

The Process of Psychometric Validation of an Instrument across Language and Culture Halfway around the World

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PURPOSE



To present the results of comprehensive psychometric tests of the Chinese version of the decisional balance scale (CDBS) from 3 different studies.



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INTRODUCTION



-  **Smoking is a gate way to drug and alcohol use.**
-  **Empirical evidences from previous studies with adolescents suggest that the DBS has acceptable reliability and validity.**



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INTRODUCTION

-  **Reliability & Validity of an instrument are fundamental to research results.**
-  **Although an instrument might have established sound psychometric properties in the original version, it is necessary to evaluate the reliability and validity in the translated version.**





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INSTRUMENT

DECISIONAL BALANCE SCALE (DBS)

-  The DBS was originally developed by Velicer, DiClemente, Prochaska, and Brandenburg (1985) founded on Janis and Mann's theory.
-  When people weighed the benefits more than the costs for a particular behavior, they would be motivated to take up the new behavior.






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INSTRUMENT

DECISIONAL BALANCE SCALE (DBS)

-  The DBS is a 12-item instrument with a 5-point Likert type scale with 1 = *strongly disagree* to 5 = *strongly agree*. There are 2 subscales.
-  Pros of Smoking- benefits or advantages of smoking acquisition
-  Cons of Smoking- costs or disadvantages of smoking acquisition




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PRELIMINARY WORK

(RESEARCH IN NURSING & HEALTH; 2003)

 This preliminary work was intended to establish the equivalence of meaning and cultural congruence between the DBS and the CDBS.

 Translating and Back Translating

 Forming a Focus group

 Having a Panel of Experts & Lay People

 Pilot Testing of the CDBS

 Testing of the CDBS



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PRELIMINARY WORK

(RESEARCH IN NURSING & HEALTH; 2003)

Translation & Back Translation step

The form and meaning of the original instruments and the translated instruments were determined to be equivalent.

Focus Group Step (10 students)

 "smoking cigarettes makes you look like an adult" (+)

 "smoking makes you look cool" (+)

 "kids who smoke go out on more dates" (-)



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PRELIMINARY WORK

Panel of Experts & Lay Persons Step

Examine content validity: C.V.I. above 0.92

- "smoking cigarettes makes you feel good" (-)

Examine face validity- the clarity of each item

Pilot Testing of the CDBS

Internal consistency reliability (α)

- **Pros: 0.90 vs. Cons: 0.94**



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PRELIMINARY WORK

Testing of the CDBS

 **Sample- 401 students were randomly selected from 2 primary schools and 1 junior high school**

 **Internal consistency reliability (α)**

- **Pros- 0.90 ; Cons- 0.87**
- **Item analysis : $r > 0.72$**

 **Construct validity (PCA; 59.3%)**

- **Pros: 37.3%**
- **Cons: 22%**
- **Item loadings : > 0.60**



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PSYCHOMETRIC TESTING

(HEALTH EDUCATION & BEHAVIOR, 2006)

 Sample- Random cluster sampling was used with 554 students.

 Internal Consistency Reliability (α)

 Pros- 0.87 ; Cons- 0.91

 Item analysis : $r > 0.50$

 Construct Validity

 Exploratory Factor Analysis (PCA; 70.2%)

- Pros: 37%
- Cons:33.2%
- Item loadings : > 0.61




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PSYCHOMETRIC TESTING

Concurrent Validity

 Contrasted Group Approach (ANOVA & post hoc tests)

 Comparing mean scores of the Pros & Cons among 3 different smoking status (non-smoker, experimental smoker, and regular smoker)

 Significant differences were found for the 2 subscales, Pros & Cons ($p < .005$)








 CDBS-short, reliable, 2 components.



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FURTHER PSYCHOMETRIC TESTING (*NURSING RESEARCH, 2006*)

-  Sample- 979 5th to 9th graders.
-  Pilot test- 50 students aged 11 to 17
-  Test-retest- 30 students; 2wks
 -  Pros- 0.90 ; Cons- 0.87
-  Internal Consistency Reliability (α)
 -  Pros- 0.88 (.62 to .74)
 -  Cons- 0.85 (.48 to .73)



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FURTHER PSYCHOMETRIC TESTING

Construct Validity

Confirmatory Factor Analysis (Maximum likelihood estimation; MLE)

- GFI: .90
- NFI: .95
- NNFI : .95
- CFI : .96
- 2-factor Model was a good fit for the data

SEM confirmed the 2-factor model (Pros & Cons)

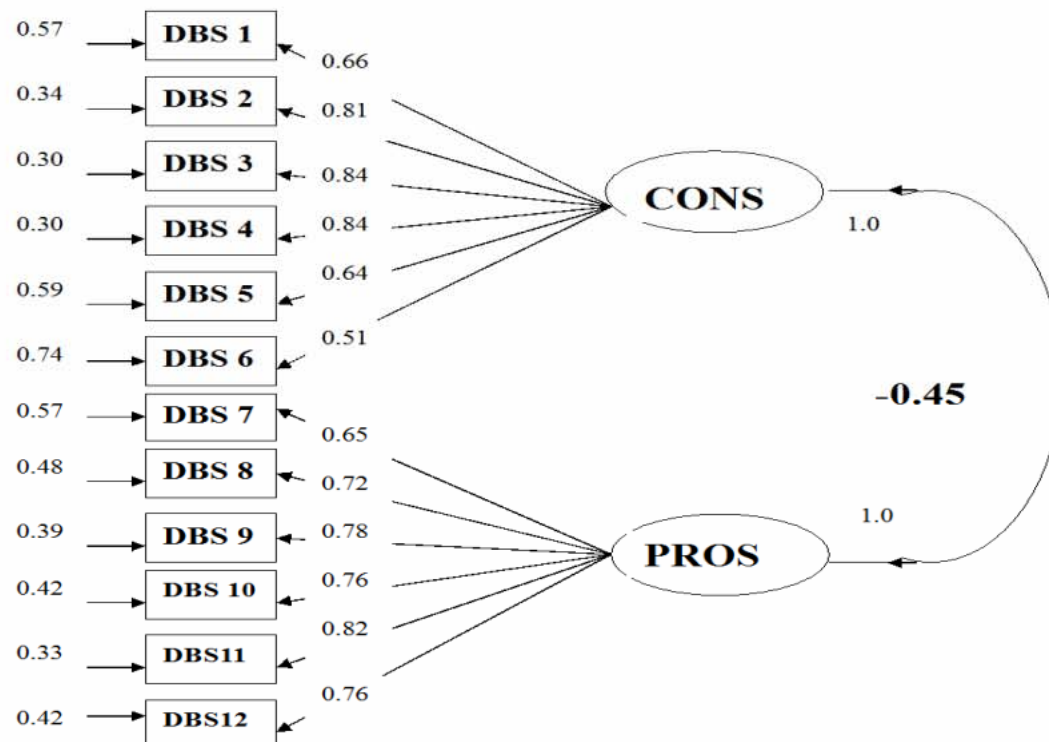


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Confirmatory Factor Analysis Model for the CDBS

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Confirmatory factor analysis model for the CDBS

DISCUSSIONS



-  **Caution must be used when generalizing the findings to young adolescents in other cities or countries.**
-  **Further validation of the CDBS scale with different populations and settings is suggested.**



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CONCLUSIONS

-  **The CDBS demonstrated satisfactory construct validity, stability, and internal consistency reliability in a population of Taiwanese adolescents.**
-  **It is suggested that the CDBS was applicable to and congruent with the culture of the Taiwanese adolescents in assessing smoking attitudes.**



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THANKS !!! QUESTIONS???

