

## **A Reasoned Action Explanation for Survey Nonresponse<sup>1</sup>**

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Survey nonresponse is a threat to the inferential value of the survey method. To adequately fight the nonresponse problem extensive knowledge about respondents and nonrespondents is necessary. In this article we describe Cialdini's method to collect information of both respondents and nonrespondents. We show that this method can be successfully used in the Netherlands and that Cialdini's results have cross-cultural validity. The decision to respond or refuse to a request for survey participation can be adequately described by the theory of reasoned action, but its predictive value is small.

**Key Words:** theory of reasoned action, nonresponse, response, survey, experiment, Cialdini, cross-cultural replication.

### **1. Introduction**

In fighting nonresponse, two strategies can be adopted. The first is to increase participation through improved fieldwork methods. The second is to use postsurvey adjustment to compensate for nonresponse. These strategies are not mutually exclusive and both can be applied in one survey. To use coping strategies for nonresponse effectively, we must know more about differences between nonrespondents and respondents, especially in their attitudes and beliefs about survey participation. Experimental studies in the U.S. by Cialdini, Braver & Wolf (1991, 1993) and Cialdini, Braver, Wolf & Pitts (1992) showed that attitude toward surveys, perceived survey participation of friends, and value of privacy are consistently important factors in survey participation. A correlational study by Mathiowetz (1992) on U.S. Census data replicated these findings.

One general model to predict behavior is the theory of reasoned action (Ajzen & Fishbein,

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1980). The theory of reasoned action hypothesizes that the *intention* to perform a specific behavior is the only direct predictor of that behavior. This behavioral intention is an accurate predictor of behavior only if three conditions hold: (1) the intention and behavior measures correspond closely, (2) the intention does not change in the interval between measurement of intention and the occurrence of the behavior, and (3) the behavior is under the individual's personal control.

The intention to perform a specific behavior is in turn determined by the individual's attitude toward that behavior and the subjective norm. The attitude is formed by relevant beliefs about the consequences of the behavior, and the subjective norm is formed by the subjective perception of what relevant others think the individual should do.

The purpose of this study is (a) to investigate whether the Cialdini findings replicate cross-culturally, (b) to offer an integration of the findings using the theory of reasoned action, and (c) to test whether our data fit a model of survey participation that is derived from the theory of reasoned action.

In the method section we first describe the paradigm for nonresponse research as developed by Cialdini, next we describe the actual data collection in the Netherlands. We follow this up by a short description of the measures used to operationalize the constructs in our application of the theory of reasoned action, and by a description of the analysis method used. In the result section we present an extended model that adds survey specific factors to the general theory of reasoned action model. We end with a discussion of the findings.

## **2. Method**

### **Research paradigm**

To understand the causes of nonresponse we need information on both responders and nonresponders, especially concerning their attitudes and beliefs about survey participation. However, acquiring information on these factors poses a fundamental problem: nonresponders are people who do not want to provide information to researchers or are not available to provide information. Attempts to collect data from survey nonresponders is costly and often unsuccessful; the data collected from the small group of converted nonrespondents may not be representative for the whole total group of nonrespondents, and the reasons given for not responding are retrospective and may be inaccurate through faulty memories or socially desirable answers (Cialdini, et al., 1991).

To overcome this problem and probe attitudes and beliefs of both survey responders and survey nonresponders Cialdini developed a new experimental paradigm. This approach has three steps: (1) collect data from a 'captive audience' (i.e., a sample that will give 100% response) on attitudes, beliefs, and personality characteristics, which might be related to survey participation; (2) implement a survey with this captive audience as sample, and register who is a respondent and who a nonrespondent; (3) try to model the response behavior on the survey in step two using as explanatory variables the data (available for both respondents and nonrespondents) from step one.

Cialdini's captive audience were American students in introductory psychology, who were required to fill in the response questionnaire as part of their first year program. Our captive audience is similar; in October 1992 we collected data from the freshmen at the department of psychology of the University of Amsterdam, who are obliged to participate in experiments and fill in questionnaires and tests as part of their program.

### **Data Collection**

*Step 1: Data collection with a captive audience*

We collected data from the freshmen at the department of psychology of the University of Amsterdam. All freshmen students were presented with a description of a mail survey (vignette) and required to complete five questions on their response intentions regarding this hypothetical mail survey. In fact this vignette described in general terms the mail survey that would be administered in step two. The first question following the vignette concerned the direct response intention (i.e., if you receive the questionnaire and the request described here what would you do). The next five questions concerned the response intention in special situations (e.g., you do not have time at this precise moment what would you do). Two indicators were constructed based on these data: response intention (question one) and generalized response intention (questions two to six). People who score high on the index 'response intention' intend to return the hypothetical questionnaire; people who score high on 'generalized response intention' generally intend to return the questionnaire even if they have no time, important other obligations etc. Besides questions on response intention additional questions were asked regarding the attitudes and beliefs toward the hypothetical survey described in the vignette. Three weeks later, all students completed a self-administered questionnaire, based on the questionnaire developed by Cialdini et al. (1991, 1992). This questionnaire contained questions on attitudes to survey research and on personal norms about response behavior and on the norms of friends.

