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Answering Questions

A Comparison of Survey Satisficing and Mindlessness

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Introduction

While the large literature on mindlessness has evolved in psychology, a remarkably related literature has evolved quite separately in the literature on survey methodology. In that context, researchers have been interested in understanding why different question wordings sometimes yield systematically different answers from survey respondents. Inspired by Simon's (1957) notion of satisficing, Krosnick (1999) proposed that respondents might sometimes devote considerable cognitive effort to answering survey questions accurately and might at other times devote little or no effort and instead seek to generate answers quickly on the basis of little thinking. This distinction parallels the notions of mindfulness and mindlessness, so building a bridge between the two literatures seems potentially promising to yield new and valuable insights and may generate interesting hypotheses that could advance research in both mindfulness and survey satisficing. In this chapter, we seek to bridge these literatures.

We begin by describing the survey questionnaire response process, with particular emphasis on the cognitive features of responding to questions. Beginning with a description of what researchers believe is the optimal response process; we then introduce the theory of survey satisficing and contrast it with the optimal process. Next, we describe specific response strategies that the theory proposes respondents may employ in order to shortcut the response process. Noting the operation of these strategies, we offer a set of general implications and recommendations for optimal questionnaire design.

Having established the notion of survey satisficing, the final section of the chapter contrasts it with mindfulness and mindlessness, and proposes a set of potential benefits of understanding satisficing theory for mindfulness researchers. Lastly, we outline some proposals for ways that understanding mindfulness and mindlessness might benefit survey researchers in areas such as momentary assessment, cognitive interviewing,

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and respondent recruitment. To do this, we draw on findings in the literature in mindfulness and mindlessness that may be relevant to survey research and suggest some novel applications of these concepts in the domain of survey research.

In the course of telling this story, we offer advice for researchers regarding how best to design survey questions to measure constructs accurately and overcome the distorting impact of satisficing. Because mindfulness researchers routinely measure the extent to which people are mindful or mindless by administering questionnaires, our advice may be useful to these researchers by helping them to design more effective measures.

Optimal Responses

Cognitive features of the response process

When a respondent is answering a question in a questionnaire, the accuracy of the obtained data is dependent partly on how well people perform the required cognitive tasks. Specifically, a person must execute a set of mental processes in order to offer a valid response. These processes have been outlined by a number of researchers, several of whom have proposed four stages (Cannell, Miller, & Oksenberg, 1981; Sudman, Bradburn, & Schwarz, 1996; Tourangeau, Rips, & Rasinski, 2000): (1) comprehension, where respondents interpret the intended meaning of the question; (2) retrieval, which involves the respondent searching memory for all relevant information; (3) judgment, which involves integrating retrieved information into summary judgments; and (4) responding in a way that conveys the judgment. Proceeding carefully through each of these stages constitutes what has come to be called *optimizing*.

Many motives may lead a person to optimize the response process when answering a question, including desires for self-expression, interpersonal response, intellectual challenge, self-understanding, feelings of altruism, or emotional catharsis (see, e.g., Warwick & Lininger, 1975). Questionnaires often require a great amount of effort to complete optimally, and the expenditure of this effort in answering questionnaires can also be motivated by desires of the respondent to help researchers or for gratification from successful performance, to help employers improve working conditions, to help manufacturers produce better quality products that suit consumers' needs better, or to help governments make better informed policy decisions. To the extent that these sorts of motives inspire a person to optimize the response process, responses seem more likely to reflect the "true" values of the constructs being assessed.

Satisficing, a Breakdown in Optimal Responding

Satisficing

As much as researchers hope that respondents optimize the response process for each question in a questionnaire, the reality of responding may often be less than ideal. In fact, some people may agree to complete a questionnaire simply through a relatively automatic compliance process (e.g., Cialdini, 1988) or because they are required to do so in order to fulfill a course requirement or to earn financial remuneration for

questionnaire completion. Thus, they may have no intrinsic motivation to provide high-quality answers to the questions.

Simon posited that, when faced with the demanding information-processing tasks of everyday life, people often expend only the amount of effort necessary to make an acceptable or satisfactory decision, a strategy Simon called *satisficing* (Simon, 1957). Presented as a simple metaphor about how people behave, this notion was a useful starting point for developing a theory of the questionnaire response process in particular. Krosnick (1991) theorized that respondents may sometimes not be sufficiently motivated to provide high-quality data and therefore may engage in satisficing during the survey response process.

Satisficing is thought to occur because optimizing is sometimes more cognitively demanding than a respondent is willing or able to execute in answering a question. Questionnaires routinely require respondents to answer multiple questions, sometimes for hours at a time during the longest face-to-face interviews. Even in shorter questionnaires, respondents are often asked to answer extensive batteries of questions, and these questions can be cognitively demanding. Taken together, these features of questionnaires may increase the chances of respondent satisficing (Krosnick, 1999; Krosnick, Narayan, & Smith, 1996; McClendon, 1986, 1991; Narayan & Krosnick, 1996).

