context-specific differences and key indicators that may play an important role in EA processes. Specifically, the application of this methodology has been limited to European (Blekić et al., 2023) and American samples (Baker & Berghoff, 2022; Eadeh et al., 2023; Hsu et al., 2022). Few studies outside these contexts have examined EA network relationships in depth. One example is a study conducted in Cyprus, where stronger partial correlations were identified between the AAQ1 and AAQ4 items, even after accounting for other ACT variables, and where item AAQ5 showed more connections with other AAQ-II items (Christodoulou et al., 2019). This finding highlights the need for studies to evaluate EA not only as a single general node, but as a set of interrelated symptoms in order to identify the most important ones (Eadeh et al., 2023; Hsu et al., 2022).

Theoretically, experiential avoidance involves rejection or control following an aversive appraisal of internal experiences; therefore, it should be considered a process of attempts whose outcomes are not static but successive (Hayes et al., 2004). From this perspective, it seems more appropriate to represent this process as patterns of connections in which thoughts, emotions, or memories feed back into one another, an interaction in which emotions about thoughts, or memories and thoughts about emotions are experienced, which may give rise to complex internalizing distress (Hayes-Skelton & Eustis, 2020). In this sense, a network perspective using experiential avoidance items can elucidate this feedback process, starting from the initial negative appraisal and followed by attempts at rejection that, although producing temporary relief, continue toward a cascading recurrence of symptoms, as suggested by the network approach to mental disorders (Borsboom, 2017). Consequently, it is possible to propose a system of cognitive–emotional–behavioral indicators that sustains continuous cycles of aversion, avoidance, relief, and persistent distress. This differs from the measurement of EA using traditional latent models, in which the covariance among symptoms is not a primary focus, as it is explained by a single underlying cause of experiential avoidance, without examining in depth the interactions among internal experiences that may constitute the central mechanism maintaining the phenomenon (Hayes et al., 2004).

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The characterization of recurrent negative cognitions and emotions, along with the tendency to escape from them, may be prevalent across various types of populations (Akbari et al., 2022). For example, these ways of processing internal experiences are also present in many individuals experiencing different types of internalizing psychopathologies, as suggested by cross-sectional studies across several countries and cultures, as well as a meta-analysis on variables associated with experiential avoidance (Akbari et al., 2022; Calvete & Connor-Smith, 2005; Chawla & Ostafin, 2007; Chentsova et al., 2023). Indeed, when considering the neuropsychological behavioral inhibition system (BIS, which involves behavioral inhibition that leads to negative affect), experiential avoidance is a prominent manifestation of this system (Johnson et al., 2003; Serrano-Ibáñez et al., 2019; Sun et al., 2020). This system is a generalizable aspect of human experience, even across diverse contexts, particularly in those with increased vulnerability to stress responses (Rajchert, 2020).

Nonetheless, in addition to these shared characteristics, it is plausible that each experience of avoiding unsatisfactory events varies uniquely according to the established norms of each culture, such as the range of acceptable expression for positive or negative emotions and cultural values in countries that favor individualistic or collectivistic behaviors (Borgogna et al., 2020; Monestès et al., 2016). For example, this variability has been supported by previous studies showing that American students experiencing EA were more prone to anxious and depressive symptoms compared to students from Latin America and the Middle East (Borgogna et al., 2020). However, complementary evidence has also been found, where participants from Asian countries reported higher EA levels than those from Western countries (Cook & Hayes, 2010; Drake et al., 2019). Similarly, a study in European countries found no significant differences among them regarding the avoidance of unpleasant experiences (Monestès et al., 2016). In this regard, additional studies are needed to provide more rigorous evidence to verify whether there is consistency in how aversive private experiences are perceived through divergent cultures.

Considering the influence of cultural differences on EA, countries with an individualistic orientation have shown higher levels of automatic negative thoughts and dysfunctional attitudes, which increase cognitive vulnerability when individuals are unable to meet the competitive standards of personal development demanded (Bartucz et al., 2022). This pressure for personal development may also relate to the pursuit of maintaining a positive mood, a common trend in individualistic Western cultures (Diener et al., 1995; Tsai et al., 2006). Thus, individuals from these cultures are likely to be less tolerant of negative mood states, leading to the avoidance of such private experiences (Borgogna et al., 2020; Monestès et al., 2016; Scollon & Koh, 2011). In analyzing cultural values related to individualism, European countries like Belgium and Hungary, as well as the United States, stand out for prioritizing individual decisions and opinions over collective ones, with a focus on self-care and immediate family over group identification. Conversely,

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countries like Peru and Mexico show a lower tendency toward individualism, marked by a strong long-term commitment to the group, whether it be nuclear or extended family or community relationships (Hofstede Insights, 2024). However, it has also been suggested that this close group affiliation may increase the tendency to yield to social pressure, resulting in decisions influenced by the environment and a tendency to avoid personal responsibility (Brunette et al., 2015).

Additionally, EA has been linked to intolerance of uncertainty, a cultural value characterized by aversion to ambivalent events within a society, as both involve a resistance to internal experiences that generate emotional discomfort (Delvecchio et al., 2023; Panjwani et al., 2024). In societies that prioritize certainty and avoid ambiguity, individuals are likely to develop strategies to evade both external uncertainty and unpleasant internal experiences (Di Giuseppe & Taylor, 2021). Particularly in countries like Belgium, Hungary, Peru, and Mexico, there is a very high tendency to avoid uncertainty (Hofstede Insights, 2024). These nations tend to maintain rigid codes of beliefs and behavior, showing intolerance toward non-traditional behaviors and ideas. In contrast, the United States exhibits lower levels of intolerance for uncertainty, which is reflected in greater acceptance of new ideas, opinions, and experiences, as well as a higher degree of freedom of expression (Hofstede Insights, 2024). This distinction between cultural values lays the groundwork for understanding the diversity of perspectives and behaviors in different social and cultural contexts, which is crucial for exploring the complexity of experiential avoidance and its relevance in various societies.

