

Comparison of Accountability to Medication self-Reported Adherence (CAMRA): Testing the PAcT with ARMS and Priming Question

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Introduction

- Medication nonadherence is a persistent problem that poses a burden on the economy and health care community. Multiple factors are involved with medication adherence: belief in medications, awareness, self-efficacy, patient-provider communication, and patient engagement.
- The most commonly used tool for measuring medication adherence is proportion of days covered (PDC); however, PDC is a limited indicator because it neglects the actual medication-taking behaviors. Thus, self-reporting may also be used to measure patient medication adherence. Adherence to Refills and Medication scale (ARMS) is a reliable and valid self-reported 12-item scale that measures patient medication adherence.¹
- The Priming Question, which was also previously developed and tested at WesternU (Law research team) is a single item self-reported measure of medication adherence.^{1,2}
- In addition, patient accountability has been proposed as a measure of patient engagement and responsibility to medication adherence. The Patient Accountability Tool (PACT), developed at WesternU (Law research team), is an 18-item tool with good reliability and validity consisting of four domains (BARS): Patient Belief in Medications, Awareness, Relationship, and Self Efficacy.³
- Medication adherence plays a significant role in improving patient care and reducing health care costs. Having a simplified tool of measuring patient adherence can streamline pharmacist interventions to improve medication adherence in patients.
- In the quest for a simple tool for self-reported adherence, a comparison needs to be made between these 3 tools to examine their value and utility towards medication adherence.

Objectives

Primary

- To compare the priming question, the ARMS and the PAcT in measuring patient medication adherence.
- We hypothesize that there is no difference in measuring medication adherence using priming question or ARMS.

Secondary

- To examine the associations between the concepts of the tools using the proposed CAMRA model.
- We hypothesize that there is no association between medication adherence and patient accountability as determined by the priming question or ARMS and PACT.

Methods

Status: Approved as Exempt status by WesternU IRB

Study Design: Cross-sectional survey design, survey administered from February 22 to 25, 2021

- Sampling:** Online panel of individuals using Qualtrics with a targeted sample size of 300 patients
- Inclusion criteria:** Aged 18 and older, taking at least two prescription medications daily, able to complete the survey in English, and with access to the internet to complete the survey
- Tools:** Through Qualtrics online, study participants received three different survey questionnaires: (1) Priming question, (2) Adherence to Refills and Medication scale (ARMS), and (3) Patient Accountability Tool (PACT).
- Respondent demographics were gathered to describe the study sample. Baseline characteristics collected through the Qualtrics online sampling were age, gender, ethnicity, education, income, and number of prescription medications taken daily.

Data Analysis

- Only completed surveys were used in the analysis.
- Sample demographics were analyzed using descriptive statistics.
- Reliability of the ARMS and PACT were assessed with Cronbach's alpha.
- Validity of PACT was assessed through factor analysis with Varimax rotation.
- Patient accountability was explained by the domains by performing regression analysis.
- Primary objective
 - Average scores from each of the tools (priming question and ARMS) were collected, and the overall correlation of the priming question vs ARMS was analyzed with a non-parametric test, Spearman's rho.
- Secondary objective
 - Overall correlation of priming question vs PACT and ARMS vs PACT were analyzed with a non-parametric test, Spearman's rho, and Pearson's correlation, respectively
 - Subgroup analyses were conducted by splitting the sample into high and low adherence subgroups using both the priming question and the ARMS, and into high and low accountability subgroups using PACT to determine whether high accountability correlated with high adherence.
- All analyses were conducted through SPSS and alpha at 95% significance level.

