

# Validating Students' Planned Engagement in Learning Arabic through Six Psychological Constructs

Munassir Alhamami\*

*Department of English, College of Languages and Translation, King Khalid University, Abha, Saudi Arabia*

Graham Crookes

*Department of Second Language Studies, University of Hawai'i at Mānoa, Honolulu, Hawai'i, United States*

## Correspondence

**Email:** mhamame@kku.edu.sa

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## Abstract

Engagement measures in language education often mix what learners do with what they say they are prepared to do, and the two are not the same thing. This study treats readiness as a construct in its own right. Planned engagement was defined as the psychological preparation that precedes visible participation. This study examines that earlier stage through the concept of planned engagement among 213 learners of L2 Arabic at Indian universities. Drawing on the Theory of Planned Behavior (TPB), the model combines intention, attitude toward behavior, subjective norms, and perceived behavioral control with enjoyment and anxiety. These six Lower-Order Constructs (LOCs) were examined as indicators of a reflective-reflective Higher-Order Construct (HOC). Data came from a 26-item bilingual Arabic-English questionnaire and were analyzed using partial least squares structural equation modeling (PLS-SEM). Intention, attitude toward behavior, and perceived behavioral control were most closely related to the HOC, followed by subjective norms and enjoyment, whereas anxiety showed an inverse relationship. The pattern suggests that planned engagement can represent a shared state of readiness before learners participate. Rather than treating readiness as engagement itself, the measure keeps the two apart. It may therefore help researchers and instructors examine how prepared learners feel to take part before their classroom behavior is observed.

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## Introduction

Student engagement is central to language learning because learners need to take part in practice, interaction, and sustained study. Yet the construct is not easy to measure. Educational research usually describes engagement through behavioral participation, cognitive investment, and emotional involvement (Fredricks et al., 2004). In language classrooms, it may be seen in interaction, attention to form and meaning, persistence, and willingness to use the target language (Hiver et al., 2021; Mercer, 2019). These behaviors change with the lesson and the task. A single self-report score may therefore describe only one part of engagement at one time. A related problem is the boundary between engagement and readiness for engagement. Learners may intend to attend, prepare, speak, or persist, but the intended action may not occur. Time pressure, task difficulty, fear of error, or lack of opportunity can intervene. The Theory of Planned Behavior (TPB) separates intention from behavior and places intention beside evaluations, social expectations, and control beliefs (Ajzen, 1991, 2005). For this reason, a questionnaire about future participation should not be read as a record of what the learner later did.

TPB gives the study a clear starting point. Intention states a commitment or plan to act. Attitude toward behavior concerns whether the action is valued. Subjective norms concern what learners think important people expect from them. Perceived behavioral control concerns capability and control over barriers (Ajzen, 1991, 2005). The four constructs are closely connected, but they answer different questions about readiness. Plans for language learning also have an emotional setting. Enjoyment and anxiety may occur in the same course, and either emotion can be present before a learner decides whether to participate (Dewaele & MacIntyre, 2016). Enjoyment is associated with approach and continued effort, whereas anxiety may restrict attention or communicative risk-taking (Papi & Khajavy, 2023; Tsang & Dewaele, 2024). We therefore include both emotions instead of treating low anxiety as another name for enjoyment. L2 Arabic is a useful setting for this measurement question. Engagement research in applied linguistics has concentrated heavily on English, and fewer validated measures are available for Arabic programs. The 213 participants in this study were studying Arabic at universities in India and came from different academic and linguistic backgrounds. Their setting broadens the empirical base of engagement measurement beyond the languages and locations that dominate the literature.

We use planned engagement for the psychological preparation that comes before visible participation. The proposed HOC brings together intention, attitude toward behavior, subjective norms, perceived behavioral control, enjoyment, and anxiety. The coefficients are interpreted as higher-order loadings, not causal effects. Partial least squares structural equation modeling (PLS-SEM) was used to examine whether the six scales share a common readiness core and whether each scale still has empirical support for its intended meaning (Hair et al., 2019; Sarstedt et al., 2019). So, the paper gives pre-action readiness a clear place beside observed participation, extends TPB with two language

emotions, and tests the resulting hierarchy with a bilingual instrument in an underrepresented L2 Arabic setting. The same profile can also help instructors distinguish a weak plan from a control, social, or emotional barrier.

### **Theoretical Framework**

The standard TPB model is directional. Attitude toward behavior, subjective norms, and perceived behavioral control are used to explain intention, and intention is placed before behavior (Ajzen, 1991, 2005). The present model asks a different question. It examines what the six measures share when learners consider future participation. Questionnaire items reflect their assigned LOCs, and the common variation among those LOCs reflects planned engagement as the HOC. This reflective-reflective specification is suitable when the components are understood as related expressions of one broader readiness state (Sarstedt et al., 2019). The higher-order coefficients therefore indicate how strongly each component represents planned engagement. They do not show that the HOC causes intention, attitude, norms, control, enjoyment, or anxiety.

A common readiness score is useful only when the six component scales retain their intended content. Strong relations are expected because every component refers to continued engagement with Arabic, but expected overlap does not make the constructs interchangeable. We address this point with two procedures. Item cross-loadings show whether an item remains most closely tied to the scale for which it was written. Bias-corrected confidence intervals around latent correlations show whether two scales are empirically indistinguishable. This second procedure follows the updated guidance of Rönkkö and Cho (2022), which treats discriminant validity as a question about the size and uncertainty of the correlation rather than a rule that closely related constructs must correlate weakly. Using both procedures allows the HOC and the six LOC scores to be interpreted together through a validation strategy that follows the stated measurement assumptions.

### **Research Questions**

**RQ1:** What are the bivariate relationships among the six LOC mean scores, intention, attitude toward behavior, subjective norms, perceived behavioral control, enjoyment, and anxiety?

**RQ2:** To what extent do the LOCs show adequate convergent validity and reliability?

**RQ3:** To what extent does the HOC of Planned Engagement show adequate convergent validity and reliability?

**RQ4:** To what extent do the LOCs show discriminant validity based on cross-loadings and latent variable correlations with bias-corrected 95% confidence intervals?

**RQ5:** To what extent does the model show acceptable inner-model collinearity levels based on variance inflation factor values?

**RQ6:** In the reflective-reflective HOC model, how strongly does each LOC reflect Planned Engagement based on higher-order loadings,  $R^2$ , and  $f^2$  values?

**RQ7:** What is the predictive performance of each LOC based on  $Q^2_{\text{predict}}$ , root mean square error, and mean absolute error?

