

EDITORIAL COMMENT

Questions Raised by a Reasoned Action Approach: Comment on Ogden (2003)

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In her critique of social cognition or reasoned action models, J. Ogden (2003) claimed that such models are not falsifiable and thus cannot be tested, that the postulated relations among model components are true by definition, and that questionnaires used to test the models may create rather than assess cognitions and thus influence later behavior. The authors of this comment challenge all 3 arguments and contend that the findings Ogden regarded as requiring rejection of the models are, in fact, consistent with them, that there is good evidence for the validity of measures used to assess the models' major constructs, and that the effect of completing a questionnaire on cognitions and subsequent behavior is an empirical question.

Key words: reasoned action, social cognitions, problems, critique, reply

Ogden's (2003) critique raises serious concerns about the use of social cognition models in health psychology. The critique is based on 47 empirical articles published in four premier health psychology journals. It is not clear why Ogden limited her review to a 5-year period (1997–2001) when more extensive meta-analyses are available (Albarracín, Johnson, Fishbein, & Muellerleile, 2001; Armitage & Conner, 2001; Hagger, Chatzisarantis, & Biddle, 2002; Hausenblas, Carron, & Mack, 1997; Sheeran, Abraham, & Orbell, 1999; Sutton, 1998) or why the review dealt only with four theoretical models: health belief model (Becker, 1974), protection motivation theory (Rogers, 1975), theory of reasoned action (TRA; Ajzen & Fishbein, 1980), and theory of planned behavior (TPB; Ajzen, 1991). Especially conspicuous by their absence are studies relying on Bandura's (1977) social-cognitive theory and Prochaska and DiClemente's (1992) transtheoretical stages of change model. However, if the literature reviewed by Ogden is far from representative, her critiques are not uncommon. Because other investigators have at times expressed similar concerns, it is important that the misconceptions evident in Ogden's article not go unchallenged. We hope that this article will help to dispel a few common misunderstandings and reassure investigators who are interested in applying reasoned action models (see Ajzen & Fishbein, in press) in the health domain. Because more than 70% of the articles reviewed by Ogden relied on either the theory of reasoned action or the theory of planned behavior, and because we are most familiar with these theories, they are the focus of our article.

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Can the Theory Be Tested?

Although acknowledging that the models under consideration have been of pragmatic value, encouraging exploration of health-related behavior and helping in the design of interventions, Ogden identifies what she considers to be three major conceptual flaws. First, the theories, in her view, cannot be disconfirmed. Because several of the studies reviewed failed to reject the theory being tested in spite of certain negative findings, Ogden concludes that the theory's constructs are too general to permit precise tests; therefore, she argues that the theory cannot be disproved. The negative results that, in her view, should lead to rejection of the theory are of two types: findings to the effect that one or another of the theory's antecedent variables fails to predict the outcome measure and findings that the theories' predictors do not explain all (or most) of the variance in intention or behavior.

Consider first the finding that one or more of the model's predictors do not carry significant weights in the prediction of intention or behavior. In the case of TPB, this might occur, for example, when intentions are predicted with significant weights from attitudes and perceived behavioral control but the regression coefficient for subjective norms is nonsignificant. To be sure, there is nothing in the theory itself to tell in advance, for any given context, which of the predictors will account for significant variance in intentions or behavior. Such expectations must be derived from extratheoretical considerations (e.g., see Ajzen & Fishbein, 1970; Ybarra & Trafimow, 1998). However, in our publications, we have noted repeatedly that the relative importance of attitudes, subjective norms, and perceptions of behavioral control for the prediction of intentions is expected to vary from behavior to behavior and population to population (Ajzen, 1988, 1991; Ajzen & Fishbein, 1980; Fishbein, 2000; Fishbein, Triandis, et al., 2001). The three theoretical antecedents should be sufficient to predict intentions, but only one or two may be necessary in any given

application. On a Web site of resources concerning the theory of planned behavior, this issue is addressed as follows:

There is nothing in the theory to suggest that attitude, subjective norm, and perceived behavioral control will each make a significant contribution to the prediction of intention. The relative importance of these three factors is likely to vary from one behavior to another and from one population to another. In some cases, one or another of the three factors will be found to have no significant effect on intention. Assuming that the factors were measured with equal reliability, lack of predictive validity merely indicates that for this particular behavior and population, the factor in question is not an important consideration in the formation of intention. (Ajzen, 2002)

A similar argument is made for the prediction of behavior from intention and perception of behavioral control. Clearly, the empirical evidence cited by Ogden is consistent with these expectations and should not lead to rejection of the theory.

