

An investigation of the factor structure and psychometric properties of the Adverse Childhood Experiences scale in college students.

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Research Questions

What is the most reliable and valid factor structure of the Adverse Childhood Experiences Scale in a college student population?

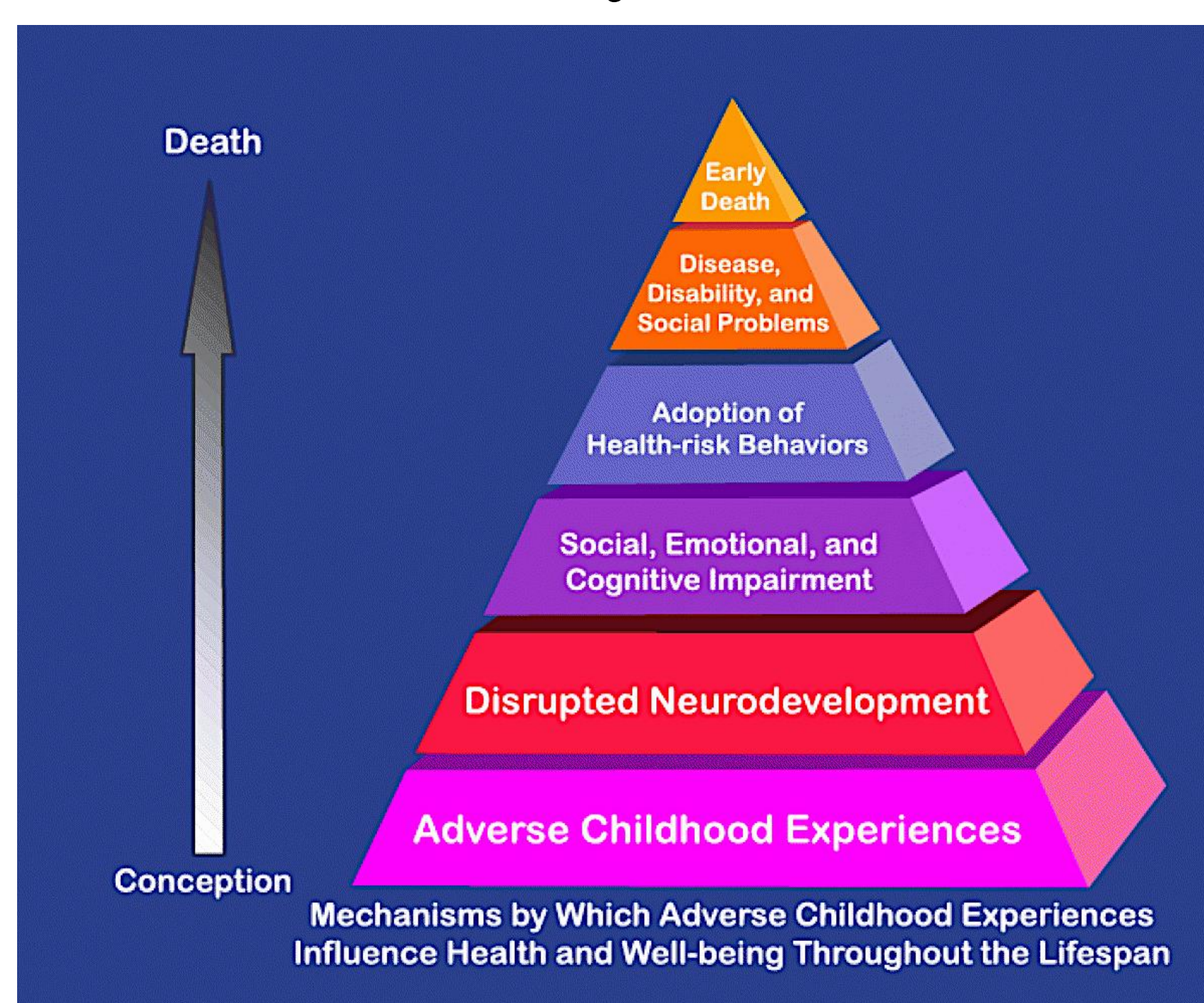
Through confirmatory factor analysis of three separate models discussed previously in research, which version has the best psychometric properties and model fit indices?