Results

1. Respondent Characteristics (n = 525)

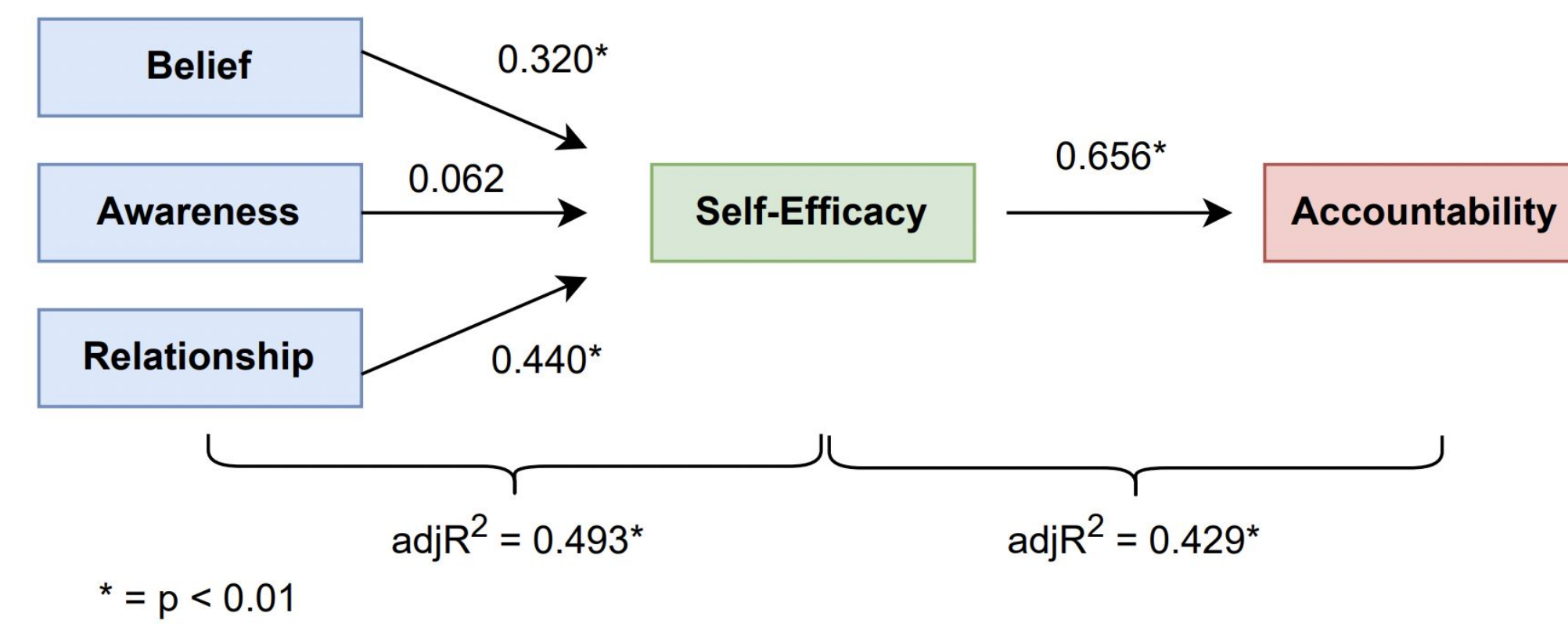
Characteristics		Frequency (%)
Age	40-49	147 (28%)
	50-59	108 (20.6%)
	60-69	145 (27.6%)
	70-79	105 (20%)
	80 or older	18 (3.4%)
Gender	Male	265 (50.5%)
	Female	256 (48.8%)
	Non-Binary	4 (0.8%)
Ethnicity	Amer. Indian/Alaska Native	6 (1.1%)
	Asian	24 (4.6%)
	Black or African American	65 (12.4%)
	Native Hawaiian/Pac. Islander	3 (0.6%)
	Hispanic or Latinx	80 (15.2%)
	White	331 (63.0%)
	Mixed race	12 (2.3%)
Characteristics		Frequency (%)
Level of education	Some high school	16 (3%)
	High school diploma	87 (16.6%)
	Some college	105 (20%)
	Associate degree (e.g., AA, AS)	64 (12.2%)
	Bachelor's degree (e.g., BA, BS)	132 (25.1%)
	Master's degree or higher (e.g., MA, MS, PhD)	121 (23%)
Income in 2020	Less than \$20,000	57 (10.9%)
	\$21,000 to \$50,000	145 (27.6%)
	\$51,000 to \$100,000	186 (35.4%)
	\$101,000 to \$150,000	75 (14.3%)
	Greater than \$150,000	44 (8.4%)
Number of prescriptions	2-5 prescriptions	405 (77.1%)
	6-8 prescriptions	85 (16.2%)
	9 or more prescriptions	35 (6.7%)

* This sample was representative of U.S. adults taking more than 2 prescription medications in age, gender, ethnicity, education, and income.

Reliability of scales: ARMS demonstrated excellent reliability with Cronbach's alpha of 0.925, PACT also showed good reliability with Cronbach's alpha of 0.856.