### Hypotheses

**H<sub>1</sub>** (+). Intention reflects Planned Engagement positively.

**H<sub>2</sub>** (+). Attitude toward behavior reflects Planned Engagement positively.

**H<sub>3</sub>** (+). Subjective norms reflect Planned Engagement positively.

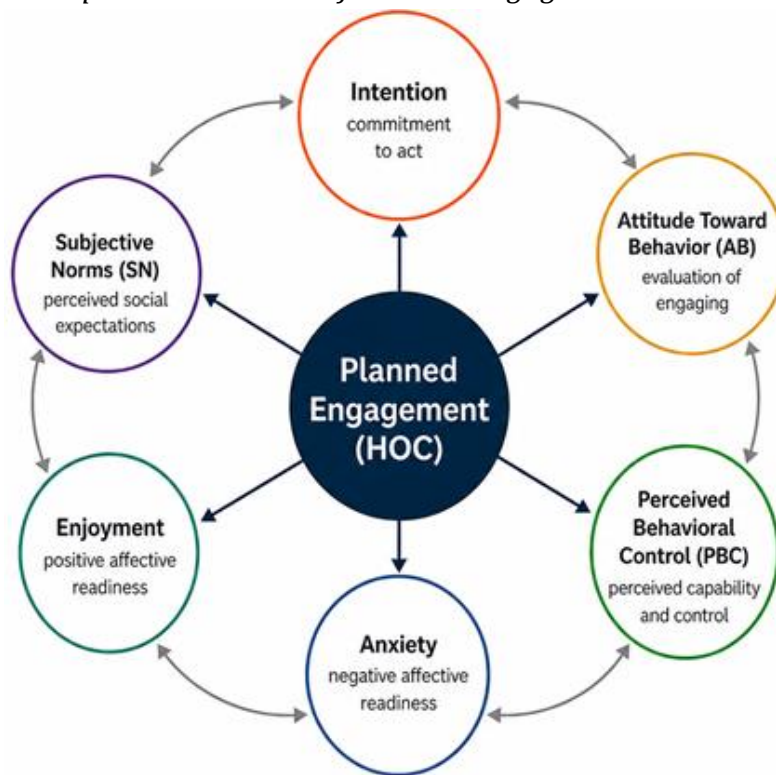
**H<sub>4</sub>** (+). Perceived behavioral control reflects Planned Engagement positively.

**H<sub>5</sub>** (+). Enjoyment reflects Planned Engagement positively.

**H<sub>6</sub>** (-). Anxiety reflects Planned Engagement negatively.

**Figure 1**

*Conceptual Framework of Planned Engagement*



### Literature Review

Engagement in language learning includes behavior, emotion, and cognition (Appleton et al., 2008; Fredricks et al., 2004). Mercer (2019) and Mercer and Dörnyei (2020) describe it as visible in interaction, attention, effort, and persistence. Those behaviors vary with the task, the teacher, and the peer group. Self-reports can describe what learners notice and feel, but they do not show what learners do across time (Fredricks, 2022; Hiver et al., 2021). A separate measure of readiness therefore has a defensible place beside measures of observed participation.

Construct boundaries are a second difficulty. Hiver et al. (2024) documented substantial variation in how engagement has been defined and measured, while Kusyk et al. (2025) found similar terminological differences in research on informal second language learning. Self-report measures can describe beliefs and feelings that are difficult to observe directly, but they should not be treated as records of what learners do across time (Fredricks, 2022). Khatami et al. (2025), for example, examined mindfulness and engagement in an online English as a foreign language (EFL) setting. Recent measurement work also continues to focus mainly on engagement during learning activity. Sun et al. (2025) measured synchronous online engagement among Saudi learners of L2 Chinese. The stage before visible participation therefore remains a separate measurement question.

In TPB, intention expresses a decision or plan to act, and barriers may still stand between the plan and the behavior (Ajzen, 2005; Conner, 2020). For a language learner, that plan may concern attending, preparing, speaking, or persisting. Fang et al. (2025) examined behavioral intention as one of the processes connecting informal digital English learning with learner engagement. Ren (2025) examined a more specific form of readiness, EFL translation majors' intention to use ChatGPT in translation practice. Both studies show how intention can be measured before a particular language-related action occurs.

Attitude toward behavior concerns how learners evaluate engagement itself. Participation may be judged useful, enjoyable, demanding, or personally valuable (Ajzen, 1991, 2005). Conner (2020) treats this evaluation as conceptually separate from a commitment to act, even where the two are closely related. Feng et al. (2025) followed young Chinese learners of English over time and reported an association between language attitude and willingness to communicate, and Liu et al. (2025) reported a comparable pattern for continuance intention. Papi and Hiver (2025) add a further condition in their account of proactive language learning, since learners may also need to see the search for input, practice, and feedback as worthwhile.

Subjective norms bring the social side of readiness into the model. Teachers, peers, families, and institutions may communicate expectations about attendance, effort, and participation (Ajzen, 1991; Conner, 2020). These expectations may be experienced as encouragement or pressure. Kim and Pae (2019) found that subjective norms contributed to South Korean high school students' intention to learn English. Nie et al. (2020) also examined social image together with TPB in mobile English learning. Social support may matter in other ways. Luo and Gan (2025) found that teacher support and family autonomy support were positively related to EFL learners' self-efficacy and achievement. Yu et al. (2025) reported that institutional support strengthened the relationship between intention and English-learning behavior.

A learner may value participation and still doubt whether there is enough ability, time, support, or opportunity to act. Perceived behavioral control captures that doubt (Ajzen, 1991, 2005). In language learning, control beliefs may concern understanding instructions, coping with mistakes, keeping pace with a class, and finding chances to use the language. Bali et al. (2025) and Nie et al. (2020) reported associations between stronger control beliefs and stronger intentions in technology-supported settings.

Enjoyment and anxiety were included because the four TPB constructs do not fully capture the emotional conditions in which learners form plans to participate. These two emotions are related, but they are not simply opposites and may occur at the same time (Dewaele & MacIntyre, 2016). Enjoyment may come from making progress, communicating successfully, receiving support, or dealing with a challenge that feels manageable. It has been linked to willingness to communicate and classroom engagement (Dewaele & Saito, 2024; Tsang & Dewaele, 2024). Sadoughi and Hejazi (2024) also reported a relationship with persistence. Such findings make enjoyment relevant to readiness, but they do not mean that enjoyment by itself leads to participation.

Anxiety reflects another side of this readiness. Learners may worry about mistakes, evaluation, or speaking before they feel prepared. These concerns may limit attention and make communicative risk-taking more difficult (Horwitz, 2017; Papi & Khajavy, 2023). Lower engagement has also been associated with anxiety in classroom and online language-learning settings (Li et al., 2024; Wang & Hui, 2024). Outside the classroom, Zhang and Lai (2024) found that English-learning anxiety was related to L2 motivational conditions among Chinese university English majors. Yet anxiety does not necessarily replace enjoyment. A learner may enjoy Arabic, value the course, and intend to take part while still feeling anxious. For this reason, anxiety is kept as a separate inverse component of the model.

