

Validating the Factor Structure of Acceptance in Practical Decision-Making: A Confirmatory Factor Analysis Approach

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Abstract

This study aims to validate a three-factor model of psychological acceptance in practical decision-making using confirmatory factor analysis (CFA). In complex real-world contexts, individuals' sense of acceptance—characterized by cognitive clarity, emotional reassurance, and volitional commitment—plays a critical role in decision quality and implementation. Existing tools like the GDMS and DCS scales fail to fully capture this multidimensional construct. Based on previous exploratory factor analysis (EFA), the authors developed a 30-item scale measuring three latent factors: Deeper Understanding, Emotional Acceptance, and Subjective Recognition. CFA was conducted with 611 working adults, and the model showed good fit indices (CFI = 0.928, RMSEA = 0.061, etc.), with strong factor loadings and reliability. The findings confirm that psychological acceptance can be measured as a structured construct that complements traditional decision-making frameworks. This model offers practical implications for designing decision support systems and evaluating participatory decision-making. It also extends prior research in healthcare to broader organizational settings.

Keywords: psychological acceptance, decision-making, CFA, scale validation, behavioral intention

1 Introduction

In recent years, it has become increasingly clear that decision-making in practical contexts is not merely a matter of rational choice, but is significantly influenced by the decision-maker's sense of "acceptance" or "conviction" regarding their choices [1]. Particularly in business contexts such as project selection, policy decisions, and operational improvements, decision-makers are often confronted with incomplete information, multiple stakeholder interests, and time constraints, making it difficult to identify optimal solutions. Under such conditions, the ability of decision-makers to feel convinced of their own choices and act on them plays a key role in both the success and implementation of decisions [2].

Nevertheless, traditional decision-making research has rarely treated "acceptance" as a measurable construct. Existing scales, such as the General Decision-Making Style (GDMS) [3] and the Decisional Conflict Scale (DCS) [4], assess tendencies in decision-making or the presence of conflict, but do not comprehensively capture the multifaceted psychological process of acceptance. Especially in complex practical decisions where thorough understanding, emotional

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reception of outcomes, and a sense of ownership are intertwined, a more structured and multidimensional measurement framework is needed.

To address this gap, the authors previously developed a scale aimed at capturing acceptance in practical decision-making contexts [1]. Through exploratory factor analysis (EFA), they identified a three-factor structure comprising "Deeper Understanding," "Emotional Acceptance," and "Subjective Recognition." Each of these factors was confirmed to serve as a psychological foundation supporting decision-making conviction. Together, they encompass cognitive, emotional, and agentive dimensions of acceptance—an integrative approach that has not been fully captured by existing instruments.

Notably, this scale evaluates not only satisfaction with decision outcomes but also the psychological acceptance embedded in the decision-making process itself. When individuals feel that they have "understood thoroughly," "emotionally accepted," and "owned" their decisions, the resulting sense of conviction can enhance decision success, organizational consensus-building, and behavioral continuity.

However, EFA is a method for hypothetically identifying factor structures, and its findings require further validation. Therefore, this study aims to statistically verify the construct validity of the three-factor model identified in the previous research using confirmatory factor analysis (CFA). Additionally, we aim to build a foundation for structural equation modeling (SEM) to investigate causal relationships between acceptance, decision satisfaction, and behavioral intention. Notably, this scale evaluates not only satisfaction with decision outcomes but also the psychological acceptance embedded in the decision-making process itself. When individuals feel that they have "understood thoroughly," "emotionally accepted," and "owned" their decisions, the resulting sense of conviction can enhance decision success, organizational consensus-building, and behavioral continuity.

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2 Previous Studies

2.1 The Significance of Acceptance in Decision-Making

In traditional rational choice theory, decision-making has largely been conceptualized as the optimal selection among alternatives based on utility maximization [5]. However, this framework often overlooks the internal psychological processes that influence how individuals accept and commit to their decisions. In real-world contexts—especially those involving high uncertainty, time constraints, or conflicting values—decision-makers often rely not just on cognitive evaluation but also on emotional resonance and motivational alignment to reach a satisfactory decision.

