



## Full length article

## Improving social media measurement in surveys: Avoiding acquiescence bias in Facebook research



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## ARTICLE INFO

## Article history:

Received 1 July 2015

Received in revised form

21 November 2015

Accepted 2 December 2015

Available online 21 December 2015

## Keywords:

Social media measurement

Acquiescence

Agree–disagree scales

Survey experiment

Method biases

Correlates of Facebook use

## ABSTRACT

Social media measurement relies heavily on self-report survey research. Hence, known biases in how individuals answer survey questions can introduce systematic errors into the social media literature. In particular, many common social media measures are prone to acquiescence response bias, an error that occurs due to individuals' tendency to agree with agree–disagree questions. The current study tests a series of techniques to both detect and overcome acquiescence bias in the context of Facebook measurement. Controlling for individuals' tendency to agree with agree–disagree questions, we find evidence that acquiescence has inflated the reliabilities and factor loadings of many Facebook use scales, and has altered correlations both among Facebook use measures and between those measures and related covariates. Further, when the individual-level tendency to agree with questions is controlled, Facebook measures demonstrate greater criterion validity in their relations to items that do not use agree–disagree scales. Having identified the presence of acquiescent responding, we test three methods for mitigating this response bias: the use of balanced scales, item-specific questions, and statistical correctives. All three methods appear to reduce the bias introduced by acquiescence. Thus, the results provide comparative evidence on strategies to alleviate the consistent impact of an important method bias in social media measurement and thereby contribute to improving the validity of social media research at large.

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## 1. Introduction

Acquiescence bias is a pervasive problem in survey research that could translate to social media measurement as well. When questions are presented with agree–disagree (AD) or yes/no response options, some respondents select the “agree” (or “yes”) option disproportionately more frequently than the “disagree” (or “no”) option. Presumably, this tendency stems from the social norm to be agreeable (see Pasek & Krosnick, 2010). Acquiescence can introduce errors into data, as survey responses to acquiescence-prone measures conflate individuals' true attitudes and behaviors with agreeableness. At its most pernicious, this can lead survey researchers astray, inducing correlations between similarly worded items that may be designed to tap unrelated constructs and hence resulting in systematic errors (Bagozzi, 1984; MacKenzie & Podsakoff, 2012). These concerns have led some researchers to

decry the use of AD Likert scales for social research (Fowler, 1995; Saris, Revilla, Krosnick, & Shaefner, 2010). Yet, despite these calls, social media measurement through surveys, and especially the literature on Facebook, has extensively relied on survey techniques that are prone to acquiescence bias.

Domains where AD scales are widely used might be particularly susceptible to inferential errors related to acquiescence; and research on the social network site Facebook appears to be one such area. With the explosive emergence of social media and the subsequent proliferation of scholarship on Facebook from diverse fields (e.g. Wilson, Gosling, & Graham, 2012), a number of strategies have been introduced for gauging users' behaviors on the site (Kuru & Pasek, *in press*). The vast majority of studies of Facebook use, however, have been dominated by acquiescence-prone measures. Further, these measures tend to conflate agreement with greater use of the social network site. Acquiescence bias could therefore be an important confound in studies of Facebook, potentially hindering researchers' attempts at understanding and situating the social experience and consequences of site use. Since the Facebook literature is yet a young and emerging field, researchers may still have a

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chance to adjust course, tracking use of the site in ways that are less susceptible to bias.

The current study assesses the extent to which acquiescence response bias may be influencing current studies of the correlates of Facebook use. To accomplish this, we look for the presence of method bias using an online survey experiment. Where methodological biases are observed, we test whether a variety of statistical correctives, balanced scales, and finally alternative question wording might mitigate these biases (cf. Saris et al., 2010). Structural equation modeling (SEM) and alternative question wording approaches are compared as potential ways to improve indexes of Facebook use as well as in their ability to predict a variety of theoretically related constructs.

## 2. Literature review

### 2.1. Acquiescence bias

Survey methodologists have long noted the tendency of respondents to agree when confronted with AD questions, regardless of their content (Billiet & McClendon, 2000; Jackson, 1959; Welkenhuysen-Gybels, Billiet, & Cambré, 2003). Nonetheless, Likert scales using these response options remain prevalent throughout social science research. AD questions are simple to format and easy to generate, which may explain their prevalence (Saris et al., 2010), but this simplicity comes at a cost. Acquiescent responses can lead scholars to incorrect conclusions because they confound the attitudes and behaviors studied with the general tendency to agree. And acquiescence can have a large impact; multiple studies suggest that between 10% and 20% of respondents engage in this behavior (Krosnick & Fabrigar, 2001; Saris et al., 2010; Schuman & Presser, 1981).