In the face of the significant cognitive demands of the response process, respondents may not optimize when answering every single question and may instead shortcut or completely skip some stages of optimizing (Krosnick, 1999). Some respondents are motivated to expend the considerable cognitive effort necessary to optimize their responses. However, the sources and duration of this motivation may vary across respondents and across questions within a single questionnaire. Respondents may expend their resource of available effort early in the questionnaire-completion process, before all questions have been answered. As motivation fades, such respondents may lose interest and become increasingly fatigued, impatient, or distracted. Yet questions remain to be answered, even after a respondent is no longer fully engaged with the reporting process or motivated to optimize their responses. This presents respondents with a dilemma: they have agreed to complete a questionnaire and may have even been promised an incentive as a reward for completion, but they now lack the motivation to provide optimal responses to what must often feel to the respondent like an unending stream of questions.

In this situation, some respondents will break off, stopping the process of answering questions before all have been answered. But perhaps more often, respondents may continue answering but change their response strategy. Instead of continuing the cognitively demanding process of optimizing, some respondents may choose to expend less mental effort in any or all stages of the response process. This behavior is called "survey satisficing" (Krosnick, 1991). As they satisfice, respondents may interpret a question's meaning and then search memory incompletely or in a biased manner, integrate retrieved information superficially, and then report their response. In this formulation, respondents complete all four steps of the response process but shortcut stages 2 and or 3, an approach called *weak satisficing.*

As questionnaire completion continues, respondent motivation may decrease, and fatigue may increase, leading to further degradation in the response process. When

this occurs, the respondent may fail to implement the retrieval and judgment stages altogether and may instead exert only minimal effort to interpret the question and provide a response that appears plausible. Yet this answer is selected without referring to any internal psychological cues specifically relevant to the attitude, belief, or event of interest. Instead, the respondent may look to the wording of the question for a cue, pointing to a response that can be easily selected and easily defended if necessary. If no such cue is present, the respondent may select an answer completely arbitrarily. In this case, the respondent provides what may appear to be a sensible answer to each question but without having actually delivered any meaningful information. This is termed *strong satisficing*.

Optimizing and strong satisficing can be thought of as being at the poles of a continuum of cognitive effort, with weak satisficing occurring to varying degrees between the poles. When optimizing, respondents thoroughly retrieve and carefully integrate relevant information. When strong satisficing occurs, respondents do not retrieve or integrate any relevant information from memory before providing a response. Weak satisficing, then, is a label encapsulating a range of potential levels of incompleteness in the response process; retrieval may be thorough, while integration is incomplete, or vice versa.

Satisficing Response Strategies

According to the theory of satisficing, respondents may satisfice in a series of specific ways depending on the format and features of the question that has been asked and the response options that have been provided. This section outlines the primary satisficing response strategies that have been documented in the literature.

Don't know?

One response strategy thought to be a manifestation of strong satisficing is selecting an offered "don't known" option. When a respondent is asked about a subjective phenomenon, researchers routinely presume that the responses provided reflect opinions or information that the respondent had in their memories. Even if the specific requested judgment does not already exist in long-term memory, a respondent might draw on available information to construct a judgment (e.g., Zaller & Feldman, 1992). Under this set of assumptions, responses to a question, whether previously extant or newly formed, then reflect the respondent's true opinion on the matter under investigation.

However, questions sometimes focus on a matter about which the respondent knows nothing and cannot form a judgment. In this case, researchers would prefer the respondent indicate this lack of relevant information by stating that he/she has "no opinion" (NO) or by offering a "don't know" (DK) response. If the question is worded in such a way that respondents feel that they ought to have an opinion, then they may provide an arbitrary, seemingly substantive response in order to avoid appearing to be embarrassingly uninformed. Thus, some respondents may provide a nonattitude in the guise of a meaningful answer (Converse, 1964).

Consistent with this argument, the reliability of questionnaire responses over time is often moderate to low (Achen, 1975; Converse & Markus, 1979; Feldman, 1989; Jennings & Niemi, 1978). This low response reliability has been taken by some to indicate that many respondents don't have true opinions about issues and are indeed responding at random. More disconcerting are findings that respondents sometimes offer apparently meaningful opinions on extremely obscure or fictitious issues about which they are extremely unlikely to know anything (Bishop, 2005; Bishop, Tuchfarber, & Oldendick, 1986; Hawkins & Coney, 1981; Paulhus, Harms, Bruce, & Lysy, 2003; Schwarz, 1996), again suggesting that they are likely reporting nonattitudes.

To reduce the chance of arbitrary responses being given to questions, some experts have suggested that NO or DK response options should always be offered to respondents (e.g., Vaillancourt, 1973). However, other researchers caution against offering DK or NO response options, because they may induce respondents who do have meaningful opinions to fail to report those opinions (Krosnick, 1991; Krosnick et al., 2002). Along these lines, Oppenheim (1992) speculated that some people give a "don't know" response in order to avoid thinking. Further supporting this recommendation to avoid DK options is evidence that voting behavior is better predicted by estimates of respondents' political candidate preferences when researchers discourage DK responses (Krosnick et al., 2002; Visser, Krosnick, Marquette, & Curtin, 2000). Additionally, respondents who are encouraged to guess after providing a DK response tend to provide the correct answer to factual questions about political knowledge at better than chance rates (Mondak & Davis, 2001). This indicates that discouraging DK responses leads to more valid data than encouraging such responses.

Satisficing theory focuses on people who have relevant considerations available in memory but must construct overall evaluations by integrating those considerations, rather than simply retrieving existing judgments already in memory. If a person is low in ability to optimally conduct a memory search and information integration or low in motivation to do so, or task difficulty is high, and a "don't know" option is explicitly offered, he or she may choose to satisfice by selecting it (Krosnick, 1991). If the NO option were to be omitted from the question instead, these respondents might be less likely to satisfice and might therefore optimize instead. Consequently, offering a NO option may forego collection of useful data by discouraging some respondents from providing thoughtful answers.