Recent research in behavioral economics and psychology has drawn attention to the concept of "decision conviction," which encompasses not only rational understanding but also emotional

and volitional acceptance [6].

Studies have shown that individuals who experience a higher sense of conviction in their decision-making process report greater post-decision satisfaction, lower decisional regret, and higher compliance with their own decisions. This has important implications for practice: whether in healthcare, business, education, or public policy, the degree to which a person feels personally invested and emotionally settled in their decision plays a key role in subsequent follow-through behavior.

Imai et al. (2022) developed a scale to measure patient "conviction" in the context of cancer treatment, identifying components such as "understanding," "emotional acceptance," "self-involvement," and "value alignment" [7]. Their model treats acceptance not merely as the endpoint of a decision but as a dynamic, multidimensional process that evolves over time and integrates cognitive, affective, and agentic layers. This view aligns with constraint satisfaction theory, which emphasizes the coherence between beliefs, emotions, and values in decision justification [2].

Moreover, the importance of acceptance is becoming increasingly relevant in the era of AI-supported and algorithmic decision-making. Users may understand the system output but still reject it due to lack of emotional or personal resonance. Thus, modeling acceptance as a construct with multiple dimensions offers a richer and more realistic understanding of how people navigate complex decisions in contemporary environments.

2.2 Studies on Decision-Making Styles and Their Limitations

Understanding individual differences in decision-making has long been a central focus in applied psychology and organizational behavior. The General Decision-Making Style (GDMS) model by Scott and Bruce (1995) classifies decision-makers into five styles: rational, intuitive, dependent, avoidant, and spontaneous [3]. These styles capture habitual cognitive approaches and have been used widely in research across various age groups and cultural contexts. However, several scholars have raised concerns about the conceptual and psychometric limitations of such trait-based classifications.

Iwabuchi (2020) conducted a systematic review of decision-making style studies and proposed that at least seven dimensions exist, including maladaptive tendencies (e.g., impulsiveness, procrastination, avoidance) and interpersonal components (e.g., deference, conflict avoidance) [8]. Moreover, he questioned the assumption of temporal stability, suggesting that decision style may be situationally flexible and context-dependent rather than fixed. This observation aligns with dual-process theories such as those proposed by Epstein et al. (1996), who distinguish intuitive-experiential and analytical-rational systems of thought [9], and Kahneman's (2011) System 1 / System 2 model, which further elaborates the dichotomy between fast, instinctive reasoning and slower, deliberative cognition [10].

Despite these theoretical advancements, decision-making style research has largely focused on cognitive processing preferences and neglected the emotional and motivational aspects of how decisions are accepted or internalized. Rarely do these models explore whether individuals actually endorse the decisions they arrive at, or how emotionally invested they are in the process. As a result, existing typologies may fail to capture the psychological depth of real-life decisions, especially under complex, ambiguous, or emotionally charged conditions. This gap has paved the

way for newer models—such as the one proposed in this study—that prioritize psychological acceptance as a key explanatory variable in post-decision outcomes.

2.3 Positioning of the Present Study

In response to these limitations, the authors previously developed a scale to operationalize the construct of acceptance in practical decision-making [1]. Through EFA, they derived a three-factor structure—"Deeper Understanding," "Emotional Acceptance," and "Subjective Recognition"—each capturing a core dimension of the psychological process of conviction. This model aligns conceptually with Imai et al. (2022)'s work in healthcare while offering broader applicability across decision-making contexts.

Moreover, the present study addresses a theoretical and methodological gap by conducting CFA to statistically test the structural validity of the three-factor model. In doing so, it contributes to decision-making research by proposing a robust, multidimensional framework that complements traditional style-based approaches and offers practical utility in decision support contexts.

In their previous study, Hosoda and Matsuo [1] developed an initial scale to assess psychological acceptance in practical decision-making, drawing on insights from qualitative interviews and pilot testing with professionals. The scale was composed of 30 items designed to capture cognitive, emotional, and agentic aspects of decision conviction, derived from theoretical grounding in decision process research and refined through expert review. Their exploratory factor analysis (EFA), using a sample of 485 working adults, applied maximum likelihood extraction with Promax rotation.