### *Step 2: Survey implementation*

In May 1993, six months later, a mail survey was sent to all freshmen in psychology of the University of Amsterdam. The topic of the questionnaire was study success and career expectations, the same topic that was described in the vignette in step one. In this questionnaire questions were asked about well-being, opinions on study, study habits, effective studying, grades, expectations about the future and about success of study and professional career. For this mail survey an adapted TDM approach (Dillman, 1978; De Leeuw & Hox, 1988) was used that omitted the last mailing by certified mail.

### *Step 3: Matching data and analysis*

Very strict procedures were followed to match the data from step one to the response data of step two. For privacy reasons, the matching was done by a third party. This resulted in a sample of 462 cases.

## **Instruments**

The *response behavior* was measured with a dichotomous variable that indicated whether one had completed and returned the mail questionnaire. Based on the self-administered questionnaire from step one several multiple item indicators were constructed for behavioral intention, attitudes, norms, and beliefs. Also situational specific indicators on attitudes, norms and beliefs were constructed based on the vignette questions in step one. These indices are discussed in more detail below.

Two indices for *behavioral intention* were constructed based on the responses to the vignette: individuals who score high on 'generalized response intention' intend to return the questionnaire even if they have no time, important other obligations etc. Individuals who score high on the index 'specific response intention' intend to return the hypothetical questionnaire.

*Attitudes*: General attitude toward survey research was measured with eight questionnaire questions on the affective feeling toward survey research. Situational specific attitude toward this specific survey was measured with five vignette questions (e.g., how enjoyable would it be completing the specific questionnaire described).

*Subjective norms*: Internal (own) norms on survey participation were measured with four questionnaire questions. In these questions one was asked how probable it was that one would

respond to general surveys from the government, universities, or marketing research societies (probability of responding).

*Normative beliefs:* Normative beliefs about survey participation were measured with three questionnaire questions on perceived friends' norms, asking estimates of the percentages of friends who would respond to different types of surveys.

*Behavioral beliefs:* Three multi-item scales were constructed that measured general behavioral beliefs about survey participation. The first involved the personal value of privacy. The second scale, positive experience, consisted of four questionnaire questions about the last survey experience. The third scale involved beliefs about the amount of effort needed for participation.

Two one item-scales were used to measure specific survey behavioral beliefs; they were based on questions asked about the vignette that described in hypothetical terms the survey that actually took place half a year later. These two scales were: Privacy beliefs specific for the survey undertaken (How large do you estimate the probability that in the described survey your answers will be treated confidentially) and beliefs about effort necessary for the survey (Can you spare the effort to complete and return the described questionnaire?).

### **Statistical model and analysis procedure**

Our model derives from the Ajzen-Fishbein theory of reasoned action (Ajzen & Fishbein, 1980). The central constructs in the theory of reasoned action are the behavior, the behavioral intention, the attitude toward the behavior, the beliefs forming that attitude, the subjective norm, and the normative beliefs forming that subjective norm, specifically the perceived norms of relevant others. For personal behaviors the attitude will generally be the dominant predictor, and for social behaviors the norm will generally be the dominant predictor. We use the theory of reasoned action to specify a causal path model to predict response behavior. The basic structure of this model follows the theory of reasoned action, with behavioral beliefs added as predictors of attitudes, and friends norms as predictor of the personal subjective norm. To further explore the role of the attitude in this application of the theory of reasoned action, we specified the attitude part of the model twice, once for attitude toward surveys in general, and once for the attitude toward a survey such as the one actually used to measure the response (specific attitude). The available response indicators (intention to respond and response) are used as indicators of a latent factor 'intention to respond.' In our extension of the theory of reasoned action model, we use *two* indicators for attitude: one indicator for the attitude toward surveys in general, and one indicator for the attitude toward the specific survey actually used to measure the response. For a graphical representation of the model see the path diagram in the 'results' section.