Therefore, this study is based on the growing importance of EA as a transdiagnostic phenomenon in current clinical psychology, highlighting the need to confront these events rather than avoid or suppress them, as suggested by the ACT. Consequently, it is essential to have a reliable measurement tool like the AAQ-II and to conduct cross-cultural validation to ensure its usefulness in different cultural contexts, where differences in values and norms can influence the experience and expression of EA. However, the limitations of previous studies on the AAQ-II emphasize the lack of representation from Latin American countries, which could affect the generalization of findings in this culturally diverse region. Additionally, the absence of analyses that jointly consider the psychometric properties of EA across various countries hinders a comprehensive understanding of the cross-cultural validity of the questionnaire. Furthermore, there is a lack of detailed exploration of the relationships between the items and those that activate central processes of experiential avoidance in different cultural contexts.

In this regard, the objective of this study is to conduct a cross-cultural validation of the AAQ-II across five culturally diverse countries by applying a hybrid analytical framework of structural equation modeling (SEM) and psychometric network analysis to assess the structural and relational stability of experiential avoidance constructs.

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Method

Participants and Procedures

The databases used in the study were requested via email from the original corresponding authors. Sample sizes for each study were as follows: Peru (Valencia & Falcón, 2022) n = 1122 (M_{age} = 20.84); Mexico (Mellín & Padrós, 2021) n = 988 (M_{age} = 24.44); United States (Allen, 2021) n = 200 (M_{age} = 19.23); Belgium (Krings et al., 2021) n = 344 (M_{age} = 31.76); and Hungary (Eisenbeck & Szabó-Bartha, 2018) n = 1065 (M_{age} = 29.16). No treatment for missing data was necessary, as all cases were found to be complete. All datasets correspond to adult populations, including some university students, and none of the previous studies indicated any specific clinical characteristics in the collected samples. Therefore, the overall sampling pertains exclusively to adults from the respective countries.

The total sample comprised n = 3719 individuals with an average age of 25.1 years (SD = 9.71). Generally, female participants outnumbered males across countries, with n = 2367 (63.65%) female and n = 1352 (36.35%) male. Data collection was conducted using different strategies, Peru, Mexico, and the United States used paper-and-pencil surveys, while Belgium and Hungary employed online tools for survey distribution, such as social media and email invitations. All studies adhered to the ethical standards of each respective country and followed the guidelines of the Helsinki Declaration about informed consent, data confidentiality, and respectful treatment of participants.

Instruments

The instrument analyzed in this study was the Acceptance and Action Questionnaire (AAQ-II; Bond et al., 2011). This scale consists of 7 items that assess experiences of experiential avoidance. The statements reflect the tendency to resist confronting one's own unpleasant emotions or thoughts in daily life, with examples such as "I'm afraid of my feelings" and "Emotions cause problems in my life." Participants rated each item on a scale from 1 = Completely false to 7 = Completely true. In Bond et al.'s (2011) original studies with college student samples, construct validity was assessed using confirmatory factor analysis, yielding satisfactory fit indices (CFI > .96, SRMR and RMSEA < .06), while reliability scores ranged between .87 and .88.

Data Analysis

All data was analyzed in the R Studio IDE using the R programming language (R Core Team, 2025; Posit Team, 2025). The interface utilized the following packages, tidyverse (Wickham, 2023), lavaan (Rosseel, 2012), bootnet (Epskamp & Fried, 2024), NetworkComparisonTest (van Borkulo et al., 2019), psychonetrics (Epskamp, 2020), igraph (Csardi &

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Nepusz, 2006), qgraph (Epskamp et al., 2012), semTools (Jorgensen et al., 2025), NetworkToolbox (Christensen, 2018), networktools (Jones, 2025), and psych (Revelle, 2025).

First, the databases were unified using R base codes, assigned a country-specific ID, and classified by gender and age. After the initial data processing, the distribution was assessed through skewness and kurtosis calculations, with expected values between |2| (Kline, 2023).

Once the normality of the data was confirmed, a Confirmatory Factor Analysis was carried out for the consolidated dataset and for each country, aiming for factor loadings higher than $\alpha > .30$ (Bandalos & Finney, 2018). The WLSMVS estimator (Weighted Least Square Mean and Variance Adjusted with Satterthwaite correction) was employed due to the ordinal nature of the data (Lei, 2009). Fit indices such as CFI and TLI were expected to exceed .95, and RMSEA (Root Mean Square Error of Approximation) and SRMR (Standardized Root Mean Square Residual) were expected to remain below .06 (Hu & Bentler, 1999). The reliability of the instrument was assessed using the omega coefficient ($\omega > .70$) (Hair et al., 2019).

To examine the cross-cultural validity of the scale, Measurement Invariance was assessed through Multi-Group Confirmatory Factor Analysis (MG-CFA). A hierarchical testing procedure was employed, sequentially evaluating configural invariance (same factor structure), metric invariance (equal factor loadings), and scalar invariance (equal item thresholds) across countries. Model comparison relied on the changes in fit indices rather than the Chi-square difference test, which is overly sensitive to large sample sizes. Following the guidelines by Cheung and Rensvold (2002) and Chen (2007), invariance was considered supported if the decrease in CFI was less than or equal to .010 ($\Delta CFI \geq -.010$) and the increase in RMSEA was less than or equal to .015 ($\Delta RMSEA \leq .015$) relative to the less constrained model.