The analysis yielded a three-factor structure—Deeper Understanding, Emotional Acceptance, and Subjective Recognition—with eigenvalues of 8.23, 5.47, and 3.33 respectively, and a total variance explained of 63.2%. The factors showed high internal consistency ($\alpha > .85$) and low cross-loadings. This structure demonstrated conceptual alignment with prior qualitative themes and was deemed theoretically meaningful. However, the authors noted that the EFA method inherently lacks confirmatory power, and that the factor structure needed further validation in a new sample.

In addition, although the initial study confirmed the internal coherence of each factor, it did not examine the convergent and discriminant validity through statistical modeling, nor did it assess the overall model fit. Therefore, the present study was designed as a follow-up validation effort, applying confirmatory factor analysis (CFA) to a new sample of 611 respondents. The transition from EFA to CFA represents a necessary step in moving from scale development to measurement validation, providing stronger evidence for construct validity. By anchoring the current investigation within the prior PPMS2024 framework, this study strengthens the theoretical lineage and ensures methodological continuity in the study of decision acceptance.

Table 1 summarizes the exploratory factor analysis (EFA) results reported in Hosoda and Matsuo [1], including eigenvalues, internal consistency (Cronbach's α), and the proportion of variance explained by each factor. These results form the empirical basis for the three-factor model validated through confirmatory factor analysis in the present study.

Table 1: Summary of Exploratory Factor Analysis (EFA) Results

Factor	Eigenvalue	Cronbach's α	Variance Explained (%)
Deeper Understanding	8.23	0.87	27.4
Emotional Acceptance	5.47	0.88	18.2
Subjective Recognition	3.33	0.85	17.6

3 Method

3.1 Participants and Data Collection

This study targeted working adults with decision-making experience in real-world professional settings. Participants were recruited from various industries including manufacturing, IT, education, and research. A total of 611 valid responses were obtained through an online survey after screening for completeness and relevance. The sample had a balanced gender distribution (55% male, 45% female) and spanned a wide age range (late 20s to late 50s, mean age approximately 38).

All participants were informed of the research purpose and assured of anonymity and data confidentiality, and informed consent was obtained in accordance with research ethics guidelines.

3.2 Measurement Items and Factor Structure

The measurement instrument used in this study was developed in prior research by Hosoda and Matsuo [1], focusing on capturing the psychological acceptance in decision-making. The scale comprises 30 items grouped into three latent factors: "Deeper Understanding," "Emotional Acceptance," and "Subjective Recognition." Each item was rated on a 5-point Likert scale (1 = Strongly disagree, 5 = Strongly agree).

The previous exploratory factor analysis (EFA) showed that each factor had strong internal consistency (Cronbach's $\alpha > 0.85$), and the items exhibited high loadings on their respective factors. This multidimensional model was conceptually aligned with the multi-faceted structure of conviction described in Imai et al. [2]. Each dimension reflects a distinct psychological process—cognitive clarity, emotional alignment, and motivational ownership—that together define acceptance.

The final measurement instrument consisted of 30 items across three latent factors. Each factor represents a distinct dimension of psychological acceptance, and was operationalized through multiple observed items (Table 2).

Table 2: provides representative items for each factor along with brief descriptions.

Factor	Description	Example Items
Deeper Understanding	Clarity and comprehension of information	"I understood the background of the decision thoroughly."
Emotional Acceptance	Emotional stability and reassurance	"I feel emotionally calm about my choice."
Subjective Recognition	Ownership and self-determination	"I believe this decision reflects my own will."

3.3 Analytical Approach

To test the structural validity of the model, confirmatory factor analysis (CFA) was performed using the maximum likelihood estimation method. The analysis was conducted in Python using libraries such as Statsmodels and Semopy.

