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A Restricted Multiple Generator Approach to Enumerate Personal Support Networks: An Alternative to Global Important Matters and Satisficing in Web Surveys

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Highlights

- Satisficing occurs when the important matters (IM) generator is presented alone with one name box.
- Five name boxes with IM alone elicit a more complete network with less measurement error.
- The use of five topic-specific IM generators that record up to one alter per generator (R5D) is explored.
- R5D is more aligned with the theoretical construct of the personal support (core) network.
- R5D enumerates more cross-cutting, less diverse alters with less slippage in importance.

Abstract

Overlooked issues in the selection and presentation of name generators may lead to extreme measurement errors in Web surveys. This paper compares networks elicited from the standard "important matters" (IM) name generator, which records alter names on one or five boxes per page, with a two-generator design and an alternative approach, the R5D. The R5D consists of five name generators focused on a range of topics commonly discussed as important matters. Each generator is restricted to recording one alter. Generally accepted practices in egocentric surveys result in inaccurate measures of network size and composition. They include the use of the stand-alone IM generator and advice to present a single name box to record one alter name per page. The use of a single name box encourages satisficing. The R5D is a parsimonious alternative with stronger construct validity. It has less measurement error, provides measures of social support, and enumerates alters with less slippage in importance than other approaches.

Key words: core discussion network, general social survey, heaping, egocentric, mode effect

A Restricted Multiple Generator Approach to Enumerate Personal Support Networks: An Alternative to Global Important Matters and Satisficing in Web Surveys

1. Introduction

The growth of Web surveys has contributed to increasingly standardized approaches to the administration of egocentric network surveys. However, challenges to the selection and presentation of name generators are often ignored. Specifically, when combined with existing guidance on how alter names should be collected, e.g., only one name recorded per survey page (Vehovar, Lozar Manfreda, Koren, & Hlebec, 2008), dependence on a single-generator design (the ubiquitous “important matters” generator (Marsden, 1987)) means that most Web surveys are not eliciting networks that are representative of the core. They tend to underestimate network size, favor alters that are interconnected, and enumerate alters from limited domains of support. As such, current approaches risk reproducing findings of greater social isolation, lower diversity, and less social support than exist in most personal support networks (McPherson, Smith-Lovin, & Brashears, 2006).

This paper proposes a restricted, five-generator design (R5D). The R5D consists of five name generators focused on the range of topics commonly discussed as important matters. Each of the five generators is restricted to recording one alter. Recognizing the role that discussion plays in the process of mobilizing social support (Small, 2017), the R5D is better aligned with the theoretical construct of the personal support network (core network), than the global important matters (IM) generator that is focused on the “core discussion network” (McCallister & Fischer, 1978; Poel, 1993). The R5D builds on previous recommendations to address concerns that the standard IM generator can be biased through topic-role dependency (Bearman & Parigi, 2004) and by how respondents recall names from memory (Marin, 2004).

The size and composition of networks elicited through the R5D are compared to those elicited through four alternative designs in a Web survey. Alternative models include IM as a stand-alone generator with one name box per page, IM with five-boxes per page, and IM with a second, affective generator for “especially significant” (ES) ties, with one- and five-boxes per generator. Findings suggest threats to measurement validity that are particularly acute with the IM one-box design, including satisficing and missing data. Compared to other models, the R5D elicits networks of lower density and lower diversity with alters of higher average importance and of similar, average, relationship duration. It produces a sample that reflects a core network that consists of important, cross-cutting ties, who are relatively homogeneous and provide broad support (Feld, 1981; Marsden, 1987; Wellman & Wortley, 1990). The R5D was the only approach that provided a measure of social support.

When presented with one name box per page, the standard, stand-alone IM generator omits important, core network members. This global IM generator also does not align with the construct of the personal support network. Alternatives, especially the R5D, enumerate networks with less error in measures of network size and composition. The discussion explores the potential for the use of the R5D in other modes of administration, an approach that would reduce satisficing in face-to-face and telephone surveys and lessen mode effects.

2. Core Networks and Name Generators

Egocentric Web surveys have evolved well beyond laborious, one-shot, custom-designed websites (Hampton, 1998). Researchers can now deploy name generators with relative ease by using widely available commercial survey software, such as Qualtrics (Eveland, Hutchens, & Morey, 2013). They can also use dedicated, ego-centric, visualization tools (McCarty & Govindaramanujam, 2005); customizable, stand-alone, software (Hogan et al., 2016); and participant-friendly applications that can be integrated into a variety of survey platforms (Stark & Krosnick, 2017). Whereas this boon in tools has increased the ease at which networks scholars deploy surveys, researchers often overlook how egocentric networks are conceptualized and the subsequent, measurement issues that pertain to the selection of name generators. Inadequate attention to these issues has led to the widespread use of measures that likely provide unrepresentative samples from the personal support network.