Even if a NO option is omitted from a question, some respondents may volunteer that they have no opinion. Interviewers or interactive software can respond by saying, "we'll make a note of that, but it would be very helpful if you'd be willing to answer the question, even if you're not completely sure of your answer." The people who volunteer a NO answer a second time in response to this probe can be viewed as genuinely having no information to offer. This approach collects meaningful response from the largest group of respondents. This recommendation is in line with common practice among most major survey organizations, who train their interviewers to probe respondents when they say that they don't know the answer to a question and encourage respondents to provide a substantive response instead, even using wording such as "what is your best guess?" to elicit responses.

Acquiescence

A response strategy thought to result from weak satisficing is agreeing with assertions made in questions. This is relevant to one of the most commonly used question-and-response formats, which utilizes what is called a "Likert scale," after the work of Rensis Likert (1932). Respondents read a statement and indicate the degree to which they agree or disagree with the statement. This format offers the opportunity for efficiency: many different constructs can be measured with a series of questions without changing the response options from question to question.

A great deal of research shows that some respondents are biased toward agreeing with just about any statement when presented with such an agree/disagree scale or when asked a question with true/false response options or implicit yes/no response options (e.g., "Do you like tomatoes?"). This agreement tendency is known as *acquiescence bias* and is thought to occur for a number of reasons. Some respondents are inclined to agree because they wish to conform to social norms that dictate agreeableness and politeness (Bass, 1956; Brown & Levinson, 1987; Campbell, Converse, Miller, & Stokes, 1960). Another cause is the tendency that some respondents are inclined to defer to people who seem to be of higher social status and better informed, including an interviewer or researcher (Carr, 1971; Lenski & Leggett, 1960).

Satisficing is also thought to be a cause of acquiescence bias. Respondents who fail to exert the mental effort required to fully evaluate the plausibility of a statement or respondents who have limited cognitive skills to do so may be inclined to manifest acquiescence bias. People implementing weak satisficing evaluate the plausibility of a statement by thinking of reasons why the statement might be valid and quickly grow fatigued and terminate the evaluation process before thoroughly considering reasons why the statement might be invalid. Thus, satisficing individuals tend toward agreeing with a statement rather than disagreeing with it (Krosnick, 1991).

Evidence of acquiescence bias comes from studies showing that some respondents agree with a statement *and* with its opposite and from evidence that more people agree with a statement than disagree with its opposite. About 15–20% of respondents appear to manifest acquiescence on average across studies (for reviews of this literature, see Krosnick & Presser, 2010; Saris, Revilla, & Krosnick, 2010). Consistent with satisficing theory, acquiescence is most common when respondent ability to optimize is low, when motivation to do so is low, and when a question requires substantial cognitive work in order to be answered optimally. Thus, acquiescence bias can present a major challenge to researchers, so a number of different approaches have been developed to attempt to address this problem.

To overcome this problem, some researchers have pursued approaches aimed at mitigating acquiescence bias rather than abandoning the agree/disagree, true/false, and yes/no response formats. One common approach is balancing batteries of questions, where half of the statements are arranged such that affirmative answers indicate high levels of the construct of interest, and the other half of the statements are such that affirmative answers indicate low levels of the construct. This approach assumes that acquiescence will be equivalent across items for each respondent, so a tendency to agree with all statements will cancel out and place such respondents

in the middle of the possible range of final scores. However, there is no theoretically justified reason why these respondents should be placed at the scale midpoint. Thus, simply balancing a set of questions may not improve the validity of measurement.

The more effective solution is to offer questions with construct-specific response choices. That is, if a question is meant to assess the personal importance of an issue to a respondent, it is preferable to ask the respondent, "How important is this issue to you? Extremely important, very important, moderately important, slightly important, or not important at all?" rather than asking them to agree or disagree with a statement such as, "This issue is important to me." The former approach eliminated any pressure in the question toward an affirmative answer.

Response-order effects

Another manifestation of weak satisficing is impact of the order in which response options are presented to respondents (Schuman & Presser, 1996). Respondents are often asked to choose among a set of offered nominal or ordinal response choices. Respondents inclined to satisfice may devote confirmatory-biased thinking to initially considered options and terminate the evaluation process before thoroughly evaluating those choices or others that are offered by the question. In short, satisficing respondents may be inclined to settle for the first plausible response option they identify. This yields what are called response-order effects (Krosnick, 1999; Krosnick & Alwin, 1987).

When questions are presented visually, typically on paper or a computer screen, people tend to choose the first nominal response options presented. This is known as a *primacy effect,* and considerable evidence indicates that such primacy effects are especially likely to occur under the conditions thought to foster satisficing (Chang & Krosnick, 2010; Krosnick & Alwin, 1987; Malhotra, 2009; Narayan & Krosnick, 1996). Recency effects occur when nominal sets of response options are presented orally. Respondents have the most time to implement confirmatory-biased thinking after hearing the final response option, and options heard most recently are most likely to be remembered after hearing a question. All this biases respondents toward selecting the last option they hear (Holbrook, Krosnick, Moore, & Tourangeau, 2007; Krosnick & Alwin, 1987). Primacy effects also occur with visually and orally presented ordinal rating scales because of a tendency for respondents to select the first response option they consider that falls within their "latitude of acceptance" of plausible responses. These effects tend to occur most among respondents with a low ability to optimize, when motivation to optimize is low, and when answering a question requires considerable cognitive work (Holbrook et al., 2007).