Subsequently, a network analysis was conducted using partial correlations, after a non-paranormal transformation of the data (Liu et al., 2009) through the ggmModSelect estimator (Isvoranu & Epskamp, 2021), which demonstrated better performance across different datasets. Significant correlation values ($p < .0001$) between elements (nodes) were expected, with blue interconnections representing positive relationships and red ones representing negative relationships. The resulting network was anticipated to be dense to ensure interpretability and accurate representation of reality. The fit indices for each analyzed network were obtained through the ggmFit function contained in the qgraph package.

The Expected Influence (EI) index was calculated to assess the importance of components within the correlations (Bringmann et al., 2019) in terms of centrality, where components with higher scores had more network connections. This was measured in two stages. To assess the practical relevance of the estimated networks, node Predictability (R2) was calculated. This metric quantifies the proportion of variance of each node that is explained by its connections with all other nodes in the network. The robustness

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and precision of the relationship weights were evaluated using 5000 non-parametric bootstrap samples to calculate 95% confidence intervals (CIs), globally assessed with the Stability Coefficient (CS) (Epskamp et al., 2018).

Multiverse analysis is a statistical transparency technique that systematically examines the full spectrum of plausible analytical choices through the execution of all defensible combinations of data processing and modeling decisions, generating multiple alternative versions of the dataset to conduct identical statistical analyses across them (Freichel, 2025; Simonsohn et al., 2020; Webb & Demeyere, 2022). The primary objective is to evaluate the robustness of the findings by determining outcome consistency across different specifications and identifying which choices most strongly influence the results (Steegen et al., 2016). Interpretation requires examining the distribution and stability of the obtained effects. Consistent conclusions across the vast majority of analytical pathways provide empirical evidence of robustness, whereas substantial variation indicates a fragility contingent on specific methodological decisions (Webb & Demeyere, 2022).

In this regard, multiverse analysis applied to samples generated by different bootstrap techniques in network psychometrics enhances the robustness, transparency, and accuracy of the relationships between items, as it allows for the identification of multiple reasonable potential outcomes. This means that various variables that may influence the results can be considered (Epskamp et al., 2018).

The specific network comparisons were performed using the 'NCT' function from the NetworkComparisonTest package, applying the same initial detection characteristics for each network. This procedure followed a hierarchical invariance testing approach: (1) Network Structure Invariance, which tests whether the global topology differs between groups; and (2) Global Strength Invariance, which tests whether the overall connectivity (sum of absolute edge weights) differs. Only if invariance was rejected at these levels were specific differences in edge strengths and centrality (Expected Influence) examined using the Bonferroni-Holm correction to control for multiple comparisons (van Borkulo et al., 2019).

Finally, in accordance with the methodological standards proposed by Kan et al. (2020), a formal statistical comparison was conducted to determine whether a Latent Variable Model (LVM) or a Psychometric Network Model best represented the data structure. Using the psychonetrics package, both the CFA model and the network model were fitted to the observed variance-covariance matrix. The models were evaluated based on absolute fit indices—RMSEA ($\leq .06$), CFI ($\geq .95$), and TLI ($\geq .95$)—and relative fit indices using the Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC), where lower values indicate a better trade-off between model fit and complexity.

All materials and additional results can be found in the OSF repository (see García O'Diana et al., 2024).

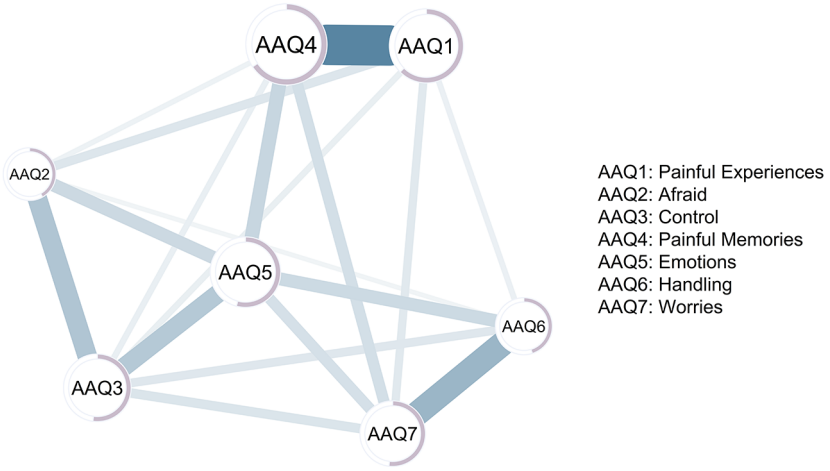
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Results

In Figure 1, the overall network of the consolidated data from all analyzed countries is presented, showing that, following cluster exploration, a unidimensional system was obtained. The strongest relationships were found between AAQ1 "Painful Experiences" and AAQ4 "Painful Memories" (r = 0.58), AAQ6 "Handling" and AAQ7 "Worries" (r = 0.34), and AAQ2 "Afraid" and AAQ3 "Control" (r = 0.27). Centrality, measured by expected influence over two steps, suggests that the most central items are AAQ4 (EI_1 = 1.06; EI_2 = 2.02) and AAQ1 (EI_1 = 0.94; EI_2 = 1.84). Predictability values were highest for AAQ4 (r^2 = 0.66) and AAQ1 (r^2 = 0.62). As for network stability, the system generally achieved a value of CS = 0.7, and for the stability of expected influence, CS_{EI} = 0.75 was obtained, indicating the stability of the network system in at least 95% of samples.