The name-generator approach has its origins in the work of Katz and Lazarsfeld (1955). Although initially used in public opinion research, the egocentric or “social influence” approach to the study of mass media has largely vanished from the field of communication (Katz, 1987). An exception is a resurgence in the area of political communication (Huckfeldt, 2021), and the study of social media (Hampton & Chen, 2021). However, the position of Katz and Lazarsfeld as a bridge between the study of mass media and sociology led to subsequent applications across fields (Laumann, 1973). Today, the application of name generators ranges extensively from specialized approaches to the study of health networks (Burt et al., 2012) to policy networks (Henry, Lubell, & McCoy, 2012). However, the most common usage is in the study of what has been described as the core network or the personal support network.

The terms *core network* and *personal support network* are used interchangeably and share common conceptual roots. McCallister and Fischer (1978) first described the core network in terms of social support: “the set of people who are most likely to be sources of a variety of rewarding interactions, such as discussing a personal problem, borrowing money, or social recreation” (p. 135). A decade and a half later, Poel (1993) coined the phrase “personal support network” while contrasting and comparing different approaches to enumerating egocentric networks. He referred to the personal support network as conceptually common to the *role* (Laumann, 1973), *interaction* (Milardo, 1988), *affective* (Wellman, 1979), and *exchange* approaches (McCallister & Fischer, 1978) to delineate egocentric networks. The core network is a subset of the broader personal network, which consists of many, segmented, sparsely-knit contacts, formed through multiple foci of activity (family, work, organizations, etc.), that provide specialized support (Rainie & Wellman, 2012). As depicted in Figure 1a, the core network consists of a person’s most important ties within the personal network. Those ties tend to be close, homogeneous, cross-cutting, and the source of a broad range of support (Hampton, 2016; Marsden, 1987; Wellman & Wortley, 1990).

The number and variety of name generators used to elicit the personal support network have never been standardized. However, there have been attempts to do so. McCallister and Fischer (1978) suggested a battery of ten name generators to provide a representative subset of alters, *a sample from the larger core network*. Poel (1993) identified five generators that captured most alters from this sample of the core. When comparing measures of network size and composition, Marin and Hampton (2007) also found that no one generator provided comparable measures to that of a multiple-generator model. However, they tested two possible shortcuts. One approach utilized two generators and administered name interpreters on a subset of alters: a modified multiple generator (MMG) that consisted of IM that was administered along with an affective generator. The second was a multiple generator random interpreter (MGRI) that included six generators with interpreters administered to a maximum of six random alters. The MMG and MGRI provided network measures that were more reliable than one-generator models, including IM used alone. Marin and Hampton recommended the use of the MGRI, because it provided reliable measures of network size and composition and a multi-dimensional measure of social support. Indeed, a fundamental limitation of any single-name generator approach is that it is conceptually inconsistent with the notion that the core network consists of relationships that provide multiple dimensions of support (Wellman & Wortley, 1990).[2]

2.1 Then There Was One

[2] For a discussion of approaches to sampling alters from the broader personal network, see work by McCarty, Bernard, Killworth, Shelley, and Johnsen (1997), and more recent suggestions by McCarty, Lubbers, Vacca, and Molina (2019).

The limitations of utilizing a single name generator are well understood. There is no evidence that a single name generator provides a reliable measure of the core. Yet, network researchers are often compelled to adopt shortcuts that are often single-generator approaches, because of the complexity of administering multiple generators, the limitations of survey length, and constrained participant attention.

The stand-alone, “important matters” generator increasingly dominates the literature on core networks. The IM generator elicits alters in response to the question:

From time to time, most people discuss important matters with other people. Looking back over the last six months, who are the people with whom you discussed matters important to you?

The IM generator was first used in the 1985 General Social Survey (GSS) (Marsden, 1987). It was a modified version of what was proposed for inclusion by Burt (1984) and was based on a narrower “discussing *personal* matters” generator previously used by Fischer (1982). Burt (1984) fully acknowledged the limitations of using a single generator. However, at the time, the approach was unique and especially complex for a national survey like the GSS. All other concerns paled “in the shadow of concern with timing” (p. 316). It was also thought that the addition of a name interpreter (to be asked of each alter) that inquired about specific important matters or types of support (e.g., work or current job, personal finances, medical care, etc.) would overcome some limitations. However, this interpreter was cut from the survey, presumably because of concern for interview length.

The IM generator has since become the preeminent name generator in the field. Researchers often suggest that IM “elicits the core” (McPherson, et al., 2006, p. 356), despite the clarifying label of “core discussion network” (Marsden, 1987) and the known reliability issues of using a single generator. Indeed, it may elicit members of the core, but it does not generate a representative picture of the core. Several studies have identified significant issues with what the IM generator measures.