Response-order effects can be managed by randomly assigning different respondents to read or hear the response choices in one of various different orders. Because the researcher directs this assignment, it is possible to control statistically for the systematic variance thus created in the data. It is best to do so with interactions between the order manipulation and attributes of respondents indicating their cognitive ability (e.g., years of education) and motivation (e.g., their need for cognition).

Nondifferentiation in using rating scales

Many survey practitioners believe that answering a series of questions with the same response alternatives is easier and more enjoyable for respondents and more efficient for interviewers than constantly changing response alternatives from question to question (e.g., Lavrakas, 1987, pp. 145–146). This belief frequently leads survey designers to group questions together that offer the same response alternatives. For example, respondents might be asked to consider a series of brands of candy bars and to indicate for each one whether they like it a great deal, like it somewhat, like it only a little, or don't like it at all.

In recent years, researchers have come to recognize that there is an inherent danger in asking respondents to rate a series of objects on a common scale. In most cases, researchers hope that respondents will differentiate among the objects in their ratings. In the candy bar example, researchers might want to use the rating data to make inferences about which brands are preferred. Unfortunately, this is sometimes difficult to do, because some respondents fail to differentiate between the objects in their ratings, instead giving all or almost all of the objects the same rating (see, e.g., Krosnick & Alwin, 1988). Doing so may sometimes be the result of a careful consideration of the merits of the objects, but this response strategy could also be the result of strong satisficing. Satisficing respondents could, for example, simply select a point on the response scale that appears to be reasonable for the first object, and then rate all of the remaining objects at that point. Therefore, this response pattern might appear more often under the conditions that foster satisficing.

A number of studies have found evidence consistent with this prediction. Nondifferentiation is more common among respondents with less education (Krosnick & Alwin, 1988; Rogers & Herzog, 1984). Nondifferentiation is more common toward the end of a questionnaire than toward the beginning (Coker & Knowles, 1987; Herzog & Bachman, 1981; Knowles, 1988; Knowles, Cook, & Neville, 1989a, 1989b; Knowles, Lundeen, & Irwin, 1988; Kraut, Wolfson, & Rothenberg, 1975; Krosnick & Alwin, 1988; Neville & Knowles, n.d.; Rogers & Herzog, 1984), particularly among respondents low in verbal ability (Knowles et al., 1989a, 1989b). Furthermore, placing rating questions later in a questionnaire makes correlations between ratings on the same scale more positive or less negative (Andrews, 1984; Herzog & Bachman, 1981; Krosnick & Alwin, 1988; Rogers & Herzog, 1984), which are the expected results of nondifferentiation (see Krosnick & Alwin, 1988).

Reducing the Likelihood of Satisficing

Researchers cannot control the ability level that a respondent brings to a questionnaire, but researchers can influence an individual's motivation to optimize and can influence the cognitive posed by a questionnaire. In order to minimize the likelihood of satisficing, questionnaire designers should take steps to maximize respondent motivation and to minimize task difficulty. Motivation can be enhanced by creating a sense of accountability among respondents, by providing instructions asking respondents to commit to thinking carefully and generating accurate answers, and by telling

respondents why the research project's findings will be valuable and have constructive impact. Task difficulty can be minimized by taking steps to make it easy for people to interpret questions, to retrieve information from memory, to integrate the information into a judgment, and to report that judgment.

For example, interpretation is presumably more difficult for questions written with rarely used words or words with various different meanings. Similarly, retrieval may be made more difficult by questions that ask about multiple objects rather than just one. It is useful to think of the difficulty of the judgment phase as a function of the *decomposability* of the decision to be made; the more constituent decisions that must be made and integrated into a single summary judgment, the more difficult this phase will be (see Armstrong, Denniston, & Gordon, 1975). A question can be difficult to answer at the point of response selection if the answer choices use familiar words with obvious meanings.

Mindful Versus Mindless Responding to Questionnaires

Mindfulness and mindlessness

Thus far, we have talked about the cognitive and contextual conditions that are associated with satisficing behavior by people answering questionnaires. Now, we turn to the literature on *mindfulness* and *mindlessness* to apply these concepts to the question-answering context of questionnaires.

Mindfulness has been described in a number of different ways, such as "bringing one's complete attention to the present experience on a moment-to-moment basis" (Marlatt & Kristeller, 1999) or as "paying attention in a particular way: on purpose, in the present moment, and nonjudgmentally" (Kabat-Zinn, 1994). Most definitions of mindfulness contain three key components. First, mindfulness is a state of consciousness, not a trait of individuals (Lau et al., 2006). Second, this state of consciousness focuses attention on the present moment, the "here and now" (Herndon, 2008). Third, this present-moment attention is marked by consciousness of both internal and external phenomenon, or "both the content and context of information" (Langer, 1992).

In contrast, according to Langer (1992), "mindlessness concerns rigid invariant behavior that occurs with little or no conscious awareness" (Langer, 1992). Mindlessness is a state of reduced attention to the present moment that is typified by implementing cognitively scripted behavior without conscious awareness (Langer, 1975).