Introduction

Felitti and colleagues (1998) created the ACEs questionnaire, a 10-item survey, to explore the connection between negative childhood experiences and the risk of chronic physical and emotional health issues later in life. Survey questions were originally categorized by two constructs: abuse/neglect and household dysfunction. Abuse/neglect was further separated into psychological, physical, and sexual categories. Household dysfunction included substance abuse, mental illness, mother treated violently, and criminal behavior in the household.

Research findings have indicated individuals who identified exposure in one category were also exposed to another. Although the instrument was conceptualized with the two constructs of abuse/neglect and household dysfunction, the scale has been utilized by calculating a total score. In particular, a total score of four or more has demonstrated clinical significance between physical health and mental wellbeing. Additional exploration regarding the validation of an ACEs measurement is lacking. Although the total score of the 10 items is widely used in clinical and research settings to screen for ACEs, the psychometric properties of the survey have not been explored.

ACE Pyramid



Methods

Confirmatory factor analysis to evaluate the factor structure of the ACEs inventory.

ACEs questionnaire (Felitti et al., 1998)

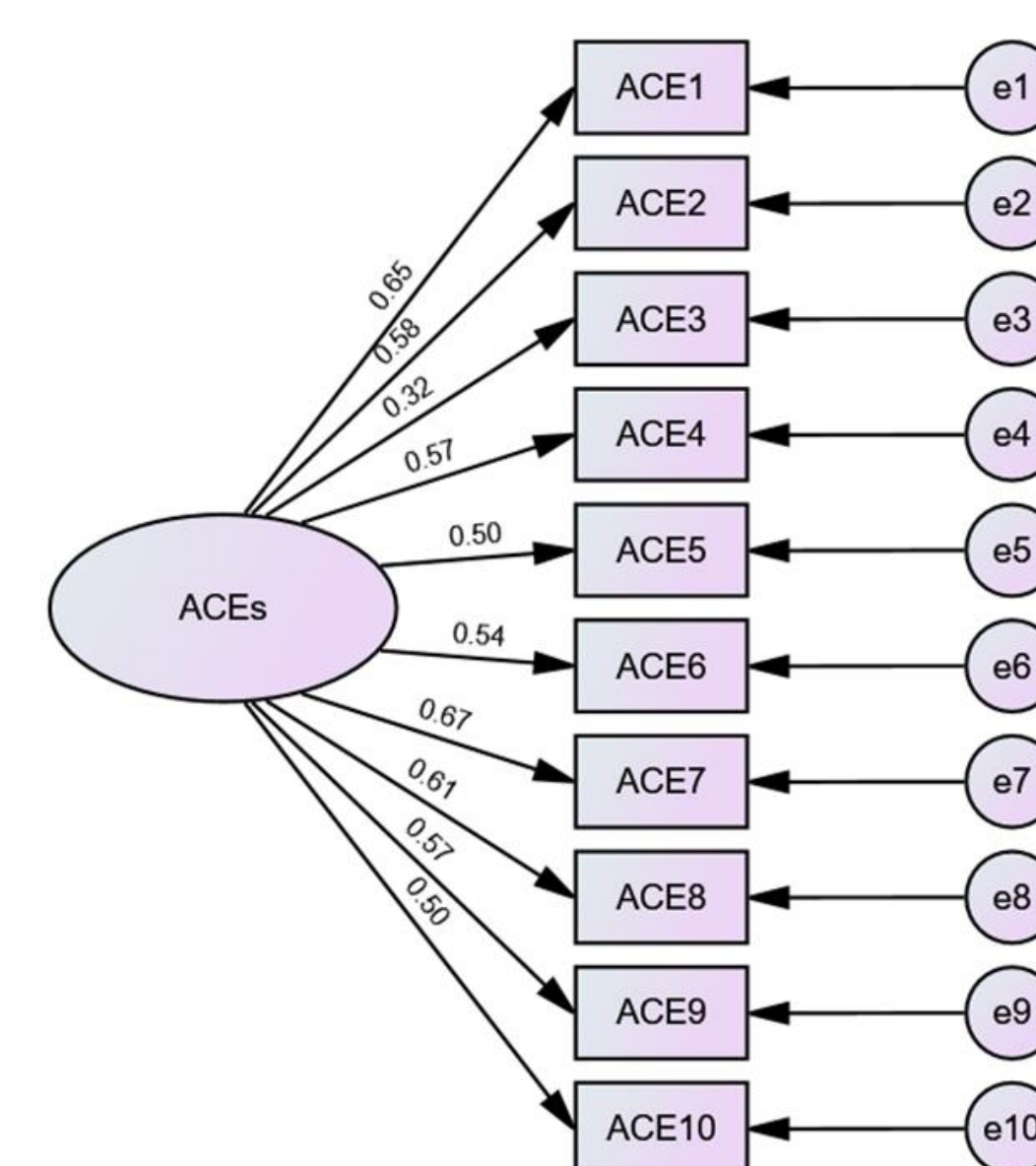
1. Did you feel that you didn't have enough to eat, had to wear dirty clothes, or had no one to protect or take care of you?
2. Did you lose a parent through divorce, abandonment, death, or other reason?
3. Did you live with anyone who was depressed, mentally ill, or attempted suicide?
4. Did you live with anyone who had a problem with drinking or using drugs, including prescription drugs?
5. Did your parents or adults in your home ever hit, punch, beat, or threaten to harm each other?
6. Did you live with anyone who went to jail or prison?
7. Did a parent or adult in your home ever swear at you, insult you, or put you down?
8. Did a parent or adult in your home ever hit, beat, kick, or physically hurt you in any way?
9. Did you feel that no one in your family loved you or thought you were special?
10. Did you experience unwanted sexual contact (such as fondling or oral/anal/vaginal intercourse/penetration)?