Respondents often have a difficult time interpreting what is meant by the term “important matters,” so that the specific matter that is salient to them at the moment of the interview can be shaped by preceding questions in the survey (Bailey & Marsden, 1999) as well as current events (Byungkyu & Bearman, 2017). Because of the IM generator’s reliance on respondents to recall an important matter, IM overestimates social isolation. Bearman and Parigi (2004) found that 56% of those who did not name anyone with whom they discussed important matters, simply could not recall a topic of importance that they had discussed. People also tend to report discussing specific topics (e.g., money) with people in specific roles (e.g., spouse). This “topic-role dependency” varies in unsystematic ways (Bearman & Parigi, 2004). For example, women tend to talk about relationships with kin, while men talk about relationships with friends. Bearman and Parigi (2004) point out that the dependency between topic and role means that the salient, important topic on which respondents initially focus has the potential to dramatically affect the composition of the network elicited. Nonetheless, prior work has generally concluded that the composition of the networks measured across respondents does tend to consistently measure the “core” discussion network (Bailey & Marsden, 1999; Bearman & Parigi, 2004). However, this may not be because the IM generator draws representative samples from the core, but because the samples it does draw are biased in similar ways.

Marin (2004) extends the observations of Bearman and Parigi (2004) and argues convincingly that the recall of names in response to IM is driven not just by topic but by how people organize names in memory. As a result, use of IM as a stand-alone generator results in considerable measurement error related to network size and composition. Marin (2004) found that respondents are more likely to recall names that cluster, i.e., named alters are more likely than other members of the core to be interconnected to one another. This is because of their social proximity as providers of similar support, they are members of the same organization or otherwise part of the same social context. The salient important topic that is most accessible in the respondent’s mind leads to the generation of a name, and, in absence of a prompt to think about other contexts, that name serves a seed for additional names. The result is a representation of the core that is not necessarily inclusive of the various domains that make up the core network in terms of roles, support, or foci (Feld, 1981; Wellman & Wortley, 1990). The early names that respondents recall are more likely to be among the most important members of the egocentric network in that they tend to be socially close. Subsequent names may exhibit slippage in relative importance. That is, respondents name additional alters who are interconnected to the initial seed name but may be of lesser importance than other members of the personal network. As a result, the network elicited through IM as a stand-alone generator may capture network members that are less important (Small, 2017), less diverse, less cross-cutting, and more specialized in supportive exchange than a representative picture of the core.

2.2 Satisficing and Heaping in Egocentric Web Surveys

Additional measurement errors can occur when name generators are administered through Web surveys. Previous work by Vehovar, et al. (2008) suggests that choices about the online presentation of the IM generator can make it susceptible to "heaping." Heaping is observed when respondents are asked to report the size of their personal network, and there is a tendency to round answers to numbers divisible by 5 (Killworth, McCarty, Johnsen, Bernard, & Shelley, 2006). However, heaping, which is traditionally related to the reporting of integer numeric responses, may not extend to the reporting of non-numerical information, such as a list of names. What Vehovar, et al. (2008) observed may not have been heaping, and the solution they proposed may introduce a different bias – satisficing.

Vehovar, et al. (2008) observed that participants provide a larger number of names, when name generators are presented with a larger number of name boxes on a survey page (the space in which respondents enter the names of alters). They argued that multiple name boxes contribute to a misunderstanding of the requirements for responding to the IM generator. They suggested that when there are more name boxes, participants over-report network alters and list ties that are weaker than those who should be included as part of the core. Their recommendation is to present only one name box per page and to permit participants to click on a button to provide a new page or an additional name box for “anyone else.”

However, Vehovar, et al. (2008) base their conclusion on the assumption that heaping in the distribution of alters (the tendency to report five alters when five or more name boxes are presented on one survey page) is evidence that respondents report weaker ties that are not part of the core. Inherently, from their perspective, “when heaping occurs, it indicates problem in data collection” (Vehovar, et al., 2008). However, distributions that resemble heaping are not always a reflection of lower data quality. In some instances, they can indicate higher quality, particularly when respondents are successfully probed to engage in a more thoughtful process (Holbrook et al., 2014)

An alternative interpretation of the findings of Vehovar, et al. (2008) is that the distribution of network size when respondents are presented with five name boxes peeks at three and five alters is typical of core discussion networks. This is similar to the finding of the 1985 GSS (Marsden, 1987). Alternatively, the tendency Vehovar, et al. (2008) observed that surveys with one box per page elicited a mode of one alter is evidence of satisficing. Satisficing is a lack of effort on the part of respondents to provide information on surveys, which results in participants adopting the minimally acceptable solution to answering a survey question (Krosnick, 1991). Indeed, this interpretation is also supported by their data. Vehovar, et al. (2008) found no statistical difference in mean tie strength when they compared networks elicited through one-box or multiple-box models. Regardless, tie strength may not be a particularly good criterion for inclusion in the core discussion network (Small, 2017). One would expect that as the number of names enumerated increases, mean closeness would decrease, even within the core (Marin, 2004).

The recommendation that name generators on Web surveys be presented with one name box per page may encourage satisficing and elicit networks that are smaller and less diverse than a measure that adequately prompts respondents, i.e., one with multiple name boxes. One strategy to reduce satisficing is to use probes that motivate participants to conduct a memory search for names (Marin, 2004). Probes need not be as explicit as “anyone else?” In the case of Web surveys, they could include nudges built into how generators are displayed, such as multiple name boxes or, more traditionally, the use of multiple name generators.