The contrast of mindfulness and mindless maps onto the contrast of optimizing and satisficing only partially and awkwardly. On the one hand, a mindful state seems necessary in order for optimizing to occur. That is, a respondent must focus their complete attention on the process of answering questions, with considerable cognitive awareness. However, satisficing could also occur in that way. That is, a satisficing respondent may be quite aware that they are choosing to shortcut the thinking process while answering questions and may execute satisficing mindfully, with attention and conscious awareness focused on that activity.

Furthermore, satisficing seems not to parallel mindlessness. To the extent that mindlessness involves the state of acting without thinking, it is similar to satisficing in that there is little conscious thought involved. But satisficing involves selecting among offered responses in ways that minimize cognitive effort, whereas mindless behavior involves relying on scripts and habits when taking actions. Thus, there is not necessarily a close parallel between these two distinctions.

It is intriguing to think about what would happen during the process of questionnaire completion if the respondent were in a state of mindlessness, behaving according to habits and scripts with very little conscious attention or thought. One circumstance in which this might occur is if a respondent is completing an online questionnaire simply to earn a financial reward and with no intention to even read or think about the questions at all (see, e.g., Yeager et al., 2011). And perhaps some college students completing a questionnaire in order to meet a course requirement might do this as well. It might be interesting to explore the behavioral habits or scripts that people execute under such circumstances in order to answer questions, in order perhaps to detect this behavior by observing patterns of responses.

Another possibility worth noting is that mindlessness may be a state into which respondents creep as they progress through a questionnaire. For example, a person completing a questionnaire may begin in a state of conscious awareness, executing cognitive processes thoughtfully and diligently. But as the questionnaire progresses, respondents might become fatigued and increasingly unwilling to think carefully. As a result, people may become increasingly mindless as time passes, and more questions are answered.

It is also interesting to think about the possibility of transforming respondents from being in a mindless state to being mindful. Specifically, the mindfulness literature suggests exploring the possibility that respondents could be told explicitly about the four stages of optimal question answering: interpretation, retrieval, integration, and judgment. Perhaps encouraging respondents explicitly to perform these cognitive tasks might lead people to be more effortful and responsible—in short, more mindful in a good way. But perhaps encouraging people to introspect and attempt to control the working of their minds would interfere with ordinarily effective processing and would yield reductions in report accuracy. Future studies could explore this possibility.

Indeed, one instantiation of this general concept is a core component of what is known as *cognitive interviewing*, an increasingly popular pretesting method used to identify problems with wordings or formats employed in questionnaires (Beatty & Willis, 2007). During this pretesting procedure, respondents are first asked to restate each question in their own words and then think out loud to verbalize all their thoughts when generating an answer to the question. The purpose of this procedure is to gain insights into how people interpret questions, to identify instances in which misinterpretations occur, so questions must be rewritten. It seems obvious that the procedure itself will induce a state of mindfulness, so the answers that pretest respondents provide are likely to reflect that mindful state. If the same state would be desirable during all questionnaire completion, it might be interesting to see what methods could be used to induce it without considerably lengthening the interview process the way that cognitive interviewing does.

Are there benefits of satisficing for assessing mindlessness?

One might imagine that if a questionnaire's purpose were to predict or understand behavior performed mindlessly, then optimizing during questionnaire responding would not be desirable. Instead, we might want people to answer a questionnaire in just the way they will ultimately act in the situation of interest: thinking only superficially. Thus, it might seem that satisficing would be desirable to accomplish such research goals.

There are two principal reasons that we do not share this perspective. First, we view the goal of questionnaire measurement of subjective phenomena to be the accurate assessment of the contents of an individual's memory. Thus, if the contents of memory are incompletely measured and/or the measures are biased, then we are handicapped in any effort to describe how the information in a person's memory will later impact their thinking or action. The process of mindless behavior involves superficial or biased retrieval from memory, so the challenge of explaining such behavior is to document the superficiality and bias in the process. To assess the contents in an incomplete or biased fashion is to incorrectly assign that incompleteness and bias to the contents, not to the process by which they are retrieved and applied.

The second reason why satisficing is undesirable, even for understanding behavioral phenomena that may involve mindlessness, is that its particular manifestation for any given measure is presumably a function of the question form employed. If a "don't know" alternative is offered, satisficing might manifest itself as a selection of it. If a question is closed-ended, a response-order effect may be manifested in the form of selecting the first reasonable response. If a question is in an agree/disagree format, satisficing may drive respondents toward affirmative answers. Yet these biases are not substantively informative about the contents of respondents' memories. They reflect primarily the question format that the researcher happens to have chosen to measure the construct of interest. How could such biases possibly help a researcher to understand the sources of mindless behavior performed without a question stimulating it? We think they cannot, and so we believe satisficing is best avoided, even when assessing mindless behaviors.

Benefits of bridging the mindfulness and satisficing literatures

Satisficing theory may offer some thoughts of value to mindfulness research. First, awareness of satisficing when completing questionnaires is useful for mindfulness researchers to consider any time that mindfulness is measured using questionnaires, which seems to be quite often (Baer, 2004; Cardaciotto, Herbert, Forman, Moitra, & Farrow, 2008; Herndon, 2008; Lau et al., 2006; Van Dam, Earleywine, & Borders, 2010). Satisficing can have dramatic impacts on data reliability and validity, so it is important that researchers in any domain making use of questionnaires apply concerted and concrete efforts to reduce satisficing by task difficulty and increasing respondent motivation. We hope that this chapter raises awareness of the causes of satisficing and the risks that it poses to questionnaire-based research on mindfulness in such a way that helps measurement to improve and science to advance more rapidly.