The HOC brings these related components together without removing the six LOC scores. This interpretation is useful only if the LOCs share enough variance to support a broader readiness construct while retaining their intended meanings. Sarstedt et al. (2019) discuss the specification and evaluation of HOCs. Following Rönkkö and Cho (2022), we therefore examine the item pattern and the size and uncertainty of latent correlations before interpreting the LOC scores separately.

Three gaps guide the study. First, most engagement measurement work has been carried out in English classrooms, and the emotional profile of a class may differ by target language. Dewaele and Saito (2024) surveyed 360 students at an English-medium university in Kuwait who were studying English, German, Spanish, or French, and found that learners of the other three languages reported higher enjoyment, similar classroom anxiety, and lower attitudes and motivation than the learners of English. The authors noted that confounding variables prevent a causal reading of that difference, but it does

suggest that instruments developed for English classrooms may not transfer unchanged to other languages. L2 Arabic remains largely absent from this literature (Hiver et al., 2021; Mercer, 2019). Second, self-reported readiness is often discussed together with observed engagement, although the two are not identical (Fredricks, 2022). Third, TPB constructs and language emotions are rarely tested in one hierarchical readiness model. Alhamami and Almosa (2023) applied the theory to 61 learners of Arabic from 25 countries at seven Saudi universities and reported positive intention, attitude, subjective norm, and perceived behavioral control beliefs alongside strong religious motivations. The present study takes the four item sets developed in that work to a much larger sample outside the Arabic-speaking world, adds enjoyment and anxiety, and models the six components as one readiness state.

## **Methodology**

### *Context and Participants*

We obtained 213 usable questionnaires from students enrolled in L2 Arabic courses or programs at 16 Indian universities. The sample included 140 men (65.7%) and 73 women (34.3%). There were 111 master's students (52.1%), 59 bachelor's students (27.7%), and 43 doctoral students (20.2%). Participants came from several regions and institutions. Jawaharlal Nehru University had the largest group, and Jamia Millia Islamia, the University of Mumbai, and Gauhati University were also represented. The sample was suited to the purpose of testing the measure in varied university settings, although it was not a national probability sample.

### *Instrument Validation Procedures*

Ethical approval was obtained from the Research Ethics Committee at King Khalid University, Saudi Arabia (Approval No. ECM#2024-2106; Committee Registration: HAPO-06-B-001). Permission to host the first author during data collection was also granted by Jawaharlal Nehru University, Delhi, India. All procedures followed relevant ethical guidelines, including the Declaration of Helsinki. Participation was voluntary. The questionnaire was anonymous, and data were handled using standard confidentiality procedures. Informed consent was obtained before participants accessed the questionnaire items.

The questionnaire measured six LOCs of planned engagement in L2 Arabic learning: intention, attitude toward behavior, subjective norms, perceived behavioral control, enjoyment, and anxiety (Ajzen, 1991, 2005). For intention, attitude toward behavior, subjective norms, and perceived behavioral control, three items per construct were adapted from Alhamami and Almosa (2023). One additional item was added to each of these constructs to improve construct coverage. Thus, each of these four constructs included four items. For enjoyment and anxiety, five items were selected for each construct from Dewaele and Saito (2024). The final instrument included 26 items.

Responses were recorded on six-point scales. The agreement items ran from 1 (strongly agree) to 6 (strongly disagree). Attitude toward behavior used semantic-differential endpoints, including very good to very bad and very useful to very useless, because that scale measures evaluation (Ajzen, 2005). We drafted the questionnaire in English and translated it into Arabic. Two professors of translation checked the Arabic wording and its fit with the intended constructs. After revision, two Arabic instructors at an Indian university read the bilingual form for clarity in their teaching setting. The items were interleaved before administration. Appendix A presents the full wording.

### *Data Collection*

Data were collected in July and August 2024. The first author met Arabic instructors and graduate students at events organized by the King Salman Global Academy for Arabic Language in New Delhi. The survey link was also distributed through Arabic departments, professional email, WhatsApp, and social media groups, followed by one reminder. This open-link procedure was needed to reach programs in different parts of India. It also meant that we had no fixed invitation list and could not know how many eligible students received the link. A conventional response rate and a direct comparison of respondents with nonrespondents were therefore unavailable. Participation was voluntary and the sample was nonprobability-based. Alhamami (2025) previously analyzed the same survey dataset to examine directional relations among the six psychological constructs. The present study does not repeat those structural models. It addresses a different measurement question by examining whether the six scales can be represented as a reflective-reflective HOC of readiness to engage.

### *Data Analysis*

We first summarized the participant data and calculated the six scale means. Pearson correlations among the means were examined in Jamovi. We then estimated the reflective-reflective HOC in SmartPLS using PLS-SEM (Ringle et al., 2024). Both the HOC and its six LOCs were reflective, and the repeated-indicators approach was used for the hierarchy (Hair et al., 2019; Sarstedt et al., 2019).

The measurement analysis covered item loadings, Cronbach's alpha, composite reliability, and average variance extracted. We assessed discriminant validity in two ways. Cross-loadings showed whether each item was most closely related to its assigned LOC, and bias-corrected 95% confidence intervals showed whether latent correlations reached 1.00, following Rönkkö and Cho (2022). For the higher-order model, we used 10,000 bootstrap samples and two-tailed 95% confidence intervals. The reported indices were the HOC loadings,  $R^2$ ,  $f^2$ , collinearity values,  $Q^2_{\text{predict}}$ , root mean square error, and mean absolute error (Hair et al., 2019; Ringle et al., 2024). Also, confirmatory tetrad analysis in PLS was conducted with 10,000 bootstrap samples, two-tailed testing at  $\alpha = .05$ , and a fixed seed. We examined the multiplicity-adjusted confidence intervals for the

nonredundant tetrads to assess whether the six LOCs were consistent with reflective measurement.

## Results

### *Interpretation of Mean Scores*

Google Forms responses were exported to Excel, and construct means were calculated by averaging item scores. The equal-interval method was used to interpret the six-point scale. Although Likert-type items are ordinal, composite means are often reported for multi-item scales in applied research (Harpe, 2015). The interval width was 0.83. Mean scores were interpreted as follows: 1.00–1.83 = Very High, 1.84–2.67 = High, 2.68–3.51 = Moderate High, 3.52–4.33 = Moderate Low, 4.34–5.17 = Low, and 5.18–6.00 = Very Low. Because lower values indicate stronger agreement, lower means reflect higher levels of the construct.