Model fit was assessed based on four indices, following the benchmarks used by Imai et al. [7]:

- CFI (Comparative Fit Index) ≥ 0.90
- TLI (Tucker-Lewis Index) ≥ 0.90
- RMSEA (Root Mean Square Error of Approximation) ≤ 0.08
- SRMR (Standardized Root Mean Square Residual) ≤ 0.08

Model refinement was considered using modification indices (MIs), but changes were only made if theoretically justifiable. The analysis adopted a listwise deletion strategy to handle missing data, and covariances between latent factors were freely estimated.

This mixed-method approach reflects the principles of integrated methodology outlined by Patton (2002), where exploratory findings are validated quantitatively to enhance both empirical robustness and theoretical clarity [10].

4 Result

4.1 Model Fit Evaluation

Confirmatory factor analysis (CFA) was conducted on the three-factor model previously identified through exploratory factor analysis (EFA), consisting of Deeper Understanding, Emotional Acceptance, and Subjective Recognition. The fit indices were as follows:

- CFI (Comparative Fit Index): 0.928
- TLI (Tucker-Lewis Index): 0.912

- RMSEA (Root Mean Square Error of Approximation): 0.061
- SRMR (Standardized Root Mean Square Residual): 0.054

These values meet the recommended thresholds as outlined by Imai et al. [2], indicating a good model fit (CFI and $TLI \geq 0.90$, $RMSEA$ and $SRMR \leq 0.08$). The findings also support the structural robustness of the factor model developed in the previous study [1], affirming its replicability across different samples.

4.2 Factor Loadings and Construct Validity

All items exhibited standardized factor loadings greater than 0.50, indicating sufficient contribution to their respective latent constructs. The factor loading ranges were:

- Deeper Understanding: 0.62 to 0.84
- Emotional Acceptance: 0.65 to 0.81
- Subjective Recognition: 0.60 to 0.79

These results confirm the convergent validity of each latent variable and align with the original EFA results reported in Hosoda and Matsuo [1]. Notably, the Emotional Acceptance items showed strong alignment with emotional reassurance aspects similar to those measured in the healthcare conviction scale by Imai et al. [2]. The Subjective Recognition factor also demonstrated a clear emphasis on decision ownership, supporting the theoretical positioning of acceptance as an agentic process.

Table 2 summarizes the reliability and validity indicators for each latent factor, including Cronbach's alpha, composite reliability (CR), and average variance extracted (AVE), as well as model fit indices from the CFA results.

Table 2: Model Fit and Reliability

Factor	α	CR	AVE	Loading Range
Deeper Understanding	0.86	0.89	0.61	0.62–0.84
Emotional Acceptance	0.88	0.90	0.65	0.65–0.81
Subjective Recognition	0.85	0.88	0.59	0.60–0.79

These cutoff criteria for model fit evaluation are widely adopted and supported by Hu and Bentler (1999) [11].

4.3 Consideration of Model Modification

To explore the potential for improved model fit, modification indices (MIs) were reviewed. While some item pairs—particularly within the Deeper Understanding factor—indicated possible correlated residuals, no post hoc modifications were made. This decision prioritized theoretical

coherence and consistency with the original model validated through EFA [1].

This approach mirrors the practice adopted in Imai et al. [2], who similarly emphasized theoretical justification over statistical gain when evaluating model refinements. As such, the three-factor model is retained in its original form, confirming both its statistical adequacy and theoretical integrity.

5 Discussion

5.1 Theoretical and Practical Implications

The validation of a multidimensional model of psychological acceptance has both theoretical and applied implications. Theoretically, it confirms that acceptance in decision-making is not a unidimensional construct but consists of cognitive, emotional, and agentic elements. This supports integrative frameworks that treat decision-making as a psychologically layered process. The model also addresses gaps in traditional decision-making style frameworks, such as GDMS [3], which focus primarily on cognitive preferences and neglect evolving psychological states during decision processes. Additionally, it complements dual-process theories [9] and heuristic-systematic models [10] by highlighting a layered experience of conviction that unfolds over time.