Second, satisficing theory might stimulate new hypotheses and directions in the area of mindfulness research. For example, as with satisficing, perhaps when people are being mindless, they are more prone to acquiescence bias or deciding that they "don't know" something that they might actually hold in memory (e.g., Chiesa, Calati, & Serretti, 2011). To our knowledge, exploration of this possibility has not been conducted in either the mindfulness or survey research domains. The predictions made by satisficing theory could be tested in the contexts of mindlessness and mindfulness to identify whether the predicted patterns arise in each. Perhaps participants trained to be mindful are more motivated during the question-response process and will demonstrate more optimizing behavior rather than satisficing. Similarly, perhaps participants that are mindlessly engaging in the question-response process will be less motivated and more likely to exhibit satisficing behaviors.

In addition, mindfulness researchers may benefit from the sizable and accumulating literature on the causes of satisficing (Krosnick, 1991). Under the headings of ability, motivation, and task difficulty, many concrete attributes of individuals, situations, and questions have been identified as catalyzers of satisficing. These same factors might combine in the same additive and interactive ways in inducing mindless behavior, a possibility worth exploring in future research.

There may also be benefits for survey researchers from understanding the concepts of mindfulness and mindlessness, and the literature on them. Particular subfields and techniques of survey research may be uniquely suited to take advantage of the concepts and methods of mindfulness training, while others may benefit from understanding mindless behavior. For example, cognitive interviewing seems well positioned to benefit from incorporating the concepts and training techniques thought to induce mindfulness. Similarly, techniques for stimulating mindfulness may be useful for researchers employing Ecological Momentary Assessment, which is a survey practice where respondents are called at intervals throughout a day and asked to report their behavioral and cognitive processes and states in the natural settings (Stone & Shiffman, 1994). Lastly, there may be a place for exploring the extent to which mindless responding to requests (Langer, Blank, & Chanowitz, 1978) might be useful to exploit in the context of increasing survey participation rates. In other words, there may be a parallel between "May I use the copy machine? I need to make some copies." and "Would you please complete this survey? We need your responses." If potential respondents might mindlessly comply with the request to participate in a survey, given the appropriate request framework and length, then there may be implications for how survey interviewers should make the initial request for participation in order to increase response rates.

These observations and potential links between mindfulness and mindlessness research and survey methodology are largely speculative, but we believe that they may act as a starting point for exciting new research directions that could provide benefits for research in both fields. These and other questions could provide meaningful new incentives to bridge the fields of mindfulness and satisficing research. We hope that this chapter acts as a starting point to stimulate new ideas and applications of existing theories, concepts, and techniques in important psychological and methodological research.

Conclusion

In this chapter, we have outlined the cognitive features of responding to questionnaires and described satisficing theory, a framework for understanding the conditions that predict when people are likely to engage in suboptimal questionnaire responding. We then described a series of concrete steps that researchers should take to reduce opportunities for satisficing when designing questionnaires. We hope that this evidence-based advice will prove useful to mindfulness researchers whenever they use questionnaires.

Next, we turned to examining the potential conceptual parallels and connections that may exist between optimizing and mindfulness, and satisficing and mindlessness. While these concepts are in many ways complementary, they do not completely overlap, and neither can fully explain the other in the context of the questionnaire-response process. Despite this lack of perfect correspondence between the concepts, there may be significant benefits that mindfulness researchers could gain from an understanding of satisficing. By applying the optimal questionnaire design principles suggested by satisficing theory, researchers can reduce opportunities for satisficing among their participants, which should have the effect of improving data reliability and validity. Furthermore, satisficing theory presents opportunities to ask new and interesting questions about the effects of mindfulness and mindlessness in light of satisficing theory. There are also opportunities for survey methodology research to benefit from understanding the integrating concepts and techniques from mindfulness and mindlessness research in hopes of improving both data quality and survey participation. We hope that this chapter provides important insights and guidance that will help move both mindfulness research and survey methodology forward by improving data collection and offering new areas for research.

References

Achen, C. H. (1975). Mass political attitudes and the survey response. *The American Political Science Review*, *69*(4), 1218–1231.

Andrews, F. M. (1984). Construct validity and error components of survey measures: A structural modeling approach. *Public Opinion Quarterly*, *48*(2), 409–442.

Armstrong, J. S., Denniston, W. B., Jr., & Gordon, M. M. (1975). The use of the decomposition principle in making judgments. *Organizational Behavior and Human Performance*, *14*(2), 257–263.

Baer, R. A. (2004). Assessment of mindfulness by self-report: The Kentucky Inventory of Mindfulness Skills. *Assessment*, *11*(3), 191–206.

Bass, B. M. (1956). Development and evaluation of a scale for measuring social acquiescence. *Journal of Abnormal Psychology*, *53*, 296–299.

Beatty, P. C., & Willis, G. B. (2007). The practice of cognitive interviewing. *Public Opinion Quarterly*, *71*(2), 287–311.

Bishop, G. F. (2005). *The illusion of public opinion: Fact and artifact in American public opinion polls.* Oxford, UK: Rowan & Littlefield.