There is also no justification for Ogden's conclusion that no data can be collected to show that a reasoned action model is wrong. If all three factors (i.e., attitude, subjective norm, and perceived behavioral control) failed to predict intention, the TPB would be disconfirmed. Similarly, we would have to question the model if perceived behavioral control and intention jointly failed to predict behavior. However, perhaps the strongest support for the validity of the TRA and TPB comes from evidence for the effectiveness of theory-based behavior change interventions (e.g., Bamberg, Ajzen, & Schmidt, 2003; Brubaker & Fowler, 1990; Fishbein, Ajzen, & McArdle, 1980; Fishbein, Hennessy, et al., 2001; see Hardeman et al., 2002, for a review). In most interventions of this kind, information relevant to one or more of the theory's predictors is provided, and its effect on behavior is traced through the theoretical antecedents. The theory would have been falsified if these interventions had influenced the targeted predictors but had failed to have a significant effect on intentions or behavior.

This leads us to Ogden's second argument: that the models should be rejected because they leave too much of the variance in intentions and behavior unaccounted for. It is not made clear how much variance a model has to explain for it to be judged acceptable. Although it is true that in some studies only a relatively small portion of the variance is explained by the theory's predictors, overall the reasoned action approach has actually fared quite well. For example, in a meta-analysis based on 185 independent studies (Armitage & Conner, 2001), the TPB was found to account, on average, for 39% of the variance in intentions and for 27% of the variance in behavior, and in many studies the obtained values were much higher. Of course, this still leaves considerable variance to be explained. Some of the unexplained variance may be due to random measurement error. This suggestion is supported by structural equation modeling with the TPB, which usually results in a high proportion of explained variance once measurement unreliability is taken into account as well as a good fit between model and data (e.g., Bamberg & Schmidt, 1994; Blue, Wilbur, & Marston-Scott, 2001; Davis, Ajzen, Saunders, & Williams, 2002; Levin, 1999). In some studies, low predictive validity is due to a lack of variance in the behavioral criterion or inappropriate operationalization of the predictor or criterion measures. Even with these limitations, meta-analyses show that the reasoned action approach has done exceptionally well, particularly when one considers that, before the introduction of these models, most studies

accounted for, at most, 10% of the variance in behavior (see Wicker, 1969). Of course, as some investigators have suggested (see Conner & Armitage, 1998), it may be possible to further improve prediction by designing better measures or adding more predictors to the model. However, although available reasoned action models may be incomplete, the favorable results obtained thus far with models of this kind surely do not call for their rejection.

Is the Theory True by Definition?

In addition to the claim that the reasoned action models should be rejected because results often fail to bear out predictions, Ogden argued that operationalizations of the cognitive variables in these models, such as perceived behavioral control and intention, are so similar as to virtually ensure a strong correlation among them. It is interesting to note that this claim is inconsistent with her previous argument that empirical results often fail to confirm hypothesized relations among model components. More importantly, operationalizations of these components have been validated in some of the structural equation analyses mentioned previously as well as in other investigations that have tested for convergent and discriminant validity among the different measures (e.g., Bamberg et al., 2003; Davis et al., 2002). Finally, the fact that attitude, perceived behavioral control, or subjective norm sometimes fails to carry a significant weight in the prediction of intentions, and that the observed patterns of weights are intuitively reasonable (e.g., Ajzen & Fishbein, 1970; Finlay, Trafimow, & Jones, 1997; Trafimow & Finlay, 1996), also demonstrates that predictor and criterion measures are not redundant but instead are valid indicators of the constructs in question.