Figure 1

General Network for the Acceptance and Action Questionnaire-II



Note. Node widths are the expected influence of each node. Node pies are the r^2 value for each node. Blue paths represent positive relationships between nodes.

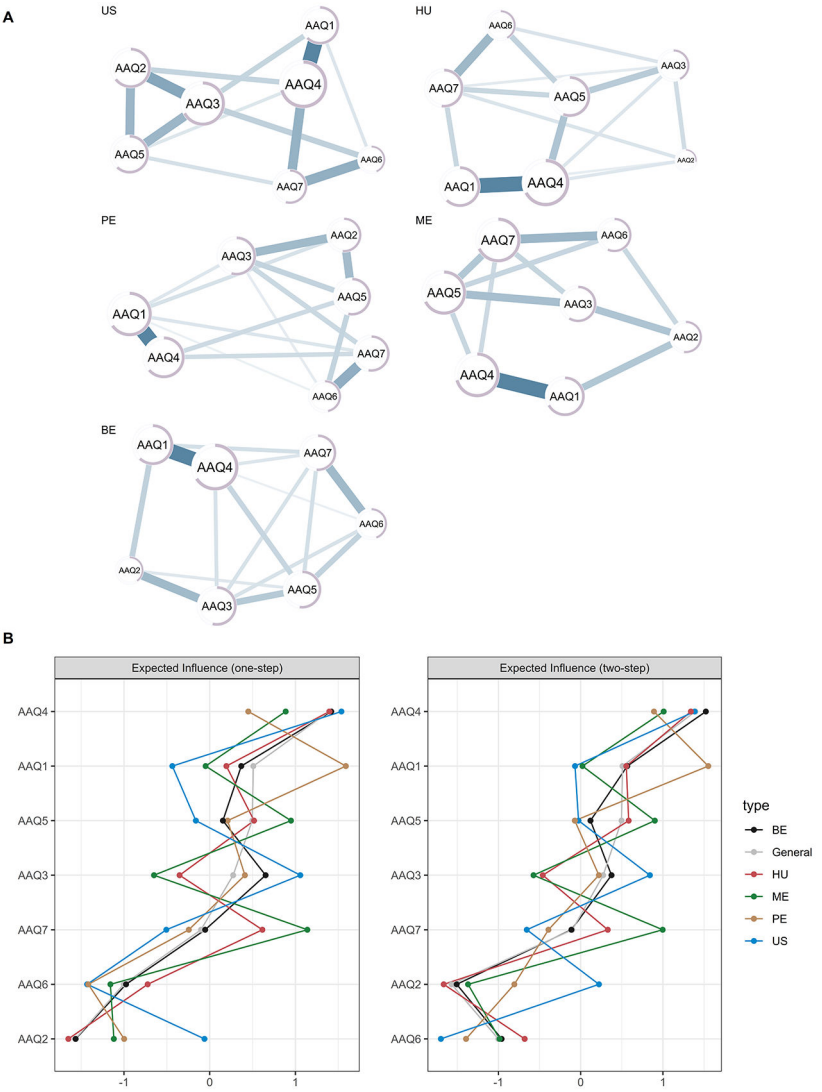
Figure 2 shows the network systems and centralities for each country analyzed in the study. All systems displayed a unidimensional and interpretable network structure. Generally, all networks showed the strongest relationships between nodes AAQ1 and AAQ4 (r_{US} = 0.53; r_{PE} = 0.59; r_{BE} = 0.57; r_{HU} = 0.60; r_{ME} = 0.62) and AAQ6 and AAQ7 (r_{US} = 0.34; r_{PE} = 0.39; r_{BE} = 0.32; r_{HU} = 0.35; r_{ME} = 0.37). Common relationships also appeared in the USA, Peru, and Belgium networks between nodes AAQ2 and AAQ3 (r_{US} = 0.38; r_{PE} = 0.33; r_{BE} = 0.32). In addition, the Hungary network highlighted the relationship between nodes

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AAQ4 and AAQ5 (r_{HU} = 0.29), while in Mexico, the strongest link was between nodes AAQ3 and AAQ5 (r_{ME} = 0.33).

Figure 2

Country Network and Centrality Plots for the Acceptance and Action Questionnaire-II



Note. A) Network system plot for each country. Node widths are the expected influence of each node. Node pies are the r^2 value for each node. Blue paths represent positive relationships between nodes. B) Centrality by Expected Influence in both steps for each country.

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Regarding centralities, measured by expected influence over two steps, highest values in the USA network were found in nodes AAQ4 (EI_1 = 1.16; EI_2 = 2.12) and AAQ3 (EI_1 = 1.08; EI_2 = 1.96). For Peru, the most central nodes were AAQ1 (EI_1 = 1.04; EI_2 = 1.97) and AAQ4 (EI_1 = 0.93; EI_2 = 1.85). In Belgium, the highest values appeared in nodes AAQ4 (EI_1 = 1.09; EI_2 = 2.07) and AAQ3 (EI_1 = 0.97; EI_2 = 1.76). The Hungary network showed the most central values in nodes AAQ4 (EI_1 = 1.13; EI_2 = 2.10) and AAQ7 (EI_1 = 0.97; EI_2 = 1.72), while in Mexico, nodes AAQ7 (EI_1 = 1.04; EI_2 = 1.98) and AAQ5 (EI_1 = 1.02; EI_2 = 1.96) emerged as the most central.