Bishop, G. F., Tuchfarber, A. J., & Oldendick, R. W. (1986). Opinions on fictitious issues: The pressure to answer survey questions. *Public Opinion Quarterly*, *50*(2), 240–250.

Brown, P., & Levinson, S. C. (1987). *Politeness: Some universals in language use*. New York, NY: Cambridge University Press.

Campbell, A., Converse, P. E., Miller, W. E., & Stokes, D. E. (1960). *The American voter*. New York, NY: John Wiley & Sons.

Cannell, C. F., Miller, P. V., & Oksenberg, L. (1981). Research on interviewing techniques. *Sociological Methodology*, *12*, 389–437.

Cardaciotto, L., Herbert, J. D., Forman, E. M., Moitra, E., & Farrow, V. (2008). The assessment of present-moment awareness and acceptance: The Philadelphia Mindfulness Scale. *Assessment*, *15*(2), 204–223.

Carr, L. G. (1971). The Srole items and acquiescence. *American Sociological Review*.

Chang, L., & Krosnick, J. A. (2010). Comparing oral interviewing with self-administered computerized questionnaires: An experiment. *Public Opinion Quarterly*, *74*(1), 154–167.

Chiesa, A., Calati, R., & Serretti, A. (2011). Does mindfulness training improve cognitive abilities? A systematic review of neuropsychological findings. *Clinical Psychology Review*, *31*(3), 449–464.

Cialdini, R. B. (1988). *Influence: Science and practice*. Glenview, IL: Scott, Foresman.

Coker, M. C., & Knowles, E. S. (1987). *Testing alters the test scores: Test–retest improvements in anxiety also occur within a test*. Paper presented at the Annual Meeting of the Midwestern Psychological Association, Chicago.

Converse, P. E. (1964). The nature of belief systems in mass publics. In D. Apter (Ed.), *Ideology and discontent*. New York, NY: Free Press.

Converse, P. E., & Markus, G. B. (1979). Plus ca change … : The New CPS Election Study Panel. *The American Political Science Review*, *73*(1), 32–49.

Feldman, S. (1989). Measuring issue preferences: The problem of response instability. *Political Analysis*, *1*, 25–60.

Hawkins, D. I., & Coney, K. A. (1981). Uninformed response error in survey research. *Journal of Marketing Research*, *18*(3), 370–374.

Herndon, F. (2008). Testing mindfulness with perceptual and cognitive factors: External vs. internal encoding, and the cognitive failures questionnaire. *Personality and Individual Differences*, *44*(1), 32–41.

Herzog, A. R., & Bachman, J. G. (1981). Effects of questionnaire length on response quality. *Public Opinion Quarterly*, *45*(4), 549–559.

Holbrook, A. L., Krosnick, J. A., Moore, D., & Tourangeau, R. (2007). Response order effects in dichotomous categorical questions presented orally the impact of question and respondent attributes. *Public Opinion Quarterly*, *71*(3), 325–348.

Jennings, M. K., & Niemi, R. G. (1978). The persistence of political orientations: An over-time analysis of two generations. *British Journal of Political Science*, *8*(3), 333–363.

Kabat-Zinn, J. (1994). *Wherever you go, there you are*. New York, NY: Hyperion.

Knowles, E. S. (1988). Item context effects on personality scales: measuring changes the measure. *Journal of Personality and Social Psychology*, *55*(2), 312–320.

Knowles, E. S., Cook, D. A., & Neville, J. W. (1989a). *Assessing adjustment improves subsequent adjustment scores*. Paper presented at the Annual Meeting of the American Psychological Association, New Orleans, LA.

Knowles, E. S., Cook, D. A., & Neville, J. W. (1989b). *Modifiers of context effect on personality tests: Verbal ability and need for cognition*. Paper presented at the Annual Meeting of the American Psychological Society.

Knowles, E. S., Lundeen, E. J., & Irwin, M. E. (1988). *Experience with the personality test changes factor loadings on externality but not self-monitoring*. Paper presented at the 60th Annual Convention of the Midwestern Psychological Association, Chicago, IL.

Kraut, A. I., Wolfson, A. D., & Rothenberg, A. (1975). Some effects of position on opinion survey items. *Journal of Applied Psychology*, *60*(6), 774.

Krosnick, J. A. (1991). Response strategies for coping with the cognitive demands of attitude measures in surveys. *Applied Cognitive Psychology*, *5*(3), 213–236.

Krosnick, J. A. (1999). Survey research. *Annual Review of Psychology*, *50*(1), 537–567.

Krosnick, J. A., & Alwin, D. F. (1987). An evaluation of a cognitive theory of response-order effects in survey measurement. *Public Opinion Quarterly*, *51*(2), 201–219.

Krosnick, J. A., & Alwin, D. F. (1988). A test of the form-resistant correlation hypothesis: Ratings, rankings, and the measurement of values. *Public Opinion Quarterly*, *52*(4), 526–538.

Krosnick, J. A., Holbrook, A. L., Berent, M. K., Carson, R. T., Hanemann, W. M., Kopp, R. J., … Conaway, M. (2002). The impact of "no opinion" response options on data quality: Non-attitude reduction or an invitation to satisfice? *Public Opinion Quarterly*, *66*(3), 371–403.

Krosnick, J. A., Narayan, S. S., & Smith, W. R. (1996). Satisficing in surveys: Initial evidence. *New Directions for Evaluation*, *70*, 29–44.

Krosnick, J. A., & Presser, S. (2010). Question and questionnaire design. In P. V. Marsden (Ed.), *Handbook of survey research*. Bingley, UK: Emerald Group Publishing.

Langer, E. J. (1975). The illusion of control. *Journal of Personality and Social Psychology*, *32*(2), 311–328.

Langer, E. J. (1992). Matters of mind: Mindfulness/mindlessness in perspective. *Consciousness and Cognition*, *1*(3), 289–305.

Langer, E. J., Blank, A., & Chanowitz, B. (1978). The mindlessness of ostensibly thoughtful action: The role of "placebic" information in interpersonal interaction. *Journal of Personality and Social Psychology*, *36*, 635–642.

Lau, M. A., Bishop, S. R., Segal, Z. V., Buis, T., Anderson, N. D., Carlson, L., … Devins, G. (2006). The Toronto mindfulness scale: Development and validation. *Journal of Clinical Psychology*, *62*(12), 1445–1467.

Lavrakas, P. J. (1987). *Telephone survey methods: Sampling, selection, and supervision*. Beverly Hills, CA: Sage Publications.

Lenski, G. E., & Leggett, J. C. (1960). Caste, class, and deference in the research interview. *American Journal of Sociology*, *65*(5), 463–467.

Likert, R. (1932). A technique for the measurement of attitudes. *Archives of Psychology*, *140*, 5–55.

Malhotra, N. (2009). Completion time and response order effects in web surveys. *Public Opinion Quarterly*, *72*(5), 914–934.

Marlatt, G. A., & Kristeller, J. L. (1999). Mindfulness and meditation. In W. R. Miller (Ed.), *Integrating spirituality in treatment* (pp. 67–84). Washington, DC: American Psychological Association.

McClendon, M. J. (1986). Unanticipated effects of no opinion filters on attitudes and attitude strength. *Sociological Perspectives*, *29*(3), 379–395.

McClendon, M. J. (1991). Acquiescence and recency response-order effects in interview surveys. *Sociological Methods & Research*.

Mondak, J. J., & Davis, B. C. (2001). Asked and answered: Knowledge levels when we will not take "don't know" for an answer. *Political Behavior*, *23*(3), 199–224.

Narayan, S. S., & Krosnick, J. A. (1996). Education moderates some response effects in attitude measurement. *Public Opinion Quarterly*, *60*(1), 58–88.

Neville, J. W., & Knowles, E. S. (n.d.). *Serial position effects on extracted MMPI scales*. Unpublished manuscript.

Oppenheim, A. N. (1992). *Questionnaire design, interviewing, and attitude measurement*. London, UK: Pinter.

Paulhus, D. L., Harms, P. D., Bruce, M. N., & Lysy, D. C. (2003). The over-claiming technique: Measuring self-enhancement independent of ability. *Journal of Personality and Social Psychology*, *84*(4), 890–904.

Rogers, W. L., & Herzog, A. R. (1984). *Response style characteristics and their relationship to age and item covariances*. Unpublished manuscript.

Saris, W. E., Revilla, M., & Krosnick, J. A. (2010). Comparing questions with agree/disagree response options to questions with item-specific response options. *Survey Research Methods*, *4*, 61–79.

Schuman, H., & Presser, S. (1996). *Questions and answers in attitude surveys: Experiments on question form, wording, and context*. London, UK: Sage Publications.

Schwarz, N. (1996). *Cognition and communication: Judgmental biases, research methods, and the logic of conversation*. Malwah, NJ: Erlbaum.

Simon, H. A. (1957). *Models of man*. New York, NY: Wiley.

Stone, A. A., & Shiffman, S. (1994). Ecological momentary assessment (EMA) in behavorial medicine. *Annals of Behavioral Medicine*, *16*, 199–202.

Sudman, S., Bradburn, N. M., & Schwarz, N. (1996). *Thinking about answers: The application of cognitive processes to survey methodology*. San Francisco, CA: Jossey-Bass.

Tourangeau, R., Rips, L. J., & Rasinski, K. A. (2000). *The psychology of survey response*. Cambridge, UK: Cambridge University Press.

Vaillancourt, P. M. (1973). Stability of children's survey responses. *Public Opinion Quarterly*, *37*(3), 373–387.

Van Dam, N. T., Earleywine, M., & Borders, A. (2010). Measuring mindfulness? An item response theory analysis of the Mindful Attention Awareness Scale. *Personality and Individual Differences*, *49*(7), 805–810.

Visser, P. S., Krosnick, J. A., Marquette, J., & Curtin, M. (2000). Improving election forecasting: Allocation of undecided respondents, identification of likely voters, and response order effects. In *Election polls, the news media, and democracy*. New York, NY: Chatham House.

Warwick, D. P., & Lininger, C. A. (1975). *The sample survey: Theory and practice*. New York, NY: McGraw-Hill.

Yeager, D. S., Krosnick, J. A., Chang, L., Javitz, H. S., Levendusky, M. S., Simpser, A., & Wang, R. (2011). Comparing the accuracy of RDD telephone surveys and internet surveys conducted with probability and non-probability samples. *Public Opinion Quarterly*, *75*(4), 709–747.

Zaller, J., & Feldman, S. (1992). A simple theory of the survey response: Answering questions versus revealing preferences. *American Journal of Political Science*, *36*(3), 579–616.