Ogden is also concerned that in many of the studies she reviewed self-reports rather than objective measures of behavior were obtained. Self-reports of behavior, she argues, can be contaminated by self-reported cognitions, and the correlation between such cognitions as intentions or perception of control and self-reported behavior can, therefore, not be trusted. Is it not time to stop questioning the validity of all self-reports of behavior? It is virtually impossible to obtain objective measures of some health-related behaviors (e.g., condom use), and for many others (e.g., exercise, physical check-up) objective measures are expensive and time consuming. It is for these reasons that self-reports are usually preferred. However, whether self-reports of behavior are contaminated by self-reports of cognitions or biased in other ways is an empirical question that cannot be asserted by fiat. In some behavioral domains, such as condom use (Jaccard, McDonald, Wan, Dittus, & Quinlan, 2002) or environmental actions (Kaiser, Frick, & Stoll-Kleemann, 2001), self-reports are found to be quite accurate, whereas in other domains, such as medication adherence (Wagner & Rabkin, 2000) and drug use among drunk-driving offenders (Lapham, C'de Baca, Chang, Hunt, & Berger, 2002), they are not. Yet, even in the latter cases, it is not at all clear that, as Ogden asserts, behavioral self-reports are contaminated by self-reports of cognitions. Often, the bias is due to a tendency for some respondents to overstate performance of socially desirable behaviors. Biases of this kind can inflate observed correlations between cognitions and behavior (see Armitage & Conner, 2001); however, they do not invalidate the theoretical model. In fact, even when the behavior is observed rather than reported, prediction of

behavior is highly significant and the model accounts for considerable variance (R^2 s = .21 and .31, respectively, in Armitage and Conner's meta-analysis).

Do Questionnaires Assess or Create Cognitions?

A final problem identified by Ogden (2003) is the possibility that responses to questionnaire items, rather than measuring existing cognitions, may actually create new cognitions or change existing cognitions. Furthermore, such changes in cognitions could influence subsequent behavior. This concern is common to all questionnaire studies and surveys. It is always possible that our instrument affects the phenomenon we are trying to study. Ogden speculates that this may have occurred in some of the studies she reviewed, and she cites two investigations (Masalu & Astrom, 2001; Morrison, Baker, & Gillmore, 1998) as possible cases in point. However, whether completing a questionnaire did or did not influence cognitions and behavior in a given investigation is, again, an empirical question. In one study (Ajzen, Brown, & Carvajal, in press), a theory of planned behavior questionnaire either preceded observation of behavior or followed it. There was no evidence whatsoever that responding to the questionnaire affected later behavior or that performance of the behavior changed later cognitions. It is only through tests of this kind that we can determine the influence of responding to a questionnaire. To further support her contention that responding to a questionnaire can influence behavior, Ogden cites research on implementation intentions (Gollwitzer, 1999), which are known to increase the likelihood that a goal intention will be carried out. However, contrary to Ogden's contention, existing evidence suggests that implementation intentions have no appreciable effects on cognitions or at least not on the cognitive constructs contained in the theories of reasoned action or planned behavior (Orbell & Sheeran, 2000; Sheeran & Orbell, 2000). According to Gollwitzer (1999), implementation intentions exert their effect by transferring control over initiation of a behavior to stimulus cues, not by changing behavior-relevant cognitions.

More important, it should be recalled that readily accessible behavioral, normative, and control beliefs that serve to explain behavior in research with the TRA and TPB are supposed to be elicited in a free-response format (see Ajzen, 2001; Ajzen & Fishbein, 1980). Clearly, if this procedure is followed, it minimizes the possibility that the assessment itself will create or change the cognitions of interest.

Conclusion

In conclusion, we must reject each of Ogden's (2003) assertions. Models of reasoned action can be tested, and the measures used to test them are not redundant but possess discriminant validity. Whether, in a given study, questionnaire completion has biased self-reports of behavior, has changed cognitions, or has influenced later behavior are empirical questions that cannot be answered by speculation.

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