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Reviving the critical distinction between perceived capability and motivation: A response to commentaries

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The distinction between confounding and association

Schwarzer and McAuley (2016) equate confounding with association:

Many constructs are conceptually, as well as empirically, confounded without this causing much harm. When variables are correlated with each other, they share variance. If constructs were orthogonal, they would be less useful. . . Confounding is the rule, not the exception. This is because human nature is not compartmentalized into orthogonal constructs but everything is related to everything. . . It is no surprise that [self-efficacy] is associated (“confounded”) with prior behavior and motivation.

We disagree with this characterization of measurement confounding as equivalent to associations between constructs. Instead we distinguish between an assessment of construct A that is partly measuring construct B and an association between scores on valid measures of constructs A and B. Brewer (2016) points out several examples of such measurement confounds in health psychology (see his Table 1) as well as in cancer biology research.

Such confounding is the problem with common measures of self-efficacy—these measures do not just assess self-efficacy, they also assess motivation. If measures of self-efficacy are confounded by motivation, then we cannot use those measures to learn anything about self-efficacy, because we will never know whether (or to what extent) the associations we find are actually a function of self-efficacy or, alternatively, the motivational confound. Both Brewer and Beauchamp (2016) share our concerns about self-efficacy’s measurement confound and offer additional suggestions for addressing the problem.

So how do we know whether a measure is confounded? In Brewer’s example of cancer biology it is possible to do a more fine-grained audit of the sampled tissue to ensure that it was not contaminated by extraneous cancer cells that were not intended to be included in the assessment. We acknowledge that such auditing is harder to do with psychological

constructs, particularly for construct pairs like self-efficacy and motivation that are theorized to be interrelated. In these situations we need to work a bit harder.

One approach is to experimentally manipulate constructs that should not, according to the relevant theory, have any impact on the measured construct, and see whether such manipulations in fact alter responses to the measured construct. For self-efficacy measures, this can be accomplished by manipulating outcome expectancies to see whether these manipulations change self-efficacy ratings. If they do, then the measures of self-efficacy lack divergent validity—that is, they are confounded by outcome expectancies or variables for which outcome expectancies are theorized to be a causal antecedent (i.e., motivation). Another method is to hold constant the suspected confounding variable and see whether this results in changes in responses to the measure. For self-efficacy measures this can be accomplished by adding the phrase “if I really wanted to” to the end of the assessment, as this phrase should (at least partially) control for the suspected motivational confound. If responses to the self-efficacy measure change as a function of the additional phrase, or, if cross-loadings between the modified self-efficacy measure and a measure of motivation decrease, then the original self-efficacy measure is confounded by motivation. A third method is to ask people what factors influenced their response to the measure to see whether the sources of their responses are consistent with the theoretical sources of the construct. For self-efficacy measures, if people report that their rating on the measure was a function of motivation, then the measure is confounded by motivation, since motivation is not a theorized source of self-efficacy. The three above methods were reviewed in our original article (Williams & Rhodes, 2016) and findings suggest that standard measures of self-efficacy are indeed confounded by motivation.

In closing this section we acknowledge our agreement with Schwarzer and McAuley that many psychological constructs, including self-efficacy and motivation, are interrelated in many real world conditions. But, we also agree with their contention that: “In general, scientific progress is usually accompanied by concept differentiation. Using more fine-grained constructs is a means to identify active ingredients in complex situations, even if these constructs are highly correlated.” Yes! Instead of simply giving up and declaring that it is impossible to distinguish between self-efficacy and motivation because everything is interrelated, an attempt must be made to measure these constructs in a way that clearly differentiates them.