According to network predictability, there was a general consensus on node AAQ4 (r^2_{US} = 0.71; r^2_{PE} = 0.64; r^2_{BE} = 0.66; r^2_{HU} = 0.67; r^2_{ME} = 0.71), followed by AAQ1 (r^2_{PE} = 0.66; r^2_{BE} = 0.62; r^2_{HU} = 0.62). Individually, the USA network showed a high value for node AAQ3 (r^2_{US} = 0.67), while the Mexico network showed a high value for node AAQ5 (r^2_{ME} = 0.68).

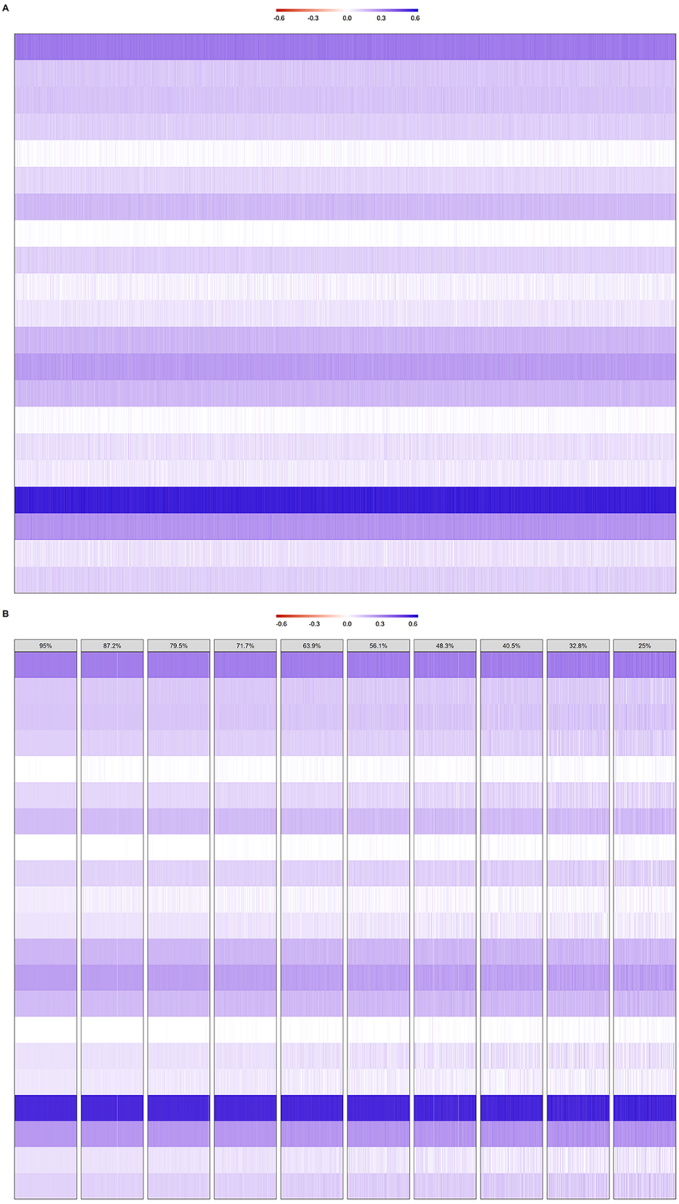
Finally, the stability and precision of the networks, using the same configuration as the overall network, were satisfactory in at least 95% of the samples (CS_{US} = 0.70; CS_{PE} = 0.70; CS_{BE} = 0.70; CS_{HU} = 0.70; CS_{ME} = 0.70). Meanwhile, the stability of expected influences varied but remained satisfactory in each system (CS_{EIUS} = 0.52; CS_{EIPE} = 0.52; CS_{EIBE} = 0.67; CS_{EIHU} = 0.75), with the exception of the Mexico network, where the lowest stability value was obtained (CS_{EIME} = 0.05), potentially indicating an unstable dimensional structure.

The multiverse analysis generally indicates structural stability, as the majority of iterated models demonstrate consistency across the varying processing specifications (see Figure 3A). This suggests that the core manifestations of EA are largely robust to methodological choices. However, distinct patterns of heterogeneity were identified specifically within the Perú and United States datasets. Unlike the General model, these samples exhibited sensitivity to specific model specifications, where negative edge weights (inverse associations) emerged in select relationships (visualized as reddish bands in the multiverse plots). This variability indicates that in these specific cultural contexts, the directionality of certain symptom interactions may be conditional on the analytical parameters used.

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Figure 3

General Multiverse Analysis of AAQ-II



Note. A: Multiverse analysis derived from non-parametric bootstrap approach. B: Multiverse analysis derived from case-dropping bootstrap approach.

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Table 1 presents the comparison of fit indices between experiential avoidance models estimated using structural equation modeling (SEM) and network analysis. This comparison was conducted to examine whether experiential avoidance can be understood not only as a common underlying factor that accounts for the covariance among thoughts, behaviors, and emotional reactions, but also to test whether it can be modeled through symptom interactions in which the cyclical properties of experiential avoidance emerge. Overall, network models show better adjustment in all fit indices that SEM approach. Taking into account that network models capture better the nonlinear complexity of all models, this can be an indicator of this sense in the different manifestations of the experiential avoidance in itself. Furthermore, all omega indices in SEM approach show a good to optimal fit for each model, capturing its feasibility to understand the experiential avoidance concept from a linear approach too. Although it might be a duality, these results can support the idea that the experiential avoidance measured by the AAQ-II is a complex variable, because its better performance in the network approach.