Participants

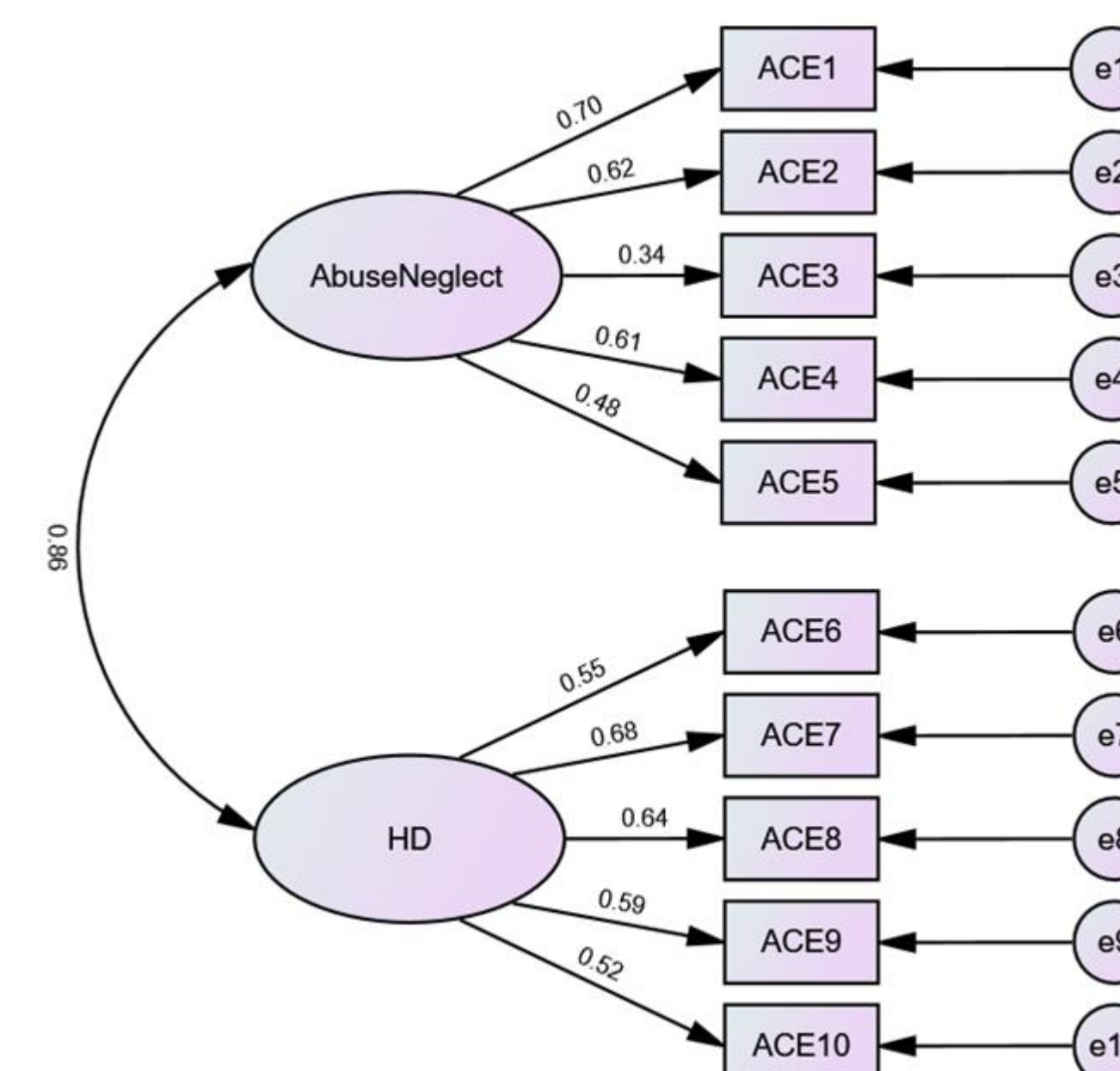
Age	Race/ethnicity
Age Range: 18 – 57 years old 97.2% between 18-23 years old Mean Age – 19.4	12 American Indian or Alaska Native (3.4%)
Gender	21 Asian (5.9%)
126 Male (35.4%)	22 Black or African American (6.2%)
225 Female (63.2%)	10 Hispanic (2.8%)
1 Transgender (.8%)	2 Middle Eastern (.6%)
3 Not sure (.6%)	314 White or Caucasian (88.2%)
	4 Other (1.2%)