Practically, the model can be applied in various fields such as healthcare, policy-making, and organizational behavior to assess decision readiness, support needs, and long-term commitment. For example, interventions can be tailored to enhance a specific subdimension—such as emotional reassurance in high-stress environments or subjective recognition in autonomous roles—to improve post-decision outcomes. In public administration, this model can support evaluation of citizen engagement and legitimacy in participatory governance. When operationalized as a measurable construct, acceptance may serve as a feedback indicator in institutional design, especially in deliberative policy contexts where alignment between understanding and emotional agreement is critical for implementation sustainability.

Moreover, in AI-supported decision environments, understanding user acceptance requires more than usability or transparency metrics. The incorporation of emotional alignment and volitional ownership—components central to this model—could guide the design of more human-centered AI systems and decision support tools.

5.2 Cross-Cultural and Contextual Considerations

While this study focused on Japanese working adults, cultural and contextual factors may influence how psychological acceptance manifests in decision-making. In more individualistic societies, subjective recognition may dominate, whereas in collectivist cultures, emotional acceptance linked to group harmony could play a more central role. Future studies should apply measurement invariance testing to validate whether the three-factor structure holds across different cultural and organizational contexts.

Additionally, cross-national studies could explore how institutional norms, such as hierarchical versus egalitarian decision protocols, influence the salience of each acceptance dimension. In high power-distance cultures, emotional acceptance might be linked more closely to authority

endorsement, while in low power-distance environments, subjective recognition may reflect stronger personal ownership. Workplace environments and industry types may also moderate acceptance dynamics—for instance, engineering teams may emphasize cognitive understanding, whereas caregiving roles may prioritize emotional reassurance.

5.3 Future Directions and Theoretical Integration

Beyond validation, future research could integrate this model into broader theoretical frameworks such as dual-process theory, self-determination theory, or affective forecasting models. Doing so would strengthen interdisciplinary applications of the acceptance construct, allowing more dynamic modeling of how cognitive, emotional, and motivational processes co-evolve during decision-making.

Moreover, longitudinal studies could examine how psychological acceptance evolves over time in response to feedback, role transitions, or changing stakes. Such temporal analyses could reveal whether specific subcomponents (e.g., emotional acceptance) are more malleable than others. Experimental designs may also test interventions targeting specific dimensions, such as structured reflection exercises to increase subjective recognition or visualization tools to support deeper understanding. Incorporating qualitative inquiry could further refine item interpretations and improve scale sensitivity across settings.

6 Conclusion

This study validated a three-factor model of psychological acceptance in practical decision-making through confirmatory factor analysis. The results confirmed that the structure identified in previous exploratory work holds across a broader population, providing empirical support for the cognitive, emotional, and agentic dimensions of acceptance.

This finding offers theoretical clarity and methodological rigor to a construct that is often discussed but rarely measured. The confirmed model not only addresses gaps in traditional decision-making style research, but also bridges cognitive and affective perspectives, supporting more holistic approaches to understanding how people internalize and follow through with decisions.

The practical implications are broad. The model can inform decision support system design, improve the personalization of policy communication, and guide training interventions aimed at enhancing decision quality and follow-through. In particular, identifying which dimension of acceptance is underdeveloped—be it understanding, emotional readiness, or a sense of ownership—can inform targeted interventions in professional, clinical, or AI-supported environments.

This research also highlights the methodological value of integrating EFA and CFA in sequential validation, demonstrating how exploratory insights can be robustly confirmed through structured modeling. The rigorous use of measurement indicators (e.g., factor loadings, AVE, CR) strengthens confidence in the scale's psychometric soundness. Such validated tools are essential for ensuring reliable evaluation and targeted improvements in practice.

Future research should continue to refine the model across cultural and contextual boundaries, test its measurement invariance, and explore causal relationships through SEM-based modeling. Furthermore, studies examining longitudinal change, behavioral outcomes, and comparative acceptance profiles across domains (e.g., healthcare vs. governance) could deepen our understanding of acceptance dynamics.

By doing so, we may gain a deeper understanding of how acceptance functions as a critical driver of effective and sustainable decision-making in complex real-world settings.

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