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The Relationship Between the Position of Name Generator Questions and Responsiveness in Multiple Name Generator Surveys

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Abstract

Using randomly ordered name generators, we tested the effect of name generators' relative position on the likelihood of respondents' declining to respond or satisficing in their response. An online survey of public health staff elicited names of information sources, information seekers, perceived

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experts, and friends. Results show that when name generators are asked later, they are more likely to go unanswered and respondents are more likely to respond that they do not know anyone or list fewer names. The effect of sequence was not consistent in different question types, which could be the result of the moderating effect of willingness to answer and question sensitivity.

Keywords

name generator, satisficing, refusal, online survey, social network, fatigue

In many social network analysis studies, the collection of egocentric network data occurs by surveying a sample of people who identify others and who fulfill certain criteria (e.g., friend, acquaintance). "Name generators" are used in egocentric network analysis and in sociocentric analysis when rosters (the whole list of population) are not available or it is not feasible to obtain (Burt 1984). The name generation process requires respondents to use free recall from memory to provide names of relevant people (Marsden 2011). Because it is impossible to elicit a complete list of individuals' social interactions, which may include hundreds of names (Killworth et al. 1990), researchers take various approaches to focus on a subset of personal networks based on specific time limits (e.g., recent interactions), relationship types (e.g., discussing important matters), relationship quality (e.g., strong ties), and frequency (e.g., frequent exchange of resources; Van der Poel 1993).

However, survey techniques have their inherent limitations (McColl et al. 2003; Schwarz et al. 1991; Tourangeau and Rasinski 1988), and the accuracy and usefulness of name generators in eliciting social network information have been debated (Bailey and Marsden 1999; Campbell and Lee 1991). Name generators are prone to various biases that are rooted in how the memory stores and retrieves the names and how the survey structure and context affect the responses (Brewer 2000). Wording matters and different respondents may interpret the name generator concepts (such as "close friends," "important matters") differently (Bailey and Marsden 1999; Bearman and Parigi 2004; Burt 1983; Fischer 1982). The network size and average tie characteristics may vary by the way of asking name generating questions (Campbell and Lee 1991). Also the reliability of name generators is dependent on several cognitive, contextual, and social factors (Marsden 1993).

In many network studies, researchers are interested in more than one type of network such as friendship, advice seeking, and daily conversations (Marsden 2011). This is because no single name generator is able to capture all aspects of social relations (Marin and Hampton 2007), and sometimes researchers study the associations among various social networks. Therefore, multiple name generators may be provided in a single survey. However, little attention has been paid to how multiple name generators interact with one another.

Network questions are cognitively demanding. Asking several complex questions in multiple name generators may lead to respondent fatigue, as happens in surveys (Tourangeau and Rasinski 1988). Fatigue may simply result in a person refusing to answer a question. But in less extreme situations, the respondent may look for shortcuts to complete the survey in order to make it less burdensome, which may include choosing the easiest available option (e.g., choosing "I don't know"; Fischer 2009), or limiting the name list to the minimum possible number of people (Pustejovsky and Spillane 2009).

Refusal and fatigue may affect the accuracy of network data in a unique way that is rooted in the mechanisms by which the mind stores and retrieves network information and the structural characteristics of social networks. Individuals store and retrieve social network information by clustering the social relations into triads and groups and retrieve the data from conceptual lists (Brashears and Quintane 2015; Brewer 1995). Consequently, shortening the name lists as a result of fatigue may bias the resulting social networks to certain social clusters (Burt 1986). In addition, when using name generators to study whole networks missing data and incomplete tie lists do not just bias data related to the relevant respondent, they bias measures of *other* network members' positions as well as measures of the structure of the entire network (Verdery et al. 2015). If a considerable proportion of the population is missed, it results in a significant challenge to the validity of the findings, especially when the reason for missing values is not due to random error (Borgatti and Molina 2003; Costenbader and Valente 2003; Kossinets 2006).

Several other processes may affect the way response to subsequent questions is modified by the preceding answers. Respondents may interpret the later questions as a request for not previously provided answers (nonredundancy) and so may limit the subsequent answers to only new information (Pustejovsky and Spillane 2009; Schwarz 1999), preceding questions may activate a set of relevant memories that would not have been activated otherwise, leading to identification of different names (cognitive priming; Tourangeau and Rasinski 1988), and the preceding questions may lead in

new interpretation of the meaning of subsequent questions, resulting in identification of a different list (question-scope redefinition; Pustejovsky and Spillane 2009; Schwarz 1999). Pustejovsky and Spillane (2009) studied the effects of various mechanisms for the effect of ordering of two social network questions. They randomized the order of two advice seeking name generators (math vs. reading) provided to a sample of elementary school staff. They found some evidence supporting satisficing (shortening the answers to minimize the effort) and question-scope redefinition. Since both name generators in that study were related to advice seeking, the findings provided little evidence on the order effect with conceptually distinct relations elicited. In addition, the effect of fatigue may be more prominent in surveys including more than two name generators.

In this study, we examined how the position of name generator questions in a survey influences respondents' motivation to answer. In this article, we focused our analysis on responsiveness regardless of the response content.

Conceptual Framework

Several factors affect responsiveness to survey questions. Respondents are more likely to refuse to answer sensitive questions (i.e., embarrassing questions or those they perceive as invading privacy; Tourangeau and Smith 1996). Also the likelihood of refusal increases in longer surveys (Galesic 2006). In the context of name generators, Vehovar et al. (2008) and Manfreda, Vehovar, and Hlebec (2004) found that increasing the number of spaces provided for names resulted in a higher dropout rate. Therefore, similar to other survey questions, we expect that in a multiple name generator, the likelihood of refusal will be higher for questions farther from the beginning of the survey.

When respondents are motivated to answer questions but not at a level high enough to endure the burdensome cognitive tasks of comprehension, retrieval, judgment, and reporting (Tourangeau 1984), they may look for shortcuts to providing answers. Krosnick (1991) referred to this process of choosing more cognitively convenient answers while still appearing to participate in the survey as "survey satisficing." Satisficers might avoid all the required cognitive steps and instead "opt out" by selecting the "I don't know" or "not applicable" options (Krosnick 1991). Satisficing is affected by the perceived level of difficulty of the task (e.g., cognitive burden of the questions), respondent's ability to answer a question (i.e., cognitive skills), and motivation to answer (e.g., the importance of the survey; Krosnick 2000).

Respondent's fatigue can affect all the abovementioned factors. Fischer (2009) in his network surveys found that fatigue in answering network questions led to a tendency to not list any alters. This was also famously the issue with the controversial social isolation finding (McPherson, Smith-Lovin, and Brashears 2006), which was later shown to be a consequence of fatigued respondents falsely claiming not having any discussion partners (Fischer 2012; McPherson, Smith-Lovin, and Brashears 2008, 2009; Paik and Sanchagrin 2013).

Alternatively, respondents may partially execute the cognitive steps but provide less than optimal answers. In the context of name generators, this could be in the form of limiting the list of the named individuals to only the most prominent names or minimally acceptable number of names. Pustejovsky and Spillane (2009) studied the effects of various mechanisms for the effect of ordering of two social network questions. They randomized the order of two advice-seeking name generators (math vs. reading) given to a sample of elementary school staff. They found some evidence supporting satisficing. The effect of fatigue may be more prominent in surveys including more than two name generators.

The extent to which the abovementioned mechanisms come into play may also depend on the sensitivity and cognitive burden of a question. The likelihood of refusal depends on survey length, respondent's initial interest in participating in survey and the cumulative burden of answering survey questions (Galesic 2006; Knapp and Heidingsfelder 2001). Shoemaker, Eichholz, and Skewes (2002) found that choosing between refusing to answer a question or selecting the "I don't know" answer was the result of an interaction effect between the cognitive effort to answer the question and level of question sensitivity. More sensitive questions get more refusal, but questions with a heavier cognitive burden have a greater likelihood of both refusal and answering "I don't know."

We studied the association between the position of name generator questions in a survey and the likelihood of refusal, the likelihood of identifying no alters in the network, and the number of alters named, and how these associations varied in name generator questions with different levels of sensitivity and cognitive complexity.

Method

In 2011 to 2013, the staff of three public health units in Ontario, Canada, participated in a longitudinal study on an organization-wide intervention to promote application of research evidence in practice (Yousefi-Nooraie,

Dobbins, Marin, Hanneman, and Lohfeld 2015; Yousefi-Nooraie, Marin, Hanneman, Lohfeld, and Dobbins 2017). We hypothesized that the intervention, which consisted of the participation of select staff in each health unit in training programs on evidence-based decision-making in public health, would affect the way the staff recognized experts and turned to their peers when seeking information on research evidence. The staff in three health units who were expected to apply research evidence in practice (including public health nurses, consultants, supervisors, and managers) were invited to participate in three rounds of online surveys at 12-month intervals. In this study, we only included the responses to the first round of the survey. In the survey, the network name generator questions were provided after 6 questions about individual characteristics (gender, work experience, educational degree, professional designation, affiliating division, and job title), a question eliciting the respondent's previous experience with evidence-informed practice, and an index of 18 questions assessing the implementation of evidence-informed decision-making in practice (the questionnaire was obtained by permission from Mazurek Melnyk, Fineout-Overholt, and Mays [2008]). Then, the respondents responded to the following name generators eliciting the names of peers in their health unit: (a) "Please identify up to five staff in this health unit to whom you regularly turn to help you apply research evidence to inform your professional activities" (information seeking), (b) "Please identify up to five staff in this health unit who regularly turn to you to help them apply research evidence to inform their professional activities" (reverse information seeking), (c) "Please identify up to five staff in this health unit who are experienced and knowledgeable in finding research evidence and translating it into practice" (expertise recognition), and (d) "Please identify up to five staff in this health unit whom you consider a personal friend" (friendship network). For each of the four questions, five blank spots were provided with specific fields for writing down the first and last names and affiliated organizational division of people as well as an additional open space in which they could write as many extra names as they desired.

The respondents could leave any question blank, choose "I prefer not to answer this question" or "I don't know anyone" options, or provide a name list. In our analysis, we analyzed the data from respondents who provided a name list or chose the "I don't know anyone" generator questions. We excluded those individuals who left all four name generators blank or chose "I prefer not to answer this question" for all four questions because it was not possible to test the effect of the position of the questions on their responsiveness.

The information-seeking networks in the study units were highly centralized, with most staff turning to a few experts for information, while nobody

identified them as an information source (Yousefi-Nooraie, Dobbins, Brouwers, and Wakefield 2012). Therefore, we expected that the frequency of answering "I don't know anyone" would be highest for the reverse information-seeking question. The four name generators were presented in random order using a simple randomization algorithm.

We developed a two-level multinomial logistic regression model (with respondent ID as random level) to predict the relationship between a question's position on the list (1, 2, 3, or 4), and question type (information seeking, reverse information seeking, expertise recognition, and friendship) on the likelihood of refusing to answer and on choosing the "I don't know anyone" response option. We did not include the variance between the three health units in the analysis because interdepartmental variance was negligible in the preliminary analysis. The analysis was carried out using the gsem function in Stata 13.1 (StataCorp 2013).

If an individual left a question blank or chose "I prefer not to answer this question," we considered it as refusal. However, since it was also possible that leaving a question blank could also mean "I don't know anyone," we reclassified blanks as "I don't know anyone" and reran the analysis to test for the sensitivity of the findings to the classification of answers (Online Appendix 1).

In the subgroup of respondents who did not refuse to answer and provided either one or more names or chose "I don't know anyone," we developed a multilevel generalized linear model with Poisson family and a log link function to predict the size of the list (number of identified alters) by the question type and the effect of placing each question further down the survey. We carried out this analysis using meglm command in Stata 13.1 (StataCorp 2013).

Results

In total, 442 individuals from the three health units answered at least one network question, of whom 173 were in unit A (28 percent of health unit workforce), 194 in unit B (18 percent of workforce), and 75 in unit C (37 percent of workforce). Eighty-seven percent of the respondents were female. Respondents were mainly public health nurses (34 percent), professional consultants (e.g., specialists, consultants, and epidemiologists: 15 percent), and managers (14 percent), and other less frequent job titles (e.g., nutritionist, health inspector, and medical officer of health). The majority of respondents had a bachelor's (56 percent) or master's+ (31 percent) degree.

Ten percent of the respondents refused to answer the information-seeking question, compared to 17 percent for the reverse information seeking,

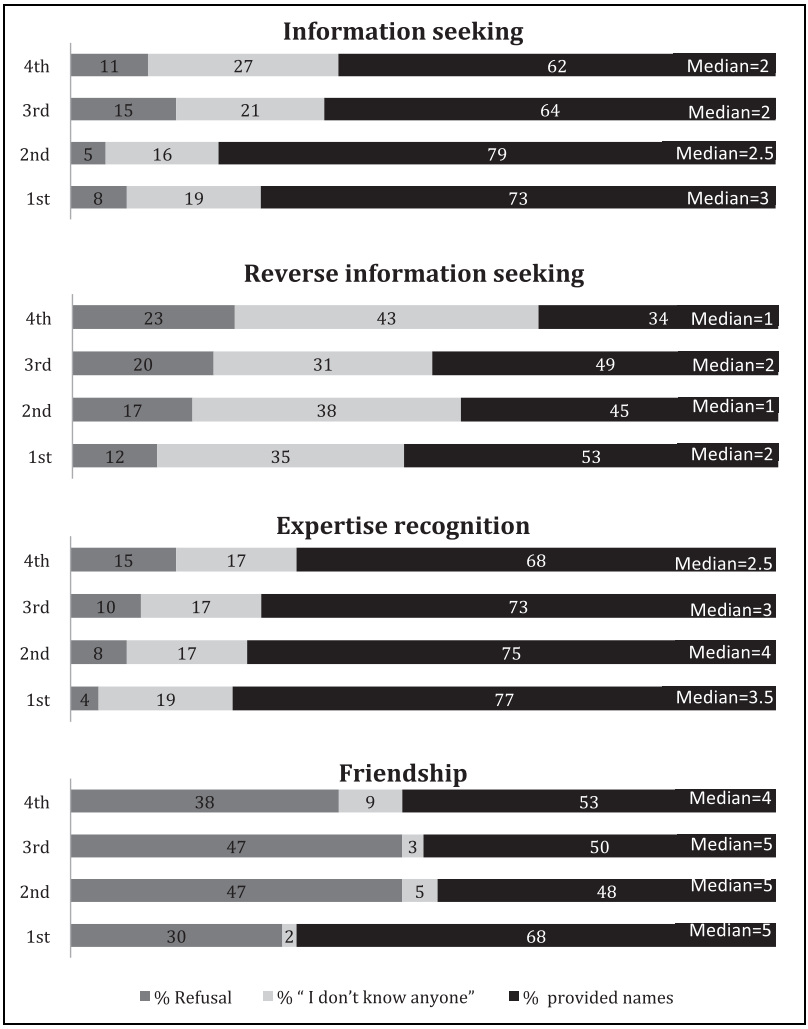

Figure 1. The percentage of refusal and "I don't know anyone" and the median list size for each question provided at different positions in the survey.

10 percent for expertise recognition, and 40 percent for friendship questions. Figure 1 shows the percentage of refusal for each network question. The refusal percentage increased from 8 percent when the information-seeking question was placed first to 11 percent when it was placed fourth in the list,

compared to a 11-point increase in reverse information seeking (from 12 percent at first to 23 percent at fourth), a 11-point increase in expertise recognition (from 4 percent at first to 15 percent at fourth), and a 8-point increase in friendship (from 30 percent at first to 38 percent at fourth).

The percentage of respondents who answered "I don't know anyone" was 20 percent in the information seeking, 36 percent in the reverse information seeking, 17 percent in the expertise recognition, and 6 percent in the friendship question. The percentage at different orderings is provided in Figure 1. Based on the descriptive analysis, the relationship between the place of the question and the probability of choosing "I don't know anyone" did not seem to be linear. The percentage increased by 8 percent from first (19 percent) to fourth position (27 percent) in information seeking and by 7 percent in friendship. However, the percentage showed a fluctuating pattern in reverse information seeking and no change by order in expertise recognition.

Table 1 shows the odds ratio of refusing to answer each question at different places in the survey, obtained from the multinomial regression model. The pooled analysis of the effect of order without including the question type in the model (first column in Table 1) showed a significant effect of the place of the question on the likelihood of refusal, with an odds ratio of 2.84 when the questions were placed second (compared to first) and an odds ratio of 4.51 when the questions were placed fourth (compared to first). The likelihood of refusing to answer information seeking and expertise recognition increased the later the question placed in the list, noticeably at third level onward (with an odds ratio of 3.35 for information seeking and 3.17 for expertise recognition for third vs. first positions). The increase in the likelihood of refusal from first to second position in the list was highest in reverse information seeking, with an odds ratio of 4.25 (compared to first), and friendship, with an odds ratio of 2.77.

Table 1 also shows the odds ratios of answering "I don't know anyone" in different positions in the survey for various network types. The pooled analysis (the first column, Table 1) showed an initial significant increase in the likelihood at second position followed by a significant decrease at third position. In information seeking, the likelihood increased by moving further down the list, with an odds ratio of 2.77 at fourth position. Expertise recognition also showed a rather small increase by moving further down the list. At second position, the greatest increase was observed in friendship and reverse information seeking, with an odds ratio of 5.5 and 2.38, respectively. Changing the definition of blank responses from refusal to "I don't know anyone" did not change the pattern of findings, as shown in Online Appendix 1.

Table 1. The Odds Ratio (95 Percent CI) of Refusing to Answer and Answering "I don't Know Anyone" to Each Question at Different Positions in the Survey.

	All Questions Pooled	Information Seeking	Reverse Information Seeking	Expertise Recognition	Friendship
Refusal					
First in the list		0.03 [0.01, 0.06][a]	2.11 [0.63, 7.11][b]	0.43 [0.08, 2.39][b]	12.21 [3.77, 39.53][b,***]
Second	2.84 [1.81, 4.45][c,***]	0.37 [0.07, 1.82][c]	4.25 [1.37, 13.17][c,**]	1.4 [0.17, 11.41][c]	2.77 [0.85, 9.04][c]
Third	2.07 [1.33, 3.24][c]	3.35 [1.13, 9.93][c,**]	4.03 [1.02, 15.87][c]	3.17 [0.58, 17.2][c]	2.54 [0.74, 8.69][c]
Fourth	4.51 [2.78, 7.34][c,***]	3.02 [0.95, 9.56][c]	6.69 [1.67, 26.83][c]	5.61 [0.86, 36.64][c]	1.65 [0.58, 4.68][c]
I don't know anyone					
First in the list		0.1 [0.06, 0.17][a]	3.6 [1.42, 9.08][b,**]	0.82 [0.3, 2.23][b]	0.06 [0, 0.77][b,*]
Second	2.62 [1.78, 3.86][c,***]	0.59 [0.17, 2.02][c]	2.38 [0.97, 5.87][c]	0.87 [0.24, 3.15][c]	5.5 [0.33, 92.66][c]
Third	1 [0.68, 1.48][c,***]	1.27 [0.5, 3.22][c]	1.34 [0.42, 4.27][c]	1 [0.36, 2.74][c]	3.59 [0.17, 73.94][c]
Fourth	1.42 [0.92, 2.2][c]	2.77 [1.14, 6.74][c]	2.76 [0.85, 8.92][c]	1.22 [0.35, 4.23][c]	11.87 [0.96, 147.13][c]

Note: CI = confidence interval.

[a]The odds of the event for information-seeking question when it comes first on the list.

[b]The odds ratio of the event for different question types compared to information seeking when they all come first on the list.

[c]The odds ratio of the event by moving later toward the end compared to the first in the row. The *p* values indicate the statistical significance of the difference from previous level.

*$p < .05$. **$p < .01$. ***$p < .001$.

The median of the number of reported names was 3, 1, 3, and 4 for information seeking, reverse information seeking, expertise recognition, and friendship questions, respectively. Table 2 shows the ratio of list size for different positions in the survey, obtained from the multilevel General Linear Model (GLM) model. The pooled analysis (the first column of Table 2) showed a significant initial decrease at second, a significant increase from previous level at third, and a final decrease at fourth. The list size decreased by moving down the survey in information seeking and expertise recognition. Friendship and reverse information seeking showed mainly an initial decrease at second position (with a ratio of 0.78 at second compared to the first for reverse information seeking and a ratio of 0.88 for friendship), which was not followed by subsequent decrease further down the list.

Discussion

We observed a relationship between the position of name generators and the likelihood of refusing to answer, choosing "I don't know anyone" and shortening the name lists, although the magnitude and pattern differed by network type. In all network types, the likelihood of refusal and choosing "I don't know anyone" increased the later the question was placed in the survey. Among respondents who provided an answer (including "I don't know anyone"), the average list size decreased significantly as the questions appeared later in the survey. Two questions of information seeking and expertise recognition showed a similar pattern of gradual increase in likelihood of refusal and choosing "I don't know anyone" and decrease in list size by positioning the questions later in the list; while friendship and reverse information seeking showed an initial increase in likelihood of refusal and choosing "I don't know anyone" and a decrease in list size at second position and a less linear pattern in subsequent positions.

The substantial relationship between survey length and response rate has been shown consistently in the literature (Heberlein and Baumgartner 1978; Yammarino, Skinner, and Childers 1991). Respondents are more likely to refuse to continue to answer longer online surveys (Galesic 2006). Providing a response to a name generator is the result of a complex process of comprehension of the meaning of the question both overall (syntactic) and in terms of its components (semantic, e.g., the meanings of terms advice seeking, research evidence), retrieving people's names from long-term memory into working memory, judging whether they meet the requested criteria, choosing the most relevant names, and providing the chosen names within the provided spaces (Tourangeau and Bradburn 2010). This complexity can

Table 2. The Ratio (95 Percent CI) of the List Size of Each Question at Different Positions in the Survey.

List size	All Questions Pooled	Information Seeking	Reverse Information Seeking	Expertise Recognition	Friendship
First in the list		2.48 [2.22, 2.77][a]	0.77 [0.62, 0.96][b,*]	1.08 [0.9, 1.28][b]	1.29 [1.1, 1.52][b,**]
Second	0.78 [0.72, 0.85][c,***]	0.94 [0.79, 1.12][c]	0.78 [0.61, 1][c,*]	1.01 [0.82, 1.24][c]	0.88 [0.71, 1.08][c]
Third	0.93 [0.86, 1][c,***]	0.8 [0.66, 0.96][c]	0.84 [0.6, 1.18][c]	0.89 [0.75, 1.06][c]	1.04 [0.85, 1.28][c]
Fourth	0.89 [0.81, 0.97][c]	0.67 [0.54, 0.84][c]	0.88 [0.62, 1.24][c]	0.8 [0.65, 1][c]	0.85 [0.72, 1][c,*]

Note: CI = confidence interval.

[a]The size of the list for information-seeking question when it comes first on the list.

[b]The ratio of the list size for different question types compared to information seeking when they all come first on the list.

[c]The ratio of the list size by moving later toward the end compared to the first in the row. The *p* values indicate the statistical significance of the difference from previous level.

*p <.05. **p < .01. ***p < .001.

explain the large percentage of refusal in our survey in which the network name generators were all placed after a long questionnaire, which resulted in a baseline fatigue.

The information seeking and expertise recognition questions both belong to a common conceptual category. Compared to friendship question, they were more evidently related to the concept of the study and were more professional rather than personal. This explains the low percentage of refusal in these questions. We expected that friendship would be the most sensitive because it was more private and less professional in nature. In addition, the respondents might not have been clear about the relevance of friendship to the objectives of the study. So the respondents' willingness to answer friendship question was expected to be the lowest among all. As expected, friendship had the highest likelihood of refusal among all question types even when the question was placed first in the list.

The effect of the name generator position on the responsiveness was more linear for information seeking and expertise recognition questions and resembled gradual effect of fatigue and satisficing to a large extent; while the pattern for friendship and reverse information seeking was more complex. Respondents were reluctant answering friendship question even when they experienced it first in the list, and the reluctance intensified when the question was placed second. So the large increase in likelihood of refusal and choosing "I don't know anyone" at the second position was probably a joint effect of fatigue and reluctance due to sensitivity or low relevance of friendship question. The similar pattern in reverse information seeking implies that the respondents might consider revealing the names of peers who turned to them as a breach of confidentiality, so they were more reluctant in answering this question compared to information seeking and expertise recognition.

In addition, choosing "I don't know anyone" may be simply a reflection of reality that the respondent does not know anyone meeting the criterion of interest. The highest percentage of null lists in our study occurred in the reverse information-seeking question ("Who regularly turns to you seeking help applying evidence in practice?"). Due to the centralized nature of information-seeking networks in our study, a large number of people turned to a small core of known experts for information (Yousefi-Nooraie, Dobbins, Brouwers, and Wakefield 2012) and many people were not approached by anyone as an information source. For the respondents who were not an information source for anybody, listing no one may reflect their true position in the network, and so that response is not a negative reaction to a burdensome question.

More motivated respondents may take another satisficing approach by limiting their answers to subsequent questions to the minimally acceptable number. Significant decrease in list size by later position of questions is supported in other network studies (Brashears 2011).

Providing shorter lists may lead to problems in constructing social networks based on information obtained by name generators. Dropping names at the end of free lists results in considerable changes in estimated network structural measures (McCarty, Killworth, and Rennell 2007). Brewer (1995), in a study of the cognitive process of classification of people's names in memory, found that names are organized in memory according to social structural principles. Affiliation to social groups and dominance of the person are two main dimensions of the organization. Brewer et al. (2005), in a literature review of the associative patterns in recall of persons, found various studies that consistently showed that persons recalled adjacently to one another in temporal terms (the order of retrieval) are perceived to interact more with each other than with nonadjacent persons. So the larger likelihood of censoring of the later names in name generators that appear at the end of the surveys may result in ignoring more weakly connected social clusters (Burt 1986). Consequently, we expect that satisficing may result in biasing networks toward more recent or stronger social interactions.

Similar to refusal and "I don't know anyone," information seeking and expertise recognition showed a linear trend of decrease in list size by moving towards the end of the survey, implying the effect of satisficing. Reverse information seeking had the smallest average list size and did not show a noticeable linear trend, apart from a decrease in second position. The steady state at third and fourth position could be the result of floor effect; since the median size of the list in reverse information seeking was 1 so even the satisficers tended to provide a minimum of one name no matter where the question was placed. Friendship had the largest average list size among all four questions and showed a nonlinear association between the list size and name generator position. This implies that in sufficiently motivated respondents (those who did not refuse and also did not choose "I don't know anyone" answering friendship question), the effect of satisficing was less prominent because of their stronger motivations to answer.

Limitations

We used a large dataset from a rigorous study to assess the pattern of responsiveness to multiple name generators. However, all the network questions were placed after other items on a long survey so the respondents were

already fatigued reaching at the network questions. Consequently, the effect of the place of the question on fatigue might have been exaggerated in our study. Our findings are based on a statistical assessment of the response pattern in several nonoverlapping groups of respondents based on the order of the questions in surveys. An optimal method of analysis would be to compare the response pattern of a single panel of respondents who answer the same questions provided in various ordering in order to minimize inter-individual variations. However, that would be impractical both due to the bias induced by the experience of exposure to previous survey rounds and changes in the network structure over time.

Another limitation is that we did not control for the effect of the structure and presentation of online surveys (Matzat and Snijders 2010) and characteristics of respondents and their ties to alters, or ties between alters (Marin 2004), both of which have been shown to affect the responsiveness in online surveys. In addition, the association between the position of questions and the list size could be attributed to nonredundancy, given that respondents may tend to retrieve names not previously identified. This may lead to the shortening of name lists in later questions.

Moreover, motivation to answer to name generators is dependent on the context. The list size also depends on the real size of the egocentric networks. The respondents to this survey were public health decision makers who used research evidence in their practice. To increase generalizability, similar studies should be carried out on other populations with various levels of literacy, motivation, and ego-network size.

Conclusions

In conclusion, our findings show that survey respondents are more likely to refuse to answer or satisfice when the name generator questions are placed later in surveys. However, the effect of sequence is moderated by several other factors, including the willingness and motivation of respondents to answer, which could be lower for more personal questions.

When designing a survey, choosing between comprehensiveness and practicality is difficult and should be guided by the study hypotheses and theoretical framework. On the one hand, incompletely capturing the constellation of relationships that connect a set of actors may result in a partial understanding of social processes (partial system fallacy), which is misleading (Laumann, Marsden, and Prensky 1983). On the other hand, answering several closely overlapping name generator questions requires great

cognitive resources from respondents and may affect the validity and reliability of their answers.

The increase in the likelihood of refusal and satisficing at second position shows a nonnegligible effect of sequence even in short lists. So we suggest that researchers avoid using several name generators in a survey, provide multiple name generators in random order, or place questions that are more sensitive to the position effect (such as friendship) earlier in their surveys. When analyzing data based on multiple name generators, we suggest considering the position and ordering of questions in statistical models. Probes and graphical aids could be used to motivate respondents (Deutskens et al. 2004), and sampling strategies could be applied to reduce the burden (McCarty et al. 2007).

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Supplemental Material

Supplemental material for this article is available online.

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