Reviewer's report

Title: Development and psychometric testing of a theory-based tool to measure self-care in diabetes patients: the Self-Care of Diabetes Inventory

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Reviewer: Kenneth A. Wallston

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In this manuscript, the authors describe the development and initial psychometric evaluation of a new Self-Care of Diabetes Inventory (the SCODI). As a behavioral diabetes researcher myself, I can attest for the need for a better measure of diabetes self-care activities than is presently available in the literature. The SCODI is an improvement, although its length may be a detriment to it being widely adopted, and the fact that to date it has only been used with an Italian sample may also be a hindrance until it is translated into English and tested with a different sample.

Older (existing) tools (such as the SDSCA and SCI-R) are critiqued by these authors because they were developed prior to 2005 and "have not been updated with recent clinical information," but not much of this new tool (SCODI) is really reflective of "recent clinical information."

Is it a strength or a weakness of this initial psychometric study that a quarter of the sample have T1DM? That's a higher percentage of people with T1DM than one usually finds, but is an n = 50 sufficiently large enough to state that the scales "work" for people with T1DM?

Is there such a thing as "exploratative" factor analysis? [Shouldn't that be "exploratory"?]

I believe strongly in making scales of this type part of the "public domain" and freely available to other researchers without having to explicitly seek the author's approval. The SCODI appears to be copyrighted. Why?

The content validity process and results were a strength of this work.

It was noted that SCODI was intended to measure 4 separate scales--not an overall measure of self-care—but couldn't there be value in combining the three behavioral scales (i.e., self-care maintenance; self-care monitoring; and self-care management)? [Note: it is smart to keep self-care confidence as a separate, but related, measure.]
What precautions were taken to make sure that the nurse research assistants were consistent in abstracting the clinical data from patients' medical records, especially since the patients were in two different clinics?

The Exploratory Structural Equation Modeling (ESEM) approach, although novel (and therefore probably not known to most readers), appears to have been a good approach to use (as opposed to going with either EFA or CFA).

Is there a problem (on p. 8, line 51) with the sentence: "RMSEA with 90% confidence intervals (< .05 to < .08) indicates good fit."??

Why was there only one covariate (diabetes type) included in the regression models used to test the first hypothesis (examining the relationship of self-care confidence to the other 3 scales)? Why not also adjust for age, gender, education, family income, marital status, caregiver support, and time from the diagnosis of diabetes when examining this first hypothesis?

For the Self-care Maintenance Scale (see Table 3), there is some question as to why certain items were counted on certain factors. For instance, item 12 ("Do you take all your medications as your healthcare provider prescribed…?") loads higher on Factor 1 (-0.44) than it does on Factor 3 (0.37), but is apparently included in Factor 3 rather than Factor 1 in order to allow them to call Factor 1 "health promoting exercise behaviors" and Factor 3 "health promoting behaviors." There is no discussion, however, why that particular item loaded the way it did on Factor 1.

Using Raykov's global reliability index for multidimensional scales (ref. #36) as the way of assessing the "internal coherence" of these multidimensional scales appears to be a much better choice than using Cronbach's alpha (especially when the subfactors have only a few items and the subfactors are only modestly intercorrelated). It was also smart not to go with subfactors that only contained a single item, although, apparently the authors don't really recommend scoring the subfactors for each of these scales.

My biggest problem with these new scales is with the skimpy findings for the relationship of the three behavioral scales (i.e., not the self-care confidence scale) and the clinical indicators. I would have thought that they would have found more significant relationships than they found to bolster their argument for the construct validity of these new scales. For example, only self-care maintenance was related to lower HbA1c, and even that one relationship wasn't all that strong. Did they even examine to see if there is a relationship between the self-care confidence scale and the clinical indicators?
The section labeled "Scoring" that appears at the end of the Results section is out of place. The beginning sentence belongs in the Methods section, and the rest of this paragraph belongs in the Discussion.

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If not, please specify what is required in your comments to the authors.

Yes

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