Participants reported Very High levels of attitude toward behavior ( $M = 1.55$ ), intention ( $M = 1.56$ ), and perceived behavioral control ( $M = 1.69$ ). Subjective norms ( $M = 1.94$ ) and enjoyment ( $M = 2.03$ ) were at High levels. Anxiety was also High ( $M = 2.66$ ). Because lower scores indicate stronger agreement with the anxiety items, this mean reflects relatively strong endorsement of anxiety.

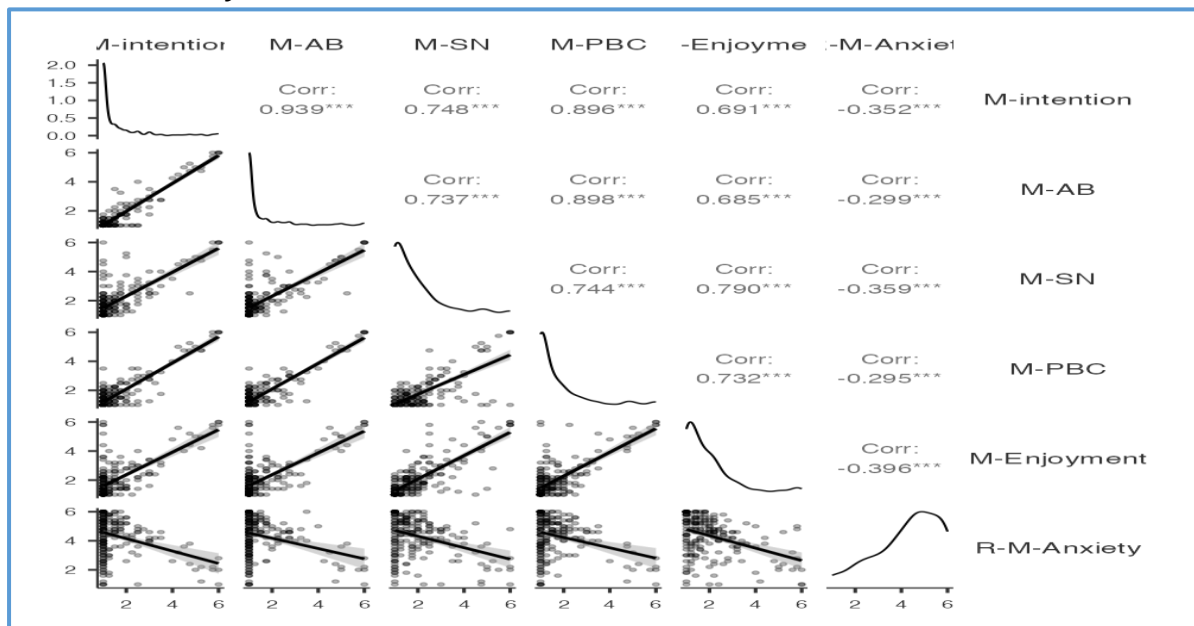
### *Correlation Matrix*

Figure 2 reports correlations among the six scale means. Anxiety was retained in its original coding for the descriptive analysis. For the correlation and PLS-SEM analyses, the five anxiety items were reverse-scored as 7 minus the original response, so that higher values represented stronger anxiety. The other five constructs retained their original questionnaire direction, where lower values represented stronger endorsement.

Intention was strongly related to attitude toward behavior ( $r = .94$ ) and perceived behavioral control ( $r = .90$ ). Its correlations with subjective norms and enjoyment were .75 and .69. Attitude toward behavior correlated .90 with perceived behavioral control, .74 with subjective norms, and .69 with enjoyment. The remaining positive-scale correlations ranged from .73 to .79. All were statistically significant,  $p < .001$ .

The reverse-scored anxiety composite had negative numerical correlations with intention ( $r = -.35$ ), attitude toward behavior ( $r = -.30$ ), subjective norms ( $r = -.36$ ), perceived behavioral control ( $r = -.30$ ), and enjoyment ( $r = -.40$ ), all  $p < .001$ . Because the positive scales and reversed anxiety use opposite score directions, these bivariate signs are reported as coded rather than used to infer a causal or behavioral relation. The main result in Figure 2 is the close movement of the positive readiness components, especially intention, attitude toward behavior, and perceived behavioral control.

**Figure 2**  
*Correlation Analysis*



Note. M = construct mean; AB = attitude toward behavior; SN = subjective norms; PBC = perceived behavioral control; R-M-Anxiety = mean of the reverse-scored anxiety items.

### Measurement Model Evaluation

After multiplicity adjustment, every confidence interval for the nonredundant tetrads included zero. Confirmatory Tetrad Analysis in PLS therefore did not reject the reflective measurement specification for any of the six LOCs.

### Convergent Validity and Reliability: LOCs

The six LOCs were assessed through item loadings, Cronbach's alpha,  $\rho_A$ , composite reliability, and average variance extracted. Reliability values above .70 and average variance extracted above .50 were treated as acceptable. Table 1 shows that every scale met these criteria. Intention item loadings ranged from .88 to .92, with alpha = .93,  $\rho_A$  = .93, composite reliability = .95, and average variance extracted = .82. Attitude toward behavior loadings ranged from .90 to .94, with alpha = .94,  $\rho_A$  = .94, composite reliability = .96, and average variance extracted = .85. Subjective norms item loadings ranged from .76 to .88; alpha was .86,  $\rho_A$  was .87, composite reliability was .91, and average variance extracted was .71. Perceived behavioral control loadings ranged from .86 to .88; alpha was .90,  $\rho_A$  was .90, composite reliability was .93, and average variance extracted was .76. Enjoyment loadings ranged from .66 to .90. The scale retained strong reliability and convergent validity, with alpha = .89,  $\rho_A$  = .91, composite reliability = .92, and average variance extracted = .70. Anxiety loadings ranged from .71 to .82, with alpha = .83,  $\rho_A$  = .84, composite reliability = .88, and average variance extracted = .59. Thus, the lower Enjoyment4 loading did not prevent the enjoyment scale from meeting the prespecified scale-level criteria. Taken together, the item and scale results support the internal consistency and convergent validity of all six LOCs.