Our model is a structural equation model with one latent variable 'response intention.' The scale of this latent variable is identified by fixing the path coefficient for general intention to one. The usual Maximum Likelihood estimators for structural equation models assume continuous data and multivariate normality. In our case, the dependent variable is a dichotomy, one predictor is a trichotomy, and two predictors have only five categories. Jöreskog and Sörbom (1989) recommend polychoric correlations and weighted least squares estimation for such data. However, polychoric correlations assume that the categorical variables reflect underlying variables with a normal distribution. Preliminary analyses showed that this is not a valid assumption for our data. Instead, we use asymptotically distribution free (ADF, cf. Browne, 1984) estimators, which do not make assumptions about the distribution of the data. Since ADF estimation requires large samples, we check the asymptotic standard errors and significance tests with bootstrap methods. A total of 1000 bootstrap samples is used to estimate bias-corrected standard errors (Stine, 1989), and Bollen and Stine's (1992) adjusted bootstrap method is used to estimate the goodness-of-fit of the model.

### 3. Results

The basic model has a modest fit (chi-square is 100 with 30 degrees of freedom,  $p=.00$ ). The modification indices for this model suggest two additions to the model. The first is a direct path from effort to subjective norm, indicating that a large perceived effort leads to lower assessment of the normative requirement to participate. The other is a correlated error term for both attitude measures. Both model modifications are theoretically reasonable. The resulting model fits well. The chi-square is 35.7 with 28 degrees of freedom. The asymptotic p-value for this chi-square is  $p=.15$ ; Bollen and Stine's adjusted bootstrap estimates the p-value as  $p=.29$ . The goodness of fit indices are also acceptable: both GFI and AGFI are equal to 1.00, and the more strict Bentler and Bonett index is .93. On the basis of the significance tests and the goodness-of-fit indices we accept this model.

Table 1. Unstandardized path coefficients and p-values

Path		Coefficient	p (asympt)	p (bootstrap)
attitude	<-- privacy	-0.13	.00	.00
attitude	<-- effort	-0.13	.00	.00
own_norm	<-- frnds_norm	0.73	.00	.01
attitude	<-- pos_exp	0.14	.00	.01
attit_spec	<-- priv_spec	0.42	.00	.01
own_norm	<-- effort	-0.50	.00	.00
intention	<-- own_norm	0.05	.00	.00
intention	<-- attitude	0.02	.26	.34
intention	<-- attit_spec	0.04	.00	.00
gen_intent	<-- intention	1.00 (fixed)		
spec_intent	<-- intention	2.92	.00	.00
response	<-- intention	0.37	.00	.00
attitude	<-- own_norm	0.08	.00	.00
own_norm	<-- attitude	0.56	.00	.00
atti_spec	<-- own_norm	0.32	.00	.00
own_norm	<-- attit_spec	0.05	.03	.05

Table 1 presents the parameter estimates for this final model, with two sets of (one-sided) p-values: one set based on asymptotic standard errors, and the other on bias-corrected bootstrap standard errors. Most path coefficients in Table 1 are as predicted by the theory of reasoned action. The bootstrap standard errors tend to be larger than the asymptotic results, but all significance tests point to the same conclusion. The one path coefficient that is clearly nonsignificant is an extremely interesting result, because it is the path coefficient of general attitude toward surveys to intention to respond. The specific attitude toward the survey has a significant path to intention, but the general attitude not. Apparently, the intention to respond to a survey request depends more on the attitude toward that specific survey, and less on a global attitude toward surveys in general.

Figure 1. Final model for survey response, standardized coefficients.