Table 1

Fit Indices From SEM and Network Models

Model	X2/DF	CFI	TLI	SRMR	RMSEA	ω
General SEM	4.20	.99	.99	.02	.03	.87
BE SEM	4.20	.98	.99	.02	.09	.86
HU SEM	3.50	.99	.99	.02	.05	.85
ME SEM	3.48	.99	.99	.03	.12	.90
PE SEM	4.20	.99	.99	.03	.10	.87
US SEM	4.19	.97	.98	.04	.17	.89
General NET	3.20	.99	.99	.01	.02	-
BE NET	4.93	.99	.98	.02	.06	-
HU NET	3.02	.99	.99	.02	.04	-
ME NET	1.18	.99	.99	.02	.03	-
PENET	2.56	.99	.99	.01	.04	-
US NET	1.23	.99	.99	.01	.03	-

Note. X2/DF = Chi-squared divided by degrees of freedom, CFI = Comparative Fit Index, TLI = Tucker-Lewis Index, SRMR = Standardized Root Mean Residual, RMSEA = Root Mean Square Error of Approximation.

To assess the validity of cross-cultural comparisons, a Multi-Group Confirmatory Factor Analysis (MG-CFA) was performed across the five country samples. First, the configural model demonstrated a satisfactory fit (CFI = .989; SRMR = .023), confirming a common factor structure. Subsequently, metric invariance was supported, as constraining factor loadings to be equal across groups resulted in negligible changes in model fit relative to the configural model (ΔCFI = .000; ΔRMSEA = -.006). Finally, scalar invariance was also established, with changes in fit indices remaining well within recommended cutoffs

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(ΔCFI = -.008; ΔRMSEA = -.011) after constraining item thresholds. These results indicate that the instrument achieved Scalar (Strong) Invariance, supporting the equivalence of the construct across the participating countries.

In line with the study's central objective, the following network comparisons are presented as core results that directly inform the transcultural validity of the AAQ-II. Table 2 presents the results of comparisons among the network systems of the different countries evaluated. It can be noted that regarding overall network differences (Network Invariance),only in US-Peru, Belgium-Mexico, and Hungary-Mexico comparisons the networks were equivalent. In contrast, the remaining comparisons showed significant differences, indicating that the networks were not fully equivalent across the other groups.

Table 2

Network Comparison Test Results

Comparison			Global strength		Network invariance		Edge invariance		Expected influence invariance	
A	**<->**	**B**	**S**	***p*-value**	**M**	***p*-value**	**E**	***p*-value**	**C**	***p*-value**
US	<->	PE	.002	.987 ns	.171	.123 ns	.171	.624 ns	.171	.263 ns
US	<->	BE	.045	.506 ns	.242	.009**	.242	.632 ns	.242	.491 ns
US	<->	HU	.147	.018*	.267	.002**	.267	.471 ns	.267	.321 ns
US	<->	ME	.13	.290 ns	.311	.005**	.311	.481 ns	.311	.195 ns
PE	<->	BE	.043	.206 ns	.218	< .001***	.218	.610 ns	.218	.545 ns
PE	<->	HU	.145	< .001***	.244	< .001***	.244	.476 ns	.244	.182 ns
PE	<->	ME	.132	.123 ns	.316	.002**	.316	.774 ns	.316	.719 ns
BE	<->	HU	.102	.003**	.16	.024*	.16	.618 ns	.16	.341 ns
BE	<->	ME	.175	.088 ns	.192	.356 ns	.192	.934 ns	.192	.697 ns
HU	<->	ME	.277	.015*	.163	.427 ns	.163	.688 ns	.163	.415 ns

Note. All means of values are shown.
*p < .05. **p < .01. ***p < .001. ns >.05.

Regarding Global Strength Invariance, significance was found only in the comparisons between the USA-Hungary (S = 0.018; p < .05), Peru-Hungary (S = 0.145; p < .001), Belgium-Hungary (S = 0.102; p < .01), and Hungary-Mexico (S = 0.277; p < .05). For other comparisons, including edge invariance and expected influences, no significant differences were observed, indicating that invariance in these measures was largely supported.

Given the extensive nature of these analyses, all detailed statistical outputs—including country-specific SEM reports, full measurement invariance tables, and granular network

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comparison metrics (node and edge level)—are available in the Supplementary Materials hosted on the project's OSF repository.

Discussion

The understanding of EA has gained importance in the field of psychology, being identified as a significant factor in mental health and psychological well-being. However, it can vary considerably across different cultural contexts, presenting challenges for its measurement and understanding. Thus, this study aimed to conduct a cross-cultural validation of the AAQ-II in five countries: Peru, Mexico, the United States, Belgium, and Hungary.

To understand EA, it is possible to identify that this phenomenon presents complex qualities that are better captured through network analysis. The characteristics of complexity in human behavior include the cyclical nature and feedback among variables (Epskamp et al., 2017). The cyclical nature of EA can be identified as beginning with evaluations of experiences that generate anxiety, leading to denial as a strategy to avoid worry. However, despite the immediate reduction in anxiety, it remains latent. This results in new negative evaluations of the individual due to their inability to tolerate their emotions, causing anxiety to manifest more intensely each time (Hayes-Skelton & Eustis, 2020). This complex dynamic underscores the need for analytical approaches that can capture the nonlinear interactions of EA.

In the SEM analysis, it was found that the overall model and each individual country exhibited a unidimensional structure. This aligns with the original theoretical proposal, which conceptualizes the phenomenon of experiential avoidance and acceptance as a negative and positive description of the same phenomenon (Bond et al., 2011). Regarding the fit indices, it was found that the results of the network analysis were better than the indices from the SEM analysis (Table 1). This is because Network Analysis allows for modeling direct relationships between all observed variables without the need to specify causal relationships (van Bork et al., 2021). This approach can better capture the complexities and interconnections in the data, especially when the relationships are nonlinear or involve complex interactions (Guyon et al., 2017). This implies that if the specified model does not yield a factorial solution, the fit indices may be low.