**Table 1***Indicator Loadings, Reliability, and Convergent Validity of the Lower-Order Constructs*

| Construct                    | Item       | Loading | Cronbach's Alpha | Composite Reliability (Rho_A) | Composite Reliability (Rho_C) | Average Variance Extracted |
|------------------------------|------------|---------|------------------|-------------------------------|-------------------------------|----------------------------|
| Intention                    | Intention1 | .90     | .93              | .93                           | .95                           | .82                        |
|                              | Intention2 | .92     |                  |                               |                               |                            |
|                              | Intention3 | .92     |                  |                               |                               |                            |
|                              | Intention4 | .88     |                  |                               |                               |                            |
| Attitude toward Behavior     | AB1        | .90     | .94              | .94                           | .96                           | .85                        |
|                              | AB2        | .94     |                  |                               |                               |                            |
|                              | AB3        | .90     |                  |                               |                               |                            |
|                              | AB4        | .94     |                  |                               |                               |                            |
| Subjective Norms             | SN1        | .86     | .86              | .87                           | .91                           | .71                        |
|                              | SN2        | .87     |                  |                               |                               |                            |
|                              | SN3        | .76     |                  |                               |                               |                            |
|                              | SN4        | .88     |                  |                               |                               |                            |
| Perceived Behavioral Control | PBC1       | .86     | .90              | .90                           | .93                           | .76                        |
|                              | PBC2       | .88     |                  |                               |                               |                            |
|                              | PBC3       | .88     |                  |                               |                               |                            |
|                              | PBC4       | .88     |                  |                               |                               |                            |
| Enjoyment                    | Enjoyment1 | .85     | .89              | .91                           | .92                           | .70                        |
|                              | Enjoyment2 | .87     |                  |                               |                               |                            |
|                              | Enjoyment3 | .89     |                  |                               |                               |                            |
|                              | Enjoyment4 | .66     |                  |                               |                               |                            |
|                              | Enjoyment5 | .90     |                  |                               |                               |                            |
| Anxiety                      | RAnxiety1  | .74     | .83              | .84                           | .88                           | .59                        |
|                              | RAnxiety2  | .75     |                  |                               |                               |                            |
|                              | RAnxiety3  | .82     |                  |                               |                               |                            |
|                              | RAnxiety4  | .80     |                  |                               |                               |                            |
|                              | RAnxiety5  | .71     |                  |                               |                               |                            |

*Convergent Validity and Reliability: HOC*

The HOC also met the stated reliability and convergent-validity criteria. Alpha was .93,  $\rho_A$  was .97, composite reliability was .95, and average variance extracted was .54. These results support the common readiness factor represented by the six LOCs.

*Discriminant Validity*

The HOC was not tested for discriminant validity against its own six LOCs. In a repeated-indicators reflective-reflective model, the higher-order factor is intended to explain their common variance. Strong HOC-to-LOC relations are therefore part of the specified measurement structure (Sarstedt et al., 2019).

Table 2 reports the cross-loadings. Every item loaded most strongly on its assigned construct. The differences were narrower for several TPB items, as expected for constructs that address the same target action. Intention1 loaded .90 on intention, .88 on attitude toward behavior, and .81 on perceived behavioral control. AB4 loaded .94 on attitude toward behavior and .92 on intention. Even in these close cases, the intended loading remained the largest. Anxiety items also loaded most strongly on anxiety and had negative cross-loadings on the positive readiness components.

The bootstrapped latent correlations provided the main construct-level evidence. None of the reported bias-corrected 95% confidence intervals included 1.00, indicating that the most strongly related LOCs were not empirically identical. The strongest relationship was between intention and attitude toward behavior,  $r = .94$ , 95% CI [.90, .97]. Perceived behavioral control correlated .90 with attitude toward behavior, 95% CI [.83, .94], and .90 with intention, 95% CI [.83, .94]. These intervals remained below unity, but their upper limits were high and therefore indicate substantial overlap among the three TPB measures.

The cross-loadings provide supporting item-level information: every item had its largest loading on its intended LOC, although several differences were small. Taken together, the results support a common readiness core more clearly than they support fine-grained distinctions among intention, attitude toward behavior, and perceived behavioral control. The three scales retain different theoretical meanings, but small differences among their scores should be interpreted cautiously.

**Table 2**  
*Cross-Loadings for the Six Lower-Order Constructs*

| Item       | Intention | Attitude | Subjective Norms | Perceived Control | Enjoyment | Anxiety |
|------------|-----------|----------|------------------|-------------------|-----------|---------|
| Intention1 | .90       | .88      | .70              | .81               | .66       | -.33    |
| Intention2 | .92       | .84      | .67              | .77               | .64       | -.35    |
| Intention3 | .92       | .88      | .69              | .86               | .64       | -.33    |
| Intention4 | .88       | .80      | .66              | .80               | .62       | -.32    |
| AB1        | .80       | .90      | .62              | .80               | .62       | -.26    |
| AB2        | .90       | .94      | .70              | .84               | .66       | -.32    |
| AB3        | .84       | .90      | .69              | .81               | .63       | -.25    |
| AB4        | .92       | .94      | .72              | .86               | .67       | -.31    |
| SN1        | .68       | .69      | .86              | .66               | .62       | -.31    |
| SN2        | .63       | .58      | .87              | .61               | .63       | -.35    |
| SN3        | .51       | .53      | .76              | .55               | .70       | -.28    |
| SN4        | .70       | .69      | .88              | .70               | .72       | -.32    |
| PBC1       | .76       | .77      | .63              | .86               | .70       | -.28    |
| PBC2       | .76       | .76      | .69              | .88               | .64       | -.27    |
| PBC3       | .81       | .82      | .64              | .88               | .61       | -.26    |
| PBC4       | .81       | .79      | .65              | .88               | .65       | -.26    |
| Enjoyment1 | .58       | .59      | .69              | .58               | .85       | -.35    |
| Enjoyment2 | .65       | .64      | .69              | .69               | .87       | -.35    |
| Enjoyment3 | .72       | .71      | .73              | .76               | .89       | -.32    |
| Enjoyment4 | .38       | .38      | .52              | .45               | .66       | -.30    |
| Enjoyment5 | .58       | .57      | .67              | .60               | .90       | -.39    |
| RAnxiety1  | -.33      | -.26     | -.24             | -.25              | -.31      | .74     |
| RAnxiety2  | -.26      | -.23     | -.27             | -.19              | -.26      | .75     |
| RAnxiety3  | -.32      | -.27     | -.37             | -.29              | -.40      | .82     |
| RAnxiety4  | -.32      | -.29     | -.35             | -.27              | -.35      | .80     |
| RAnxiety5  | -.13      | -.12     | -.14             | -.14              | -.19      | .71     |

*Note. Shaded values indicate loadings on the intended constructs.*

### *Multicollinearity*

Inner-model collinearity was checked through variance inflation factor values (Hair et al., 2019, 2024). Planned engagement was the only inner predictor of each LOC, and all

values were 1.00. This is the expected result for a single-predictor inner equation. The strong relations among the LOCs concern the measurement structure and are addressed by the two discriminant-validity procedures above (Sarstedt et al., 2019).

### Structural Model Evaluation

Because the model was specified as reflective-reflective, the HOC→LOC coefficients in Figure 3 were interpreted as higher-order loadings rather than predictor effects. These loadings show how strongly each LOC reflects Planned Engagement (Sarstedt et al., 2019).