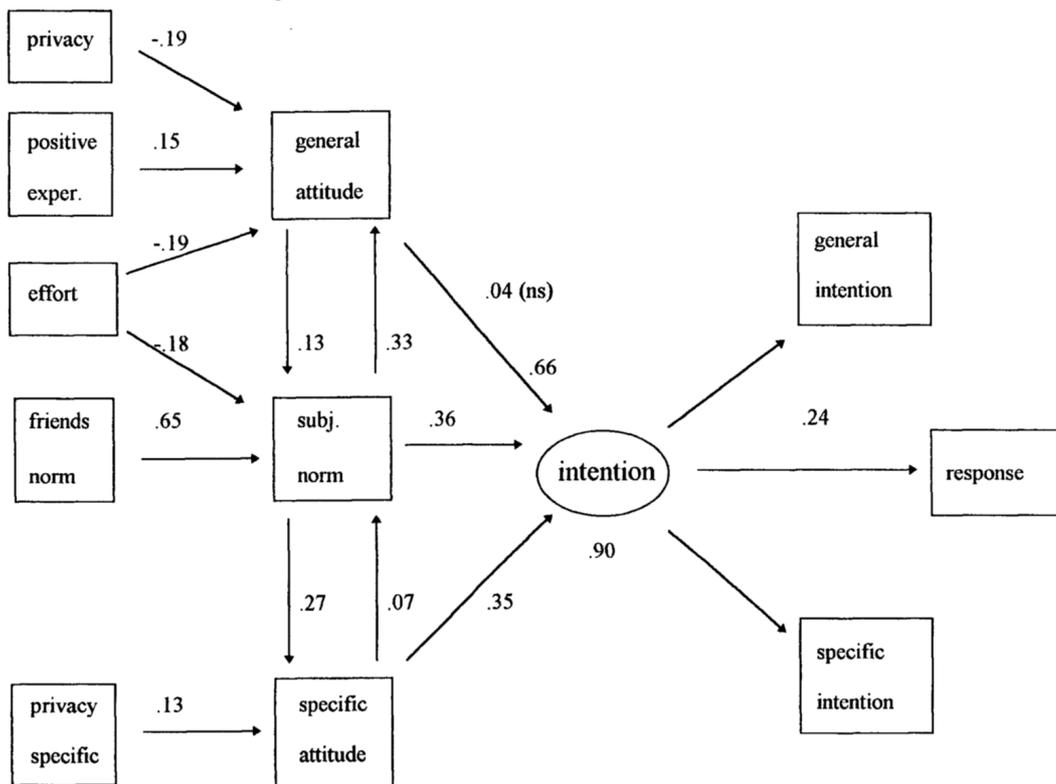


Figure 1 shows the graphical representation of the path model, with values of the standardized coefficients. The standardized path coefficients in Figure 1 make clear that, although the model as a whole fits well, it does not predict the response very accurately. The path coefficient from intention to response is only .24, which is a weak relationship. The problem is not in the model itself; the ordinary multiple correlation of all predictors with the dependent variable is also a low  $R=.25$ . The requirement, that intention to respond is the only predictor of the response, does not reduce the correlation by a significant degree.

The subjective norm and the specific attitude are in terms of the standardized path coefficients equally important in predicting the intention to respond. It is interesting to note that in the reciprocal relationship between attitude and subjective norm, the subjective norm influences the attitude more than the attitude influences the subjective norm. Given the additional indirect path from the subjective norm through attitude to the intention to respond, the subjective norm is in fact a little more important than the attitude.

#### 4. Discussion

The final model (Figure 1) fits well. However, it does not perform so well in predicting the final criterion, the response behavior. As we stated above, the theory of reasoned action is assumed to hold only if the intention and behavior measures correspond closely, the intention does not change in the interval between measurement of intention and the occurrence of the behavior, and the behavior is under the individual's personal control. Since one of the measures for behavioral intention is based on a vignette describing precisely the survey request actually used, we assume that the correspondence between the intention and behavioral measures is sufficient for our goal.

Also, although problems such as time pressure at the time of the survey request may exist, we assume that the response behavior is essentially under volitional control. However, since there is a time lag of six months between the first assessment and the final survey request, there is a considerable possibility that the behavioral intention has changed in that time period. This could be caused by a drop in saliency of the subject matter (study success and career expectations); the saliency can change strongly in the first year of study. In the Netherlands, Psychology is a popular 'temporary' study for students who have been barred from the study of their first choice, because of restriction of student numbers in certain studies (e.g., medicine). At the end of their first year in psychology they try again to enter the preferred study and they are no longer interested in their study success in psychology. Also, psychology is a favorite study for students who have not decided yet about their future, but have a general feeling that psychology is interesting and useful for their personal growth. These students often drop out during the year, but stay registered as students because they want to enjoy the financial and other student facilities. For such students, the salience of the questionnaire is low at the time the real survey was sent. Unfortunately, we have no way to detect these students, and incorporate them as a separate group in the analysis.

In our model, the correlation between the latent variable 'behavioral intention' and the final response is 0.24. In Cialdini's first two studies (Cialdini et al., 1992) seven variables significantly predicted response; no beta weights or correlations with response are given. In his third study (Cialdini et al., 1993) effects sizes are mentioned. No correlations are higher than 0.20, with a correlation of 0.16 between an indicator of response intention and the actual response. Clearly, the predictive validity of our theoretical model is not appreciably lower than the empirical regression model Cialdini uses.

In an explorative procedure, it is interesting to investigate if there are other variables than can predict response in our experiment. From the tests and questionnaires that our freshmen psychology students had to fill in, we selected 14 personality and mood tests, and 7 cognitive tests. The 14 personality tests comprised 111 sub-scales. Only eight of the 111 scales correlated at a p-level of (less than) .05 with the observed response. If we apply a Bonferroni correction, none of these correlations are significant at an alpha of 5 percent. Thus, contrary to popular belief, there appears to be no such thing as a 'responding personality.' Of the seven cognitive tests, three correlated at a p-level of (less than) .05 with the observed response. If we again apply a Bonferroni correction, two of these correlations (with 'verbal analogies' and 'drawing conclusions') are significant at an alpha of 5 percent. This outcome confirms the effect found by Bros et al. (this volume), that intelligence is a predictor of response in surveys. However, the effect is again small; the multiple correlation of the two cognitive tests with response is only 0.15, which is smaller than the 0.24 reached with our theory of reasoned action model.

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