Regarding the examination of the AAQ-II items through network analysis, this was conducted in both the overall sample and by country to assess the behavior of a symptom system that contributes to the maintenance of expressions of experiential avoidance (EA). In the multinational network, item AAQ4, "My painful memories prevent me from having a fulfilling life", stood out with the highest centrality metric. This suggests that intrusive memories stemming from distressing events are the main common activators across various countries and constitute a sequence of EA symptoms. For instance, painful memories enhance the perception of having a life filled with distressing experiences,

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leading individuals to compare themselves with others and feel that they lack the necessary skills to adequately face difficulties ($AAQ4 - AAQ1 - AAQ6 - AAQ7$). This perception fosters the understanding that worries and emotions in general are problematic and should be avoided, leading to the pursuit of control over them ($AAQ7 - AAQ5 - AAQ3$). However, when individuals are unable to control such emotions, the fear of re-experiencing past painful experiences arises, motivating them to avoid these situations at all costs, which often results in the recurrence of distressing experiences with greater intensity ($AAQ3 - AAQ2 - AAQ4$). Overall, these results align with findings reported in a systematic review, indicating that stressful events are the primary antecedents leading to persistent intrusive memories. Furthermore, such memories are often appraised catastrophically, which leads to ineffective coping mechanisms like emotional suppression, resulting in a wide range of cognitive and emotional difficulties in individuals' lives (Marks et al., 2018). A more detailed examination of some item pairs that were replicated in most estimated networks can be found in the supplementary materials of the OSF repository linked to the study.

Regarding the network analysis by country, it was found that in the United States, Belgium, Hungary, and Peru, the item "Painful Memories" stood out for its centrality. In this regard, the results highlight cultural similarities concerning the recollection of painful experiences, which can be accounted for by the cultural and historical characteristics of each country. The United States is characterized by traits of an individualistic society (Tamimy et al., 2022), where existing levels of competitiveness may contribute to the internalization of painful experiences and memories as significant barriers that hinder the achievement of a fulfilling life, leading to a tendency to focus on past failures (Cheon et al., 2013; Deer et al., 2018; Fox et al., 2019). In the Peru network, painful memories and experiences occupied a central position. These factors impact the perception of life dissatisfaction and result in a problematic perception of emotions. Consequently, there is a preference to escape from them, which is framed as maladaptive emotional strategies involving the avoidance of emotional content (Sahib et al., 2023). Emotional avoidance triggers worry regarding the anxiety experienced due to a lack of emotional control; when sustained, this extends to social self-evaluation, such as comparisons with how others handle their lives and the evaluation of one's own success. This may be attributed to the social pressure derived from the collectivist environment which, in the Peruvian case, places significant importance on social harmony and interdependence (Hofstede Insights, 2024; Varchetta et al., 2024). At a descriptive level of the Hungarian network, relevant connections stood out, such as "painful memories", which occupied a central position in the network. These memories were associated with difficulties in valuing life positively and with worries about the future. A hypothetical explanation may be linked to the avoidance of painful experiences derived from perceptions of historical injustice related to foreign domination and distrust in sociopolitical stability (Gereben, 2001). This is complemented by reports in clinical populations, where a negative view

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of the past and concern about the future mutually reinforce each other (Eisenbeck & Szabó-Bartha, 2018; Kökönyei et al., 2014). In Mexico, worry (AAQ7) stands out as the central element in the network. This finding can be explained from a sociocultural perspective, given that the country presents high scores in Achievement Motivation and Success, which fosters a marked concern for success and constant comparison regarding how others "handle their lives" (Hofstede Insights, 2024). Faced with elevated levels of worry, there is an observed tendency to interpret memories, feelings, and emotions as sources of problems in one's life, leading to cognitive avoidance strategies. This pattern results in a diminished subjective appreciation of life. Thus, EA contributes to increased anxiety (Roemer & Orsillo, 2020), which, in turn, generates new worries associated with internal experiences perceived as uncontrollable, thereby maintaining a self-reinforcing cycle wherein worry returns to a central position. In Belgium, "Painful Memories" play a central role due to the country's complex history regarding traumatic events, such as the two World Wars and the linguistic and cultural tensions between the Flemish and Francophone communities (Klimstra et al., 2012). These historical traumas and cultural divisions may generate a persistent sense of insecurity coupled with mistrust among the current Belgian population (Derluyn et al., 2008). Additionally, this fosters a constant sense of being observed and evaluated, which affects the ability to live in the present and plan for the future without constantly dwelling on the past (Hirst & Fineberg, 2012).The results of the multiverse analysis indicate adequate stability, as the majority of iterated models show consistency with each other. Thus, the manifestations of EA behave in a similar way across each "universe". However, specific models were identified, such as those for Peru and the United States, where individual differences and negative manifestations appear in some relationships within certain universes. This may suggest that, in certain realities, specific problematic situations regarding the standard manifestation within the phenomenon of EA could be perceived differently.

It was found that network invariance was significant for some country comparisons. This finding suggests that the phenomenon and its components tend to be organized as a psychologically coherent system across the different countries. However, this global structural similarity was not uniformly maintained across all comparisons, with some differences observed at the level of the general network structure. Likewise, the analyses revealed an absence of edge invariance, indicating that the specific conditional relationships among nodes differ between countries, even when the overall degree of connectivity is similar. Similarly, the lack of invariance in expected influence indicates that the central nodes of the system are not equivalent across cultural contexts, which could imply that distinct components of the instrument acquire greater psychological relevance depending on the country. From a cross-cultural and psychometric perspective, these results suggest that, while the construct retains a generally comparable organization, its internal functioning and the relative relevance of its indicators may be modulated

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by cultural factors, such as differences in item interpretation, response styles, or the contextual expression of the assessed psychological processes (Borsa et al., 2012).