**Figure 3**

*Structural Model of Planned Engagement*

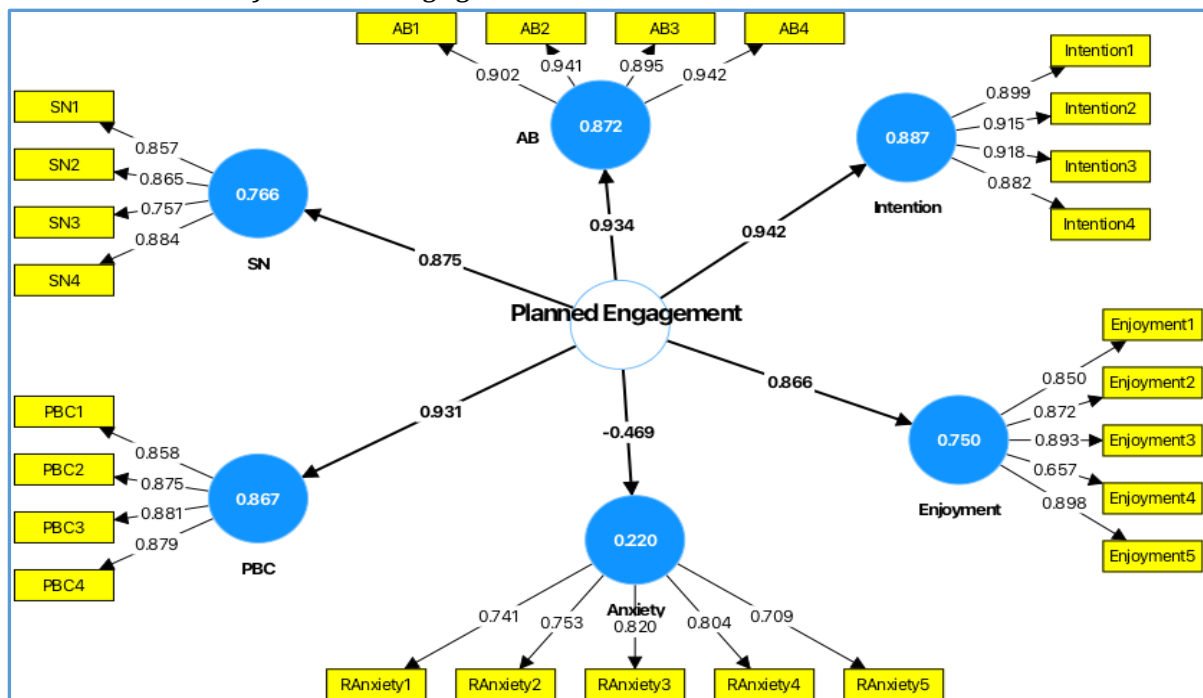


Figure 3 retains the complete submitted model. Intention, attitude toward behavior, subjective norms, perceived behavioral control, and enjoyment loaded positively on planned engagement. Anxiety loaded negatively. This pattern supports the proposed combination of deliberate, social, control-related, and affective readiness.

Table 3 reports the HOC results. Intention had the largest loading (.94), with attitude toward behavior and perceived behavioral control close behind (both .93). Subjective norms (.88) and enjoyment (.87) also had large positive loadings. Anxiety had the expected inverse loading (−.47). Every loading was statistically significant,  $p < .001$ , and  $R^2$  ranged from .22 for anxiety to .89 for intention. The ordering places intention, evaluation, and perceived control at the center of the readiness profile, with social and emotional content adding further information.

**Table 3***Structural Model Evaluation*

| Higher-Order Construct | $f^2$ | Lower-Order Construct        | $R^2$ | Loading | $t$   | $p$    |
|------------------------|-------|------------------------------|-------|---------|-------|--------|
| Planned Engagement     | 7.87  | Intention                    | .89   | .94     | 69.26 | < .001 |
|                        | 6.80  | Attitude toward Behavior     | .87   | .93     | 64.00 | < .001 |
|                        | 3.27  | Subjective Norms             | .77   | .88     | 29.06 | < .001 |
|                        | 6.50  | Perceived Behavioral Control | .87   | .93     | 57.00 | < .001 |
|                        | 3.00  | Enjoyment                    | .75   | .87     | 27.08 | < .001 |
|                        | .28   | Anxiety                      | .22   | -.47    | 3.85  | < .001 |

The  $f^2$  values describe the specified hierarchy. Planned engagement is the only inner predictor of each LOC, so the values follow directly from the corresponding  $R^2$  values and are not separate causal effects. This qualification concerns the interpretation of  $f^2$ ; it does not change the direction, size, or statistical significance of the higher-order loadings.

*Predictive Performance of LOCs*

Table 4 presents  $Q^2$ predict, root mean square error, and mean absolute error for the six LOC scores. Positive  $Q^2$ predict values indicate predictive relevance under the model's cross-validation procedure, while lower error values indicate closer reconstruction. Intention had the clearest predictive performance,  $Q^2$ predict = .89, root mean square error = .34, and mean absolute error = .24. Attitude toward behavior and perceived behavioral control followed with  $Q^2$ predict = .87 and similarly small error values. Subjective norms and enjoyment also showed positive predictive relevance, with  $Q^2$ predict values of .77 and .75. Anxiety had the smallest positive value (.21). This ordering repeats the higher-order loading pattern and supports the internal consistency of the proposed readiness hierarchy.

**Table 4***Predictive Indices for the Lower-Order Constructs*

| Lower-Order Construct        | $Q^2$ Predict | Root Mean Square Error | Mean Absolute Error |
|------------------------------|---------------|------------------------|---------------------|
| Intention                    | .89           | .34                    | .24                 |
| Attitude toward Behavior     | .87           | .37                    | .25                 |
| Subjective Norms             | .77           | .50                    | .31                 |
| Perceived Behavioral Control | .87           | .37                    | .27                 |
| Enjoyment                    | .75           | .51                    | .34                 |
| Anxiety                      | .21           | .90                    | .72                 |

**Discussion**

The results give some support to planned engagement as a way of describing what learners bring to a possible act of participation before that act takes place. This is narrower than the usual meaning of engagement. Classroom engagement is generally discussed in terms of what learners actually do, such as participating, paying attention, interacting, or persisting with a task (Fredricks et al., 2004; Mercer, 2019). The questionnaire used here does not record those behaviors. It asks about plans, evaluations, perceived expectations, control beliefs, enjoyment, and anxiety. These are conditions that

are already present when a learner considers whether to take part. Planned engagement is therefore best understood as readiness for action rather than action itself. Whether that readiness later appears as attendance, speaking, persistence, or another form of classroom participation remains an empirical question for later research. So, naming that position planned engagement gives self-report data a precise role. It also protects the boundary between readiness and behavior, which allows later studies to examine whether and under what conditions a reported plan becomes classroom participation.