The need for valid measures of psychological constructs prior to testing their predictive or explanatory power

All commentators seem to agree (though with varying explicitness) that valid measurement of psychological constructs is critically important for a legitimate science of health psychology. deVries (2016) calls for more empirical evidence on the predictive capabilities of self-efficacy and on where self-efficacy falls in the causal chain with outcome expectancy and motivation. These are important questions. But they cannot be answered until there is a measure of self-efficacy that is uncontaminated by the constructs that one is seeking to find associations with—i.e., outcome expectancy and motivation. If it is unclear what is being

measured, then little can be achieved from assessing a measure's association with other variables. No amount of research showing how well the potentially confounded measure of self-efficacy is associated with other constructs or outcomes can validate the measure.

de Vries also argues that there may be valid alternative ways of assessing self-efficacy. We agree. But, this cannot simply be a matter of creating questionnaires that are more predictive of behavior and declaring such measures to be superior measures of self-efficacy. Or, worse yet, changing the definition of self-efficacy to better fit with the measures that are most predictive (see next section). Assessments of self-efficacy must remain true to the definition of the construct.

The field of health psychology is now in a situation where alleged measures of self-efficacy are highly predictive of behavior despite being inconsistent with the original definition of the construct. In our review (Williams & Rhodes, 2016) we attempt to salvage some meaning from this mountain of research by determining what construct(s) have actually been assessed with these purported self-efficacy measures. Specifically, we suggest the notion of "can-do motivation" as a more appropriate way to conceptualize the construct that underlies such confounded self-efficacy measures.

This interpretation was based, in part, on findings suggesting that outcome expectancies may causally precede self-efficacy, *as it is currently measured*. We used these findings to illustrate that standard self-efficacy measures are confounded by motivation. However, we are not suggesting that outcome expectancies should be posited as a causal source of perceptions of capability. Moreover, we agree with Beauchamp that, moving forward, it is best to conceptually disentangle perceived capability from motivation.

The importance of clear language when defining psychological constructs

Our concern that the assessment of self-efficacy is confounded by motivation would be misguided if the conceptualization of the self-efficacy construct was broad enough to include motivation. In this case, though, the problem becomes a self-efficacy *construct* that is so broad that the meaning becomes unclear. This is illustrated in the conceptualizations of self-efficacy offered in the commentaries by Schwarzer and McAuley (2016) and de Vries (2016), which, it should be noted, differ from each other except that they are broad, somewhat vague, and in some instances, incorporate motivation.

Self-efficacy is distinct from motivation, at least the way it was originally defined as: "the conviction that one can successfully execute the behavior required to produce the outcomes" (Bandura, 1977, p. 193). Motivation, in contrast, is one's wanting or desire to engage in a behavior based, in part, on the expected outcomes (Baumeister, 2016). Thus, self-efficacy (as originally defined) and motivation are conceptually orthogonal (no necessary association between them), though in many situations they may be empirically related. That is, one can logically be motivated to do something for which one perceives oneself to be incapable and vice versa, though in many situations motivation and perceived capability will be positively associated.

It was Bandura's insight that perceived capability is conceptually distinct from motivation that made the introduction of self-efficacy such a seminal contribution to psychological theory. Unfortunately, since (and perhaps because of) the controversy regarding the confounded assessment of self-efficacy—a controversy that, as noted by Brewer, began in 1978 and that we are resurrecting because it was never resolved—the science regarding motivation and perceived capability has gone backwards. Instead of working harder to distinguish between these two constructs that are clearly different, the evolving definitions of self-efficacy have moved us toward recombining them into one construct.

We do not take it upon ourselves to change this evolved definition of self-efficacy. Instead, our target article offers a 'perceived capability' construct that is aligned with the original definition of self-efficacy and can be used by researchers who have an interest in separating perceived capability from motivation. Clarity in the definitions of these important constructs should help guide understanding of health behavior, particularly in cases where motivation and perceived capability have very different relative contributions.

Acknowledgments

We thank the commentators for their insightful, sometimes critical, but always respectful comments on our article (Williams & Rhodes, 2016). We focus here on three themes that will hopefully clarify many of the issues raised.

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