Studies of acquiescence response bias indicate that the tendency to acquiesce varies across individuals (MacKenzie & Podsakoff, 2012). Three theories have been proposed for why some people behave in this manner. First, considerable evidence shows that respondents treat surveys as conversational (Brown & Levinson, 1987; Pasek & Krosnick, 2010). Following conversational conventions, respondents may agree with survey prompts because "in everyday conversations people want to be agreeable and want to be agreed with" (Brown & Levinson, 1987; Leech, 1983). A second possible cause of acquiescence stems from the perceived authority of the interviewer. Reacting to this role, respondents might defer to the interviewer, acquiescing to his or her question by responding in agreement (Carr, 1971; Lenski & Leggett, 1960). Finally, it is possible that acquiescence is a product of survey satisficing (Krosnick, 1991; Simon, 1957). Instead of pondering the question and contemplating all the information available to provide the best possible answer, respondents might satisfice by choosing an answer that seems good enough or appropriate. Agreeing with the prompt appears to be one mechanism for choosing just such an answer (Krosnick, 1999, 1991).

Apart from these theoretical mechanisms, individual differences in cognitive abilities and education (Krosnick, 1999; Krosnick & Alwin, 1987; Schuman & Presser, 1981), psychological tendencies toward impulsiveness (Couch & Keniston, 1960; Messick, 1991), and agreeableness (Costa & MacCrae, 1992; Knowles & Condon, 1999) can alter the level of acquiescence bias (MacKenzie & Podsakoff, 2012). This suggests that acquiescence can be regarded as an individual-level trait.

### 2.2. Addressing acquiescence

Three basic strategies have been proposed for mitigating the influence of acquiescence on research conclusions. The first involves the use of "balanced" scales, in which respondents are asked

whether they agree with conflicting statements about a concept (Nunnally, 1978; Schriesheim & Hill, 1981). Although these scales reduce the correlation between acquiescence and the construct of interest, they arbitrarily place individuals who always acquiesce at the midpoint of the scale, which may or may not be reasonable (Billiet & McClendon, 2000; Pasek & Krosnick, 2010). A second strategy involves statistically correcting for acquiescence. Techniques such as factor analyses (Billiet & McClendon, 2000; Cheung & Rensvold, 2000; Podsakoff, MacKenzie, Lee, & Podsakoff, 2003; Welkenhuysen-Gybels et al., 2003; Williams, Gavin, & Williams, 1996) and ipsatization (Chan, 2003; Fischer, 2004; Greenleaf, 1992) can be employed to disentangle acquiescence from the construct of interest. Finally, researchers can ask questions that are not susceptible to acquiescence response bias to start with.

In particular, replacing AD scales with direct queries about the concepts of interest – so-called "item-specific" (IS) questions – can result in measures with potentially greater reliability and validity (Ross, Steward, & Sinacore, 1995; Saris et al., 2010; Schuman & Presser, 1981). Instead of assessing whether respondents agree or disagree with a prompt, IS-questions solicit the extremity of an attitude or the extent of a behavior using response options that mirror that of the question. For example, instead of asking people how much they agree or disagree with the prompt, "I like cookies," researchers could instead ask respondents, "How much do you like cookies?" with response options ranging from "Not at all" to "A great deal."

### 2.3. Social media measurement: Facebook scales and acquiescence

With the proliferation of social network sites, researchers have scrambled to measure how people are using the sites as well as the consequences of site use. As Facebook experience became a part of social, political, and economic life, researchers from various disciplines incorporated measures of Facebook use in their studies (see Wilson et al., 2012 for a review). Faced with the need to rapidly develop and deploy scales, it is unsurprising that researchers generously borrowed measures and scales from a few early papers that established them (see Kuru & Pasek, in press). Unfortunately, validated scales are scarce, and a majority of the scales are composed of Likert-style AD questions (examples below). Hence, if acquiescence response bias is a problem for AD scales measuring Facebook, it could represent a limitation for much of the literature.

There are a variety of reasons to worry that acquiescence response bias could be altering our understanding of social network use and particularly Facebook use. First, as noted above, AD Likert-style questions compromise the bulk of measures for many commonly used Facebook scales. A recent systematic review of Facebook studies published since 2007 until the end of 2014 reveals that 20 of the 47 studies used agree-disagree format in measuring Facebook use (Kuru & Pasek, in press). Moreover, many of the widely adopted and used scales such as the Facebook Intensity Scale (Ellison, Steinfield, & Lampe, 2007) also rely on the acquiescence-prone Likert format. Second, these scales have been analyzed without any attempt to assess the extent of acquiescence, meaning that the potential for bias is unknown. Third, the previous research on response styles had found that response biases can alter the correlations between constructs (Baumgartner & Steenkamp, 2001). And finally, agreement with AD measures in Facebook use scales almost always corresponds with greater use of the social network site (i.e. the scales are not balanced), meaning that serial acquiescence could introduce a clear directional bias into correlations.

Acquiescence bias could present a cascade of problems for the literature. First, confounding respondents' tendency to agree with Facebook use could induce spuriously inflated correlations

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