The TPB part of the model captures the more deliberate side of planned engagement. Intention reflects whether learners expect to continue with Arabic, but that intention does not stand alone. Learners are also likely to think about whether continued study is worthwhile and whether they can manage what it requires. This helps explain why intention, attitude, and perceived control were so closely connected. All three refer to the same future activity, but they approach it from different angles. That pattern also makes sense in a university sample whose members had already committed time and effort to studying Arabic. Earlier studies have used TPB to examine language-learning beliefs and intentions in both online and face-to-face settings (Alhamami, 2018). Alhamami (2025) examined the same six constructs through directional models. Here, the question is different. The concern is whether these judgments can be understood as part of a broader readiness state without losing the meaning of each one.

Their overlap still needs care. A learner who intends to continue studying Arabic will often also see that choice positively and feel reasonably able to carry it out. Similar answers across the three scales are therefore not surprising. Even so, intention, attitude, and perceived control are not interchangeable ideas. One concerns commitment, another evaluation, and the third capability and constraints. A learner may value continued participation but still feel unable to manage it. Another may feel capable but have little desire to continue. These distinctions matter when the scores are interpreted. At the same time, the present pattern does not support reading small differences among the three LOCs as sharply different psychological profiles. Their shared meaning is strong, and the separate scores are most useful when they are treated with that overlap in mind (Rönkkö & Cho, 2022).

Subjective norms, enjoyment, and anxiety bring in parts of readiness that are less individual. Learners make plans while responding to people around them and to the emotions attached to language use. A teacher may encourage participation, a family may place value on learning Arabic, and peers may create either support or pressure. These messages may not always agree. The same is true emotionally. Enjoyment can make participation appealing, yet anxiety may still appear when a learner expects correction, has to speak without preparation, or worries about making mistakes. One feeling does not cancel the other. A learner can enjoy Arabic and still feel uneasy about a particular classroom moment. For that reason, anxiety should not be read as weak commitment, and

enjoyment should not be treated as its opposite. Including both allows planned engagement to reflect the fact that readiness is shaped not only by decisions and beliefs, but also by the social and emotional conditions in which those decisions are made (Dewaele & MacIntyre, 2016).

The HOC is useful because it keeps these two levels visible at the same time. The broader score summarizes what the six LOCs share, but the component scores still show where that readiness may come from. Looking only at the total would lose distinctions that can matter in interpretation, while treating the six LOCs as completely separate would ignore the common readiness they share. The model is therefore best understood as a way of moving between the broader pattern and its components. This also gives later studies something concrete to test. Other L2 Arabic programs can adapt the bilingual instrument, examine whether the same component structure appears, and then ask whether readiness measured before participation is related to what learners later do. Such replication is important because the social expectations, classroom practices, and emotional demands surrounding Arabic learning may differ across institutions and countries.

The scores are most useful when they help an instructor decide what to ask next. A learner may intend to participate but still feel unable to manage a particular task. In that case, the problem is not necessarily weak motivation. The learner may need more preparation time, may be unsure what to say, or may find one language skill especially difficult. The appropriate response depends on that difficulty. Clearer instructions, a brief rehearsal, or a less exposed first attempt may be enough to make participation feel manageable. A different issue arises when the learner sees little value in the activity itself. Then the conversation is less about ability and more about purpose. The instructor can ask how the task relates to the learner's reasons for studying Arabic or to situations in which Arabic is likely to be useful. Used in this way, the scores do not label learners. They simply provide a place to begin a conversation about what is helping or limiting participation at that time.

The social and emotional scores also need to be read in context. Anxiety is a good example. A learner may want to participate and still become nervous when asked to speak without preparation. Telling such a learner to be more confident may do little to address the actual problem. A short period of pair preparation, a chance to organize an answer, or a less public first response may be more helpful. The same principle applies to classroom expectations. Participation can be encouraged without making hesitation or mistakes unnecessarily visible to others. More importantly, none of these scores should be treated as a fixed description of the learner. Readiness can change with the task, the classroom situation, and the amount of support available. The profile is therefore most informative when it is used to identify a current difficulty and to consider whether a small change in preparation, task design, or interaction could remove that obstacle.

This study drew participants from 16 universities, which brought useful institutional variety to the sample, but the recruitment process also places clear limits on how far the findings can be generalized. The survey was shared through instructors, Arabic departments, professional email, WhatsApp, and social media rather than sent to a fixed list of eligible learners. We therefore do not know how many students received the invitation, and a conventional response rate cannot be reported. The sample was also voluntary and nonprobability-based, so it should not be taken as representative of all learners of L2 Arabic in India. In addition, men were more strongly represented than women. Replication with a clearly defined sampling frame and a more balanced gender distribution would provide a useful test of whether the six-component structure holds across different universities, degree levels, and learner groups.

The questionnaire received two stages of review before administration. Translation specialists checked the Arabic wording and construct meaning, and Arabic instructors in India reviewed the bilingual form for clarity in their teaching setting. However, no separate target-learner pilot or cognitive interviews were conducted. This is especially relevant to the three closely related TPB scales. The two procedures used in the present study supported empirical separation under the prespecified criteria, but the high correlations among intention, attitude toward behavior, and perceived behavioral control mean that small differences among these LOC scores should be interpreted cautiously. Cognitive interviews in future studies could examine how learners distinguish a plan to act, an evaluation of that action, and perceived capability or constraints. New samples should repeat the item-pattern and latent-correlation checks before comparing LOC scores across groups. Measurement invariance across gender, university, degree level, and language background would provide a further test of score comparability.

The study also measured readiness through one self-report questionnaire at one point in time. Completing all six scales under the same conditions may have contributed to some of the strong relations among them. More importantly, the study did not observe what learners later did. Longitudinal research could administer the planned engagement measure before an instructional period and then examine its relation to later attendance, classroom participation, persistence, or course performance. Teacher ratings, classroom records, and brief experience samples could add evidence independent of the questionnaire. Such designs would allow researchers to examine when reported readiness is followed by action and when classroom or program conditions interrupt that relationship.

## **Conclusion**

This study supports planned engagement as a meaningful HOC for L2 Arabic learning. The four TPB measures form the deliberate and social foundation of the construct, while enjoyment and anxiety add emotional information that the TPB scales do not contain. The item evidence, reliability results, convergent-validity results, and two discriminant-

validity procedures support use of both the common readiness score and the six component scores. The model should therefore be read as a structured account of preparation for participation. It does not rename self-reported plans as observed engagement, and it does not treat higher-order loadings as causal paths between the component measures.

The contribution extends beyond producing another questionnaire total. The study gives engagement research a defensible measure for the stage before action, incorporates social and emotional content within a TPB-based hierarchy, and provides evidence from learners at 16 Indian universities. The bilingual 26-item instrument also offers international researchers a common structure that can be tested in other L2 Arabic programs. By separating the broad readiness score from its six components, the model supports both comparison and practical interpretation. It advances understanding of how plans, evaluations, perceived expectations, control, enjoyment, and anxiety come together before language learners enter an opportunity to participate.

#### **ORCID**

 <https://orcid.org/0000-0003-4229-9947>

 <https://orcid.org/0000-0003-4379-8553>

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#### **CRedit Authorship Contribution Statement**

Munassir Alhamami: Conceptualization, Methodology, Formal Analysis, Investigation, Writing – Original Draft, Project Administration, Funding Acquisition, Writing – Review & Editing

Graham Crookes: Writing – Review & Editing

## Generative AI Use Disclosure Statement

During preparation and revision, the authors used ChatGPT (OpenAI) for language editing, sentence-level rewriting, and readability. All AI-assisted revisions were checked against the questionnaire, data files, statistical output, and cited sources. The authors made all substantive and interpretive decisions and take full responsibility for the final manuscript.

## Ethics Declarations

### World Medical Association (WMA) Declaration of Helsinki–Ethical Principles for Medical Research Involving Human Participants

The Research Ethics Committee at King Khalid University approved the study (ECM#2024-2106; committee registration HAPO-06-B-001). Participation was voluntary, informed consent was obtained, and the study followed the Declaration of Helsinki.

## Competing Interests

The authors declare no conflict of interest.

## Data Availability

The dataset is not publicly available because of participant privacy and institutional data-management conditions. Requests for de-identified data may be considered by the corresponding author subject to those conditions.

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## Appendix A

### Questionnaire Items

| Construct                | Items as Presented in the Questionnaire                                                                                                                      |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Intention                | 1. I want to continue learning Arabic more to deepen my understanding of Arabic language.<br>أريد أن أستمّر في تعلّم اللغة العربية لتعميق فهمي للغة العربية. |
|                          | 2. I intend to continue learning Arabic to enhance my understanding of the Arabic language.<br>أنوي مواصلة تعلّم اللغة العربية لتعزيز فهمي للغة العربية.     |
|                          | 3. I aim to continue learning Arabic to deepen my understanding of the Arabic language.<br>أهدف إلى مواصلة تعلّم اللغة العربية لتعميق فهمي للغة العربية.     |
|                          | 4. I plan to keep learning Arabic to better understand Arabic language.<br>أخطط للاستمرار في تعلّم اللغة العربية لفهم أفضل للغة العربية.                     |
| Attitude toward behavior | 1. For me, learning Arabic is...(options: from very good to very bad).<br>بالنسبة لي، تعلّم اللغة العربية هو أمر...                                          |
|                          | 2. For me, learning Arabic is...(options: from very useful to very useless)<br>بالنسبة لي، تعلّم اللغة العربية هو أمر...                                     |
|                          | 3. For me, learning Arabic is...(options: from very enjoyable to very unenjoyable)<br>بالنسبة لي، تعلّم اللغة العربية هو أمر...                              |
|                          | 4. For me, learning Arabic is...(options: from very valuable to very valueless)<br>بالنسبة لي، تعلّم اللغة العربية هو أمر...                                 |
| Subjective norms         | 1. Most people, whose opinions I value, think that I should learn Arabic.<br>معظم الناس الذين أقدر آراءهم يعتقدون أنه يجب عليّ تعلّم اللغة العربية.          |
|                          | 2. Most people I respect believe I should learn Arabic.<br>معظم الأشخاص الذين أحترمهم يعتقدون أنني يجب أن أتعلّم اللغة العربية.                              |
|                          | 3. I feel motivated by people around me to learn Arabic.<br>أشعر بالتحفيز من الأشخاص من حولي لتعلّم اللغة العربية.                                           |
|                          | 4. People who are important to me want me to learn Arabic.<br>الأشخاص المهمون بالنسبة لي يريدون مني أن أتعلّم اللغة العربية.                                 |

|                              |                                                                                                        |                                                                                        |
|------------------------------|--------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
| Perceived behavioral control | 1. I am confident that I can effectively learn Arabic.                                                 | أنا واثق من قدرتي على تعلم اللغة العربية بفعالية.                                      |
|                              | 2. I possess the abilities needed to learn Arabic effectively.                                         | أمتلك القدرات اللازمة لتعلم اللغة العربية بفعالية.                                     |
|                              | 3. I am capable of learning Arabic successfully.                                                       | أنا قادر على تعلم اللغة العربية بنجاح.                                                 |
|                              | 4. I feel confident in my ability to overcome challenges while learning Arabic.                        | أشعر بالثقة في قدرتي على التغلب على التحديات أثناء تعلم اللغة العربية.                 |
| Enjoyment                    | 1. In general, I've learned interesting things in my Arabic language classes.                          | بشكل عام، تعلمت أشياء مثيرة للاهتمام في صفوف اللغة العربية الخاصة بي.                  |
|                              | 2. In my Arabic language classes, I think most of Arabic language teachers are encouraging.            | في صفوف اللغة العربية الخاصة بي، أعتقد أن معظم مدرسي اللغة العربية مشجعون.             |
|                              | 3. In general, I enjoy my Arabic language classes.                                                     | بشكل عام، أستمتع بصفوف اللغة العربية الخاصة بي.                                        |
|                              | 4. As Arabic language students at the university, we form socially close groups while learning Arabic. | كطلاب للغة العربية في الجامعة، نشكل مجموعات اجتماعية متقاربة أثناء تعلم اللغة العربية. |
|                              | 5. In my Arabic language classes, I think most of the Arabic language teachers are friendly.           | في صفوف اللغة العربية الخاصة بي، أعتقد أن معظم مدرسي اللغة العربية ودودون.             |
| Anxiety                      | 1. I start to panic when I have to speak without preparation in my Arabic class.                       | أبدأ بالشعور بالذعر عندما يتوجب علي التحدث دون تحضير في صف اللغة العربية.              |
|                              | 2. Even if I am well prepared for my Arabic class, I feel anxious about it.                            | حتى لو كنت مستعداً جيداً لصف اللغة العربية، أشعر بالقلق بشأنه.                         |
|                              | 3. I always feel that the other students speak Arabic better than I do.                                | دائماً أشعر أن الطلاب الآخرين يتحدثون العربية بشكل أفضل مني.                           |
|                              | 4. I can feel my heart pounding when I'm going to be called on in my Arabic class.                     | أشعر بقلبي يخفق بقوة عندما ينادى علي داخل صف اللغة العربية.                            |
|                              | 5. I get nervous and confused when I am speaking in my Arabic class.                                   | أشعر بالتوتر والارتباك عندما أتحدث في صف اللغة العربية.                                |