CFA Results

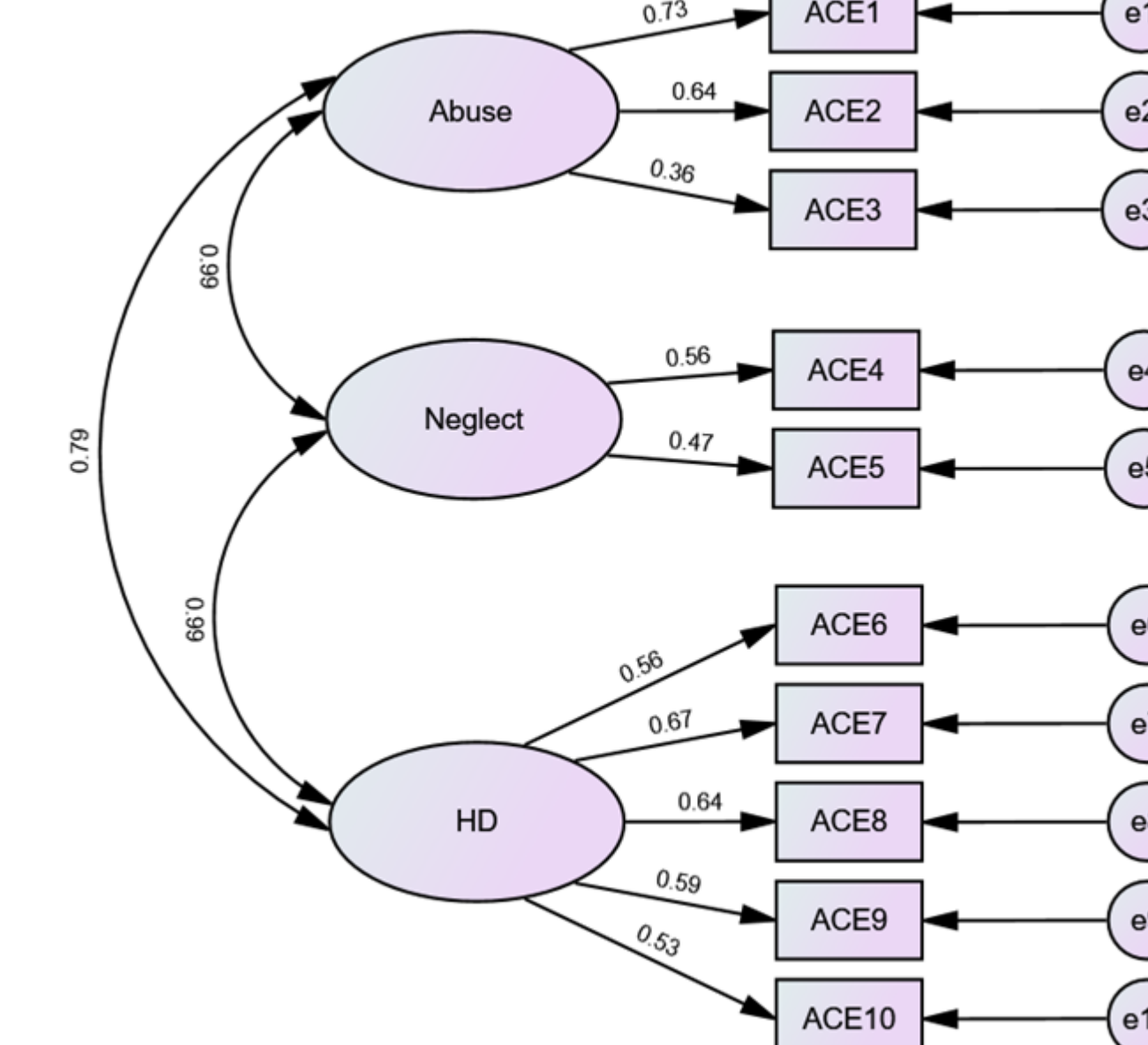
1-Factor Model



2-Factor Model



3-Factor Model



Model	Chi Squared	df	GFI	AGFI	RMSR/RMR	RMSEA	NFI	CFI	TLI	PCFI	PNFI
1-Factor	.000	2.953	.943	.910	.007	.074	.877	.914	.889	.711	.682
2-Factor	.000	2.564	.952	.923	.006	.066	.896	.933	.912	.705	.677
3-Factor	.000	2.521	-	-	-	.065	.904	.939	.914	.668	.643

*Note. Structural equation modeling was used for analysis. χ^2 = Chi-square ($p \geq .05$); GFI=Goodness-of-fit index (≤ 3); AGFI= Adjusted Goodness-of-fit Index (≥ 0.80); RMSM/RMR=Root Mean Square Residual ($< .1$); RMSEA=Root Mean Square Error of Approximation ($\leq .08$); NFI=Normed Fit Index (≥ 0.90); CFI=Comparative Fit Index (≥ 0.90); TLI=Tucker Lewis Index (≥ 0.90); PCFI=Parsimony Comparative of Fit Index (≥ 0.50); PNFI=Parsimony Normed of Fit Index (≥ 0.50)

Discussion

The 3-factor model demonstrated the best fit overall when comparing model fit indices, frequencies of responses for support of subscales, and factor loadings. Although the 1- and 2-factor models demonstrated some strengths, the 3-factor model was the only model in which each benchmark demonstrated statistical significance. The creation of a 3-factor ACE survey that provides sub scores and subscales for each factor could assist appropriate assessment for ACEs based on awareness of the three factors: Abuse, Neglect, and Household Dysfunction. Furthermore, establishing an appropriate cut-off score could assist health practitioners in interpreting potential health risks.

Conclusions & Recommendations

1. Test/retest the 3-factor model with diverse populations to establish reliability.
2. Establish cut-off scores for each factor to guide treatment planning and referral options.

Acknowledgments

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Selected References

- Felitti, V. J., Anda, R. F., Nordenberg, D., Williamson, D. F., Spitz, A. M., Edwards, V., Koss, M. P., & Marks, J. S. (1998). Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults. *American Journal of Preventive Medicine, 14*(4), 245–258. [https://doi.org/10.1016/s0749-3797\(98\)00017-8](https://doi.org/10.1016/s0749-3797(98)00017-8)
- Furr, R. M. (2011). Scale construction and psychometrics for social and personality psychology. SAGE.
- Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). *Multivariate Data Analysis*. Englewood Cliffs, NJ: Prentice Hall.
- Jackson, D. L., Gillasp, J. A., & Pure-Stephenson, R. (2009). Reporting practices in confirmatory factor analysis: An overview and some recommendations. *Psychological Methods, 14*(1), 6–23. <https://doi.org/10.1037/a0014694>