To understand this finding, it is essential to consider the cultural differences characterizing Peru and the United States. In the United States, there is an individualistic cultural orientation, where personal success is defined by autonomy and the pursuit of individual achievements (Houston et al., 2012). In this context, achievement motivation becomes a significant variable, encouraging high levels of aspiration and personal effort (Hofstede Insights, 2024). In contrast, Peru embraces a collectivist orientation, where group harmony, interdependence, and conformity are highly valued. The success of an individual is intrinsically linked to the group they belong to, and their behavior tends to align with established social norms and expectations (Bartucz et al., 2022).

However, although cultural values provide a framework for understanding how a society behaves, it is not possible to define individual behavior without considering other variables (Lu et al., 2023). Specifically, Schwartz (2012) argues that there are both cultural and individual values, which may influence individuals' thoughts and behaviors; even within the same culture, people can develop and prioritize their own values based on previous personal experiences (Sagiv & Schwartz, 2022). Therefore, it is essential to consider that, while predominant cultural values offer a meaningful reference framework for understanding behavior, they do not act as rigid determinants.

Given the absence of a theory that specifically addresses similarities in EA across different countries, the results suggest that Peru, Belgium, and Hungary share a historical background marked by extended periods of foreign domination, internal conflicts, and economic crises, which have left profound impacts on collective behavior (Monestès et al., 2016; Suarez, 2013). These experiences have fostered a predisposition toward avoiding emotionally intense situations as a form of psychological protection. In this way, the social structure in these countries implicitly promotes stability as a fundamental value (Hofstede Insights, 2024), with high intolerance to uncertainty and a pronounced control over emotional expression being evident (i.e., avoiding experiences that might disrupt social standing or family environment) (Borgogna et al., 2020). Likewise, this socio-historical structure nurtures a deep fear of failure and social rejection in these cultures, leading to the avoidance of challenging experiences as a protective measure against social judgment that could provoke intense emotions, which are then repeatedly managed through continuous avoidance.

The results emphasize the importance of considering cross-cultural differences in the application of the AAQ-II for measuring experiential avoidance in clinical practice, as well as in research on the construct. According to the findings, in the assessment of experiential avoidance using the AAQ, the interpretation patients make of the items may contrast with that of individuals from other cultures. Therefore, caution is necessary when assessing experiential avoidance, particularly when working with culturally diverse populations. Even though the construct is theoretically sound, it is crucial

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for therapists to contextualize the results, considering not only individual experiences but also each patient's cultural background. In this regard, the study contributes to broadening the clinical assessment of experiential avoidance by including the analysis of cultural factors as a central component for its proper understanding. Furthermore, the results provide cross-cultural empirical evidence across five countries with distinct realities, thereby reinforcing the understanding of experiential avoidance and its cultural and social sensitivity. In this vein, further cross-cultural research is needed to continue refining the conceptualization and measurement of experiential avoidance or to develop instruments that measure it with greater precision.

Limitations

Experiential avoidance (EA) is a complex concept which, though explored through the application of the AAQ-II in various cultural contexts, could benefit from a multidimensional approach in future research. This limitation is based on the premise that EA can manifest in diverse ways and encompass various aspects not fully captured by a unidimensional model. Therefore, future studies could consider incorporating additional variables and more comprehensive methodologies to explore EA holistically, including factors such as emotional regulation, social context, and culturally specific life experiences.

Moreover, it is essential to recognize that the development of the current population psyche is influenced by sociocultural and historical factors that have not yet been thoroughly examined in EA studies. In terms of generalizing findings, this should be approached with caution given the diversity of cultural contexts that may shape the experience and management of EA. This study provides a preliminary analysis of the multiverse; however, a more in-depth investigation is necessary to fully understand the interrelationships and dynamics operating within the multiverse.

Conclusions

The AAQ-II demonstrated adequate psychometric properties for use across five countries, allowing for the cross-cultural exploration of experiential avoidance. This finding not only validates its applicability in diverse contexts but also provides a robust foundation for investigating EA across different cultural realities. Additionally, it supports the unidimensional structure of the measure, indicating that despite cultural differences, the AAQ-II consistently assesses a single construct across varied samples.

At the same time, network analysis conducted in Peru, Mexico, the U.S., Belgium, and Hungary reveals that cultural dynamics significantly impact how EA manifests and interrelates with other psychological factors, while also suggesting similarities in EA patterns among these countries. Although EA is a common phenomenon, its expression and coping mechanisms can vary considerably according to sociocultural context, emphasizing

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the importance of considering these differences in the development of culturally tailored psychological interventions.

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Data Availability: The data, headlines, and additional online materials that support the findings of this study are openly available in the Open Science Framework (OSF) repository (see García O'Diana et al., 2024).

Supplementary Materials

The supplementary materials include a partial cleaned dataset (USA and Belgium) with a codebook, the R script used for final analyses, translations of the AAQ-II scales, supplementary tables and theoretical details for the SEM and Network analyses, as well as high-quality result images and 3D network models (see García O'Diana et al., 2024).

Index of Supplementary Materials

García O'Diana, A. A., Calle, D., & Quispe Callo, G. R. (2024). *Cross-cultural validation of the AAQ-II in five countries: A SEM and psychometric network analysis approaches* [Data, script, materials]. OSF. https://osf.io/8mpag

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