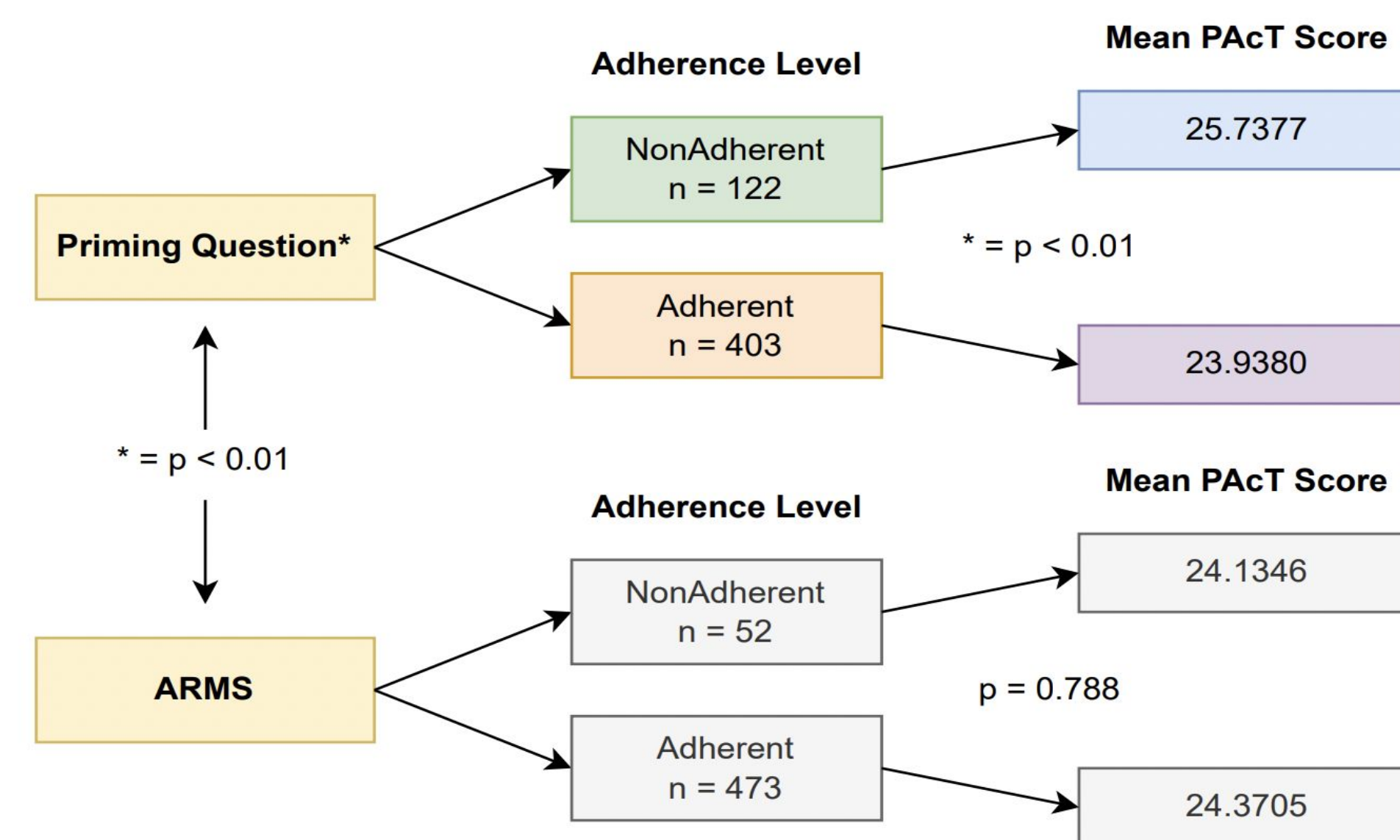
Validity of 16-item PACT: Relationship and Awareness loaded as hypothesized. Belief and Self-Efficacy merged into one component. Two items were removed due to poor loading and fit. Item-item correlations (0.370 to 0.676) were strong.

2. CAMRA Model



- Multicollinearity for ABC domains was moderate, ranging from 1.285 to 1.562.

3. Priming Question and ARMS vs. PACT



* ARMS score ranges from 12 to 48; 12 to 29 (adherent) and 30 to 48 (nonadherent)

* PACT score ranges from 16 to 64; 16 to 39 (high accountability) and 40 to 64 (low accountability)

- The priming question was significantly associated with PACT (eta=0.345).

Discussion

- This study compared the priming question with ARMS to determine which tool is better in measuring and distinguishing self-reported medication adherence in patients. Results showed that the priming question was able to significantly differentiate patient medication adherence levels into adherent and nonadherent groups, while ARMS yielded more adherent subjects.
- Patient's self-reported adherence typically skews towards adherence, making it difficult for self-reported adherence tools to give accurate results; previous studies using PDC as an adherence marker showed that the priming question was able to distinguish different adherence levels.^{2,4}
- This study further demonstrated that the priming question was better at separating between the adherence groups more than ARMS, which suggested that the priming question may be a promising standardized tool for measuring medication adherence.
- This study also analyzed the correlation of adherence measured by the priming question and ARMS to accountability determined by PACT. Results showed that the priming question was significantly correlated with PACT, while ARMS was not.
- PACT was shown to be a reliable and valid tool that demonstrated that Awareness, Belief, and Relationship explained Self-Efficacy, which in turn predicted Accountability.
- When patients have self-efficacy and thus accountability, they are more likely to be adherent to their medications. Therefore, it is important to ensure that patients believe in and are aware of their medications, have good relationships with their healthcare providers, and have the confidence to gain control of their own health.
- The correlation between Belief and Self-Efficacy needs to be re-examined to determine why the domains merged into one component.

Conclusion

- ➔ **The priming question was robust in separating patient self-perceived levels of adherence to non-adherent or adherent. ARMS was not significant in determining adherent individuals compared to the priming question, thus the tools cannot be used interchangeably.**
- ➔ **PACT demonstrated good reliability and validity; the CAMRA model explaining the correlation between Awareness, Belief, Relationship, and Self-Efficacy to Accountability developed by the WesternU team was shown to be consistent with previous studies.**
- ➔ **Only the priming question, compared to ARMS, was able to distinguish between high and low accountability individuals. Overall, the priming question was a valid tool in differentiating adherence as well as accountability.**

References

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