3. A Restricted, Multiple Generator Design (R5D)

Despite known issues with the IM generator, the focus on “discussion” may still be a good criterion for name generators. A possible solution to problems with the standard IM generator is to break it “down into the set of constituent domains that organize the structuring of discussion” (Bearman & Parigi, 2004, p. 553). “Using name generators with criterion relationships that allow for less variety in respondents’ interpretations of the question” (Marin, 2004, p. 304). A multiple generator approach that is inclusive of the various domains of important matters would enumerate a more consistent and representative sample from the *core discussion network*. However, would such a sample be representative of the *personal support network*? And would not such a battery replicate the limitations of existing multiple generator designs in terms of demands on respondents’ time and attention?

Multiple generator approaches to measure the core network have generally included dimensions that are consistent with multidimensional measures of social support (Poel, 1993; Wellman & Wortley, 1990). An approach that delineates areas of discussion is consistent with this focus. Discussion is embedded in the process of mobilizing social support (Small, 2017). Specific types of discussion include the exchange of support (e.g., emotional support), and can also be part of the process of mobilizing resources in anticipation of exchange (e.g., borrowing money or arranging childcare). Thus, an array of discussion-based generators that include topics of important matters would presumably capture even forms of tangible and emergency aid that involve physical exchange. Such an approach is superior to traditional exchange-based generators related to tangible aid (e.g., borrowing $500, childcare, major or minor repairs, etc.,), which often assume something about the respondent’s geography, financial status, type of housing, stage in the life cycle, and the geographic accessibility of core ties. Such biases have the potential to misrepresent long-term individual and societal change as a result of changes in the life cycle, historical events (e.g., COVID-19), and communication technologies.

In a representative sample of the US population, Small (2013) found that, for both men and women, five topics accounted for 92% of main and secondary conversation topics: family, career, personal finances, happiness and life goals, and health. I propose a multiple-generator design based on the five topical areas identified by Small (2013) that represent the range of important matters. In a Web survey, respondents are presented with the following, and are provided, on one page, one name box for each generator:

Who is the last person you discussed important matters about your…

Career (e.g., your job work, retirement, or schooling);

Personal Finances (e.g., issues related to money, a major purchase, paying bills, or taxes);

Happiness and Life Goals (e.g., your dreams, aspirations, and the meaning of life);

Health (e.g., blood pressure, depression, or a death);

Family or Loved Ones (e.g., issues related to your spouse, children, a relative, boyfriend or girlfriend, or someone especially close).

This approach retains a focus on the discussion of important matters. But, unlike the stand-alone, global IM generator, multiple generators are differentiated, based on the five most common, important matter topics. To further reduce unsystematic variation related to how people discuss important matters (e.g., on the Internet or in person), and what reference group participants envision when presented with the question, the following wording precedes the generators:

For the following questions, we are trying to get a picture of those people with whom you discuss important matters. You might have had this discussion in person, talked on the phone or through text messaging, or even had contact online (on the Internet). These *could be relatives, co-workers, friends, people from groups to which you belong (e.g., clubs or church), or other acquaintances.*

This approach to delineating important matters also overcomes issues of respondent burden by maximally reducing to one the number of names recorded per generator; thus it is a *restricted five design* (R5D). Network scholars regularly attempt to reduce respondent burden by capping the number of names one can provide. The cap is often five names, which is consistent with the finding that few participants provide more than five names in response to the global IM generator (Burt, 1984; Fischer, 1982; Marsden, 1987). The R5D is more restrictive per generator but is consistent with an overall cap of five unique names.

Any approach to capping names risks omitting key actors. The goal of the name-generator approach was never to elicit a census of the core but rather a representative subset of important alters from the larger core (McCallister & Fischer, 1978). A key actor in the personal support network is likely to be one who provides either specialized or broad support. Networks of redundant actors, who are of potentially declining importance, are likely to be the focus of a smaller subset of research questions. Prompts that are focused on additional domains – subsequent name generators on different discussion topics – should reset respondents' mental focus and more reliably sample important alters from diverse contexts. By switching domains, the sample of alters may be less interconnected but also less likely to exhibit slippage in importance.

3.1 Comparing Alternatives

There is no gold standard to use in comparing the R5D as an instrument to enumerate a representative sample of the core network. As suggested by Laumann, Marsden, and Prensky (1983), every network question generates its own network, and the network that it reveals is heavily dependent on the population under study. The needs of an individual research question are often the best yard stick to apply in selecting a name generator approach. However, such a nominalist perspective does not negate the necessity to avoid threats to measurement validity. If the intent is to enumerate a representative sample from the core, then researchers should avoid approaches that underestimate network size because of satisficing; enumerate alters from outside the core (Vehovar, et al., 2008); favor alters that are interconnected over alters from other contexts or those that are more important (Marin, 2004); and enumerate alters from a limited domain of supportive exchange (Poel, 1993). Failing to consider these issues undermines the construct validity of the core network.

A comparison with alternative designs, including the global IM generator, can assess the suitability of the R5D. This paper compares the R5D to the following four name-generator approaches in a Web survey.

1) A one-generator, one-box model: IM used alone and presented as one name box per page (maximum five names).
2) A one-generator, five-box model: IM as a stand-alone generator, presented with five boxes on one page (maximum five names).
3) A two-generator, one-box model: IM and a second generator for “especially significant” (ES) ties, presented as one box per page (maximum five names per generator; ten total).
4) A two-generator, five-box model: IM plus ES, five boxes per page (maximum five names per generator; ten total).

It is expected that IM as a stand-alone generator combined with existing guidance on how alter names should be collected in a Web survey (one name box per page) encourages satisficing. Additional boxes per page or additional name generators serve as prompts that may encourage respondents to list additional network members. Prompts reduce satisficing and motivate a memory search for names that may be more crosscutting than those generated by a single generator or a lone name box.

The ES generator was chosen as a second generator based on observations by Straits (2000). The wording of the ES generator is as follows:

> *Now let's think about people you know in another way. Looking back over the last six months, who are the people especially significant in your life?*

Straits compared the size and composition of networks elicited using the IM generator with that of the ES generator. He found that the two generators produce networks that are practically equivalent. ES can serve as a benchmark to compare the completeness of the list of alters elicited through the one- and five-box IM designs. It should elicit a similar set of names as the IM generator (Hampton, Sessions, & Ja Her, 2011). When used in combination with IM, a second generator may also serve as a prompt that requires more active processing from participants. Marin and Hampton (2007) found that when the IM generator was used with a second, affective generator similar to ES, the resulting network provided a good measure of core network size and composition relative to a larger battery of generators. However, presenting two generators, one-at-a-time, using the established one-box-per-page approach may not successfully reduce satisficing. Participants may still follow a one-and-done approach for each of the two generators. The addition of a second generator in a model in which each generator is accompanied by five boxes per page may also not perform substantively better than what can be achieved through the IM generator alone.

Whether using one name box or many name boxes, there is no existing evidence that the IM generator alone can provide a reliable measure of core size or composition. Approaches that attempt to measure the core based on one or even two generators lack construct validity. A measure of the personal support network can generally be produced only through multiple generators that captures different domains of support. As such, the R5D is expected to demonstrate fewer threats to measurement validity than the other four designs.

4. Data and Methods

A panel was recruited for a Web survey using Amazon MTurk. It was expected that the demographic and psychological makeup of MTurk users could vary systematically by time of day and day of the week, e.g., older users might be present early in the day and on weekends and younger participants in the morning (Arechar, Kraft-Todd, & Rand, 2017). Therefore, the pool of potential MTurk participants was sampled by releasing batches of fifty opportunities to participate at different times of the day and week. Quota sampling was used based on national distributions for gender, age, education, and political party identification. Only users who were eighteen or older, who resided in the United States, and had at least a 90% MTurk approval rating were allowed to participate (Peer, Vosgerau, & Acquisti, 2014).

In August 2018, 800 MTurk users completed a survey on Qualtrics that consisted of a small number of questions about technology use (approximately three minutes in length). Using a split-ballot, they were then randomly assigned to one of two name-generator designs that were followed by a series of demographic questions. Participants were assigned to complete either the R5D or the two-generator, five-box model. In May 2019 an additional 300 participants completed the same survey using the two-generator, one-box design. The surveys required an average of fifteen minutes to complete, and all participants were given an incentive of $2.00. Eighty-four of the 1,100 surveys were excluded because of inaccurate or incomplete data. Surveys from the three groups were weighted to improve the comparability of groups and reduce threats to validity that might have resulted from unsystematic completion of the different name generator models. The weighted groups had equal representation based on age, gender, race, ethnicity (Hispanic), education, home ownership, income, party identification, religiosity, and number of children under eighteen at home.

Standard name interpreters were administered for each alter. They included gender, connection to the participant (e.g., spouse, parent, child, or friend), length in years of the relationship, and contact in the past six months through each of six media (e.g., in person, email). For each pair of alters, participants were asked if the alters knew each other; if yes, whether they were close.

Based on responses to only IM, measures of network size and composition for the one-generator models were calculated. Participants selected into the two-generator models were presented with IM before the ES generator. Participants were reminded in advance of the second generator: “These may be some of the same people you just mentioned, other people, or no one.” Participants also completed name interpreters from the IM question before they answered questions on unique names elicited from ES. In this way, measures for the one-generator models were recreated from data that would have been produced if the IM generator had been administered alone.

Tie- and network-level variables were calculated for each of the five models. They included network size, network density, network heterogeneity (sex heterogeneity), role relationship (e.g., spouse as only alter, presence of non-kin, etc.), relationship duration, communication (media multiplexity), and, where possible, social support (type and amount of support).

Ideally, the validity of a name-generator approach would be assessed directly through convergent or discriminant correlations between established or related criteria (Appel et al., 2014). In this case, absent a criterion, the process of assessing the validity of a measure is inherently deductive, based on a comparison to expected relationships as established through prior theory and empirical research (Cronbach & Meehl, 1955). The core network consists of a person’s most important ties within the personal network. Relative to the broader personal network, alters tend to be less diverse, more cross-cutting, and the source of a broader range of support (Marsden, 1987; Wellman & Wortley, 1990). An approach to eliciting core network members that produces networks closer to this definition has greater theoretical construct validity.

Average communication activity provides an indication of alter importance or tie strength. However, although frequent discussion may be important during initial tie formation (Friedkin, 1990), it is not a reliable measure of the importance of the tie (Marsden & Campbell, 2012) or supportive exchange (Wellman & Wortley, 1990). Higher mean levels of media multiplexity do provide a measure of importance. This statement is based on the principle that stronger relationships tend to supplement but not replace in-person contact through the use of additional media (Haythornthwaite, 2005; Wellman, 1979). That is, core ties tend to use broad rather than specialized forms of communication. A comparison of the mean media multiplexity of each generator design will provide an indication of whether the design encourages slippage or lowers average alter importance.

Longer average relationship duration is an additional indicator of tie strength (Marin, 2004; Marsden & Campbell, 1984). Higher average tie strength indicates that the enumerated network is closer to the core.

The measure of density used by Marsden (1987) provides a measure of network concentration. In this measure, a pair of alters is coded as 0 if they are strangers, 0.5 if they know each other, and 1 if they are close. Although Marsden and others describe the *core decision network* as relatively dense, this may not be typical of a sample of the *personal support network*. If core network members are representative of the broader personal network, they may come from relatively segmented foci of activity (Feld, 1981). Thus, whereas the core network may be relatively dense, important alters sampled from multiple contexts, roles, and sources of support may not be locally crosscutting. In a similar way, a dense network is generally expected to have less network heterogeneity and less alter diversity. However, there may be more diversity among core ties that are less crosscutting than between ties that are less important but share a common context.

Some measures of diversity are particularly susceptible to measurement error. Like a measure of density, a generator model that elicits few names has little room for diversity. Measures of network heterogeneity are only meaningful for networks of more than one alter. Many tie-level variables are relevant only for networks of one or more. If a generator model elicits many networks with one or no alters, the number of usable cases could be reduced to the extent that it has an impact on the internal validity of network measures, statistical power, and ultimately statistical inference (McKnight, McKnight, Sidani, & Figueredo, 2007).

Each model is explored for threats to measurement validity, including satisficing, slippage in alter importance, and any additional concern with the internal validity of measures of network composition. Variables for each model and the proportion of usable cases for each measure are recorded in Table 1.

5. Findings

As shown in Figure 2 and Table 1, the distribution of network size varies considerably across the five designs.

5.1 IM Stand-Alone Designs

5.1.1 Network Size

When presented with five name boxes on one page, 44.1% of participants provided the names of five confidants (Figure 2b; M=3.46; Mode=5.00). When displayed with one name box per page, IM elicited a dramatically smaller network (Figure 2c; M=1.67; Mode=1.00). Only 4.3% of respondents provided five alters, 37.3% listed one name, and 26.3% listed two names. When five boxes are provided per page, there is apparent heaping at the ceiling of the scale. When one box is provided per page, most responses are near the floor. Apparent heaping in the five-box model may represent alters that are peripheral to the core (or less important), whereas responses to the one-box model may indicate satisficing (excluding important alters).

5.1.2 Density

Networks of size zero and one are excluded from this calculation. As a result, the number of cases included in a density measure for the five-box design is cut by 15%, whereas the one-box design loses 52% of cases. It is not clear that any measure remains a valid representation of the construct when more than half of the data cannot be operationalized, and for some types of analyses (including this one) the loss of cases may lead to a problematic loss of statistical power.

If the larger number of alters elicited by the five-box design includes more ties from outside the core, we might expect this measure of network density to be lower than the one for the one-box design. The five-box version of IM has a network density of 0.54, whereas the one-box design has a density of 0.45 ($p<.08$). This supports a conclusion that the five-box version elicits alters that are at least or possibly more concentrated in the core. Although the difference in proportions is marginally statistically significant, it should be interpreted with deference to the number of excluded cases from the calculation of density based on the one-box design. The five-box presentation of IM is as concentrated or more so in the core and avoids measurement uncertainty as a result of eliciting a smaller number of alters.

5.1.3 Duration

A measure of mean relationship length excludes networks of size zero. As such, mean duration based on the five-box model includes 92% of cases, whereas the one-box design includes 85% of cases. There is no significant difference in average relationship length when comparing the mean duration of relationships from alters elicited through a five-box and one-box design of the IM generator. Networks elicited through the five-box design appear to be as strong as those elicited through a one-box design.

5.1.4 Equivalence with ES

The expected overlap in alters generated by the IM and ES generators serves as a benchmark for IM designs. Of alters named in response to the one-box version of IM, 43.4% were not listed in response to the ES generator. 35.5% of alters elicited in response to the five-box version of the IM generator were not listed as especially significant alters. In addition, 51.4% of participants in the five-box design provided the exact same set of names from IM in response to the five-box ES generator. This was true of only 47.5% of participants from the one-box design. Nearly half of respondents (46.7%) to the one-box IM design provided a list of alters that had no overlap at all with the ES generator. This result contrasted with the five-box design, in which only 20.2% of participants reported a network of alters that had no overlap with ES. The five-box IM model elicited alters that have significantly more overlap with the two-generator model ($p<.01$).

5.1.5 Communication

The proportion of media used in communication with network alters (mean multiplexity) in the five-box IM design was significantly lower than in the one-box design (44.6 vs 51.0; p<.001). This measure excludes networks of zero and is thus based on a larger proportion of cases from the five-box design than from the one-box design (92% vs 85% of cases). Alters elicited in response to the one-box design tended to be in contact with the ego through a larger proportion of available media, which suggests higher average alter importance. However, responses to the one-box IM design make it difficult to interpret this difference. Because most participants provided no or only one name in response to the one-box design, the listed tie might be interpreted as one of the respondent's most important ties (Figure 2b). The observation of lower average alter importance in a larger network does not necessarily indicate that the additional alters are outside of the core, but that these networks include more than a very important tie and exhibit expected slippage in importance (Figure 2c).

5.1.6 Diversity

The mean sex heterogeneity (Index of Qualitative Variation) of the five-box IM networks was statistically different from the one-box design. The one-box design was more likely to have no sex heterogeneity (p<.001). Measures of diversity at the tie-level often focus on variation in role relationship, in particular the inclusion of non-kin or the presence of any confidant who is not a spouse (McPherson, et al., 2006). Compared to the five-box version of IM, respondents to the one-box design were much more likely to list a spouse as their only confidant (13.6% vs 3.3%). They were less likely to have at least one non-spouse kin (30.8% vs 64.3%), more likely to have a network of only kin (59.6% vs 33.2%), and less likely to have more than one non-kin confidant (13.6 vs 45.5; all p<.001). The one-box design elicits networks that tend to be considerably less diverse. However, this should not be interpreted to suggest that alters from the five-box design are from outside the core. The lack of diversity of the one-box design may represent the expected homogeneity of the core network. On the other hand, as with a measure of tie importance, the five-box design may represent the expected heterogeneity of alters when not truncated through satisficing.

5.1.7 Summary of IM One-Generator Designs

An initial comparison within stand-alone versions of the IM generator suggests that the one-box presentation is more susceptible to measurement error. The one- and five-box models enumerate networks of similar density and average duration. However, the much smaller networks enumerated through the one-box model are responsible for high levels of missing data in measures of network diversity and density, which likely undermines the internal validity of the measures and reduces statistical power. That the five-box model results in networks of lower average alter importance and higher heterogeneity is likely an artifact of gradual creep in the closeness and diversity of alters as they radiate outward from one of the most important core ties. Satisficing in one-box models underrepresents core network size. The network elicited through the five-box design is not simply larger but, in comparison to the one-box model, is less prone to errors in measures of network composition.

5.2 IM and ES Two-Generator Designs

5.2.1 Network Size

When presented as one box per page, IM with ES remains skewed towards the floor of the scale; 20.6% of participants listed one unique name, whereas 25.2% listed two (Figure 2e). The modal response increased from one to two. As previously discussed, participants tended to list either the exact same or an entirely different list of alters to the ES generator. There was dramatic inconsistency in the tendency for respondents to view IM and ES as equivalent. Nearly half of respondents viewed the IM and ES generators as equivalent, and nearly half viewed IM and ES as entirely different. This is consistent with evidence of satisficing, providing one name overall, or one unique name for each generator (Figure 2e). When presented as five boxes per page, the two-generator design continues to demonstrate potential heaping, maintains a modal response of five (26.8%), and has a relatively normal distribution (Figure 2d). Despite the ability to enter up to ten unique names in response to the two-generator model (which might suggest respondents misunderstood the intent of the boxes), it is notable that very few respondents did so (2.5%).

5.2.2 Density

As a result of adding a second generator, the average density of networks elicited through the one-box design decreased from 0.45 to 0.43, whereas the density using the five-box design increased from 0.54 to 0.56. Counter to any expectation that density would be lower in the larger networks elicited by the five-box, two-generator design, the five-box model tended to elicit networks that were more concentrated ($p<.01$). The five-box design of IM with ES enumerates alters that are more concentrated, even with larger average network size.

5.2.3 Duration

The addition of a second name generator with five-boxes per generator resulted in networks that were, on average, slightly less established than those in the one-box, two-generator design (18.64 vs 20.47 years; $p<.05$). This suggests that networks enumerated through this five-box model are of average lower tie strength. Yet again, this may represent expected slippage in tie strength as network size increases. In both the one- and five-box models, the average relationship length remains very large. It is so large that the difference identified here would not be detected in most survey instruments, including the GSS, which used a largest category to measure relationship duration of 6+ years (Marsden, 1987). Although statistically significant, there is likely not a substantive difference in the duration of relationships elicited by either model.

5.2.4 Communication

The communication multiplexity of both the one-box (from 51.0 to 44.2) and five-box model (from 44.6 to 40.6) decreased significantly as a result of adding the ES generator ($p<.001$). Mean multiplexity remained significantly higher in the one-box model ($p<.01$), suggesting that the average importance of ties elicited by the five-box model is lower.

The decline in average communication multiplexity from the one- to two-generator presentation of the one-box design is consistent with the interpretation that the one-box model tends to elicit one of the most important core ties. Slippage from the peek, through the presentation of multiple boxes or an additional generator, is the only possible direction of variation. Again, this lower average importance is likely an artifact of recording a larger network or possibly sampling from additional domains relative to IM alone (Figure 1 d-e).

5.2.5 Diversity

Compared to the IM stand-alone generator presented with a single name box, the addition of ES resulted in networks that were more diverse. They were less likely to include a spouse as the only confidant, less likely to have no non-kin, and more likely to have more than one non-kin (all, $p<.01$), and at least one non-spouse kin ($p<.001$). The two-generator model was also less likely to have networks with no sex heterogeneity ($p<.01$) and to have higher mean sex heterogeneity ($p<.05$).

This contrasts with the five-box version with the same two generators. There was little difference in the diversity of networks elicited from IM alone with five boxes. There was no statistical difference in the proportion of networks that included a spouse as the only confidant, the proportion of networks that had no non-kin, more than one non-kin confidant, and the proportion of networks with no sex heterogeneity or on average sex heterogeneity. Networks from the two-generator, five-box design were more likely to contain at least one non-spouse kin ($p<.001$).

When presented with one initial name box, IM and ES together enumerated networks that were less diverse than when presented with five initial boxes. Compared to the five-box model, networks from the two-generator, one-box model were more likely to include a spouse as the only confidant (6.1% vs 2.3%; $p<.01$), were less likely to have at least one non-spouse kin (55.5% vs 74.7%), more likely to have no non-kin (48.1% vs 28.6%), and were less likely to have more than one non-kin confidant (21.7% vs 50.6%; all $p<.01$). There was no statistically significant difference between the five-box and one-box, two-generator designs in the proportion of networks that have no sex heterogeneity or average sex heterogeneity. As a result of the prevalence of networks sized zero and one, a measure of network sex-heterogeneity based on the one-box design using IM and ES together lost 31% of cases, whereas the five-box version lost only 10%.

IM alone or with ES with one initial name box enumerated a network that was less diverse than IM presented with five-boxes, or IM and ES together with five name boxes. The addition of a second name generator did not result in enumerating a substantively more diverse network beyond the one that was enumerated with IM as a stand-alone generator with five initial name boxes.

5.2.6 Summary of IM with ES

A comparison of a two-generator model, IM with ES, with a stand-alone version of the IM generator and with each presented with one or multiple name boxes suggests that the second name generator offers little measurement improvement. The addition of the ES generator does not reduce satisficing when presented with only one name box. Participants tend to provide only one name per generator. When presented with five name boxes per page, the addition of ES elicited most of the same names as IM alone, and there was no impact on modal network size. Adding ES with five-boxes did not significantly affect network density and had no substantive influence on average duration. The addition of the second generator to the five-box design elicited little meaningful change in the diversity of the network or alters. The use of IM with ES, each with one initial name box, had similar issues with measurement validity as IM with one-box as a stand-alone measure. Presented with five name boxes, IM with ES performed no better than the IM generator alone with a prompt to provide the names of up to five alters on a single page.

5.3 The Restricted Five Design

5.3.1 Network Size

The distribution of the R5D varies in important ways from other models. Notably, the number of respondents who reported being socially isolated is very small, 0.9%. Unlike other models, this can be interpreted as the percent of respondents that have no one from whom they received support. The mean (2.56, SD=1.24) and mode (3.00) sit near the mid-point of the distribution. Although alters are more heavily distributed in the range of 1-3, there is no apparent heaping. Unlike other models that are capped at five names, the distribution more closely resembles a normal distribution (Figure 2a). The mean network size of the R5D is significantly smaller than either the one- or two-generator versions of the five-box models ($p<.001$), and significantly larger than the one-generator, one-box model ($p<.001$), but not significantly larger than the two-generator, one-box model.

5.3.2 Density

A calculation of density on the R5D uses 77% of all cases, which is fewer than either of the five-box models, but more than either the one- or two-generators, one-box models. The average density of the network elicited by the R5D is significantly lower than all other models (.34; $p<.001$).

5.3.3 Duration

The mean duration of networks elicited by the R5D did not differ significantly from either IM alone or IM and ES presented with five name boxes. The R5D did elicit networks that were significantly shorter in duration than those of IM with one box (18.01 years vs. 20.35 years; $p<.05$), and IM with ES and one box (20.47 years; $p<.01$). Again, although the difference was statistically significant, given the consistently long relationship duration across models, the difference may not be substantive. Because of the small number of respondents who reported no supportive ties, the R5D retained more cases than any other model for calculating mean relationship duration.

5.3.4 Communication

On average, respondents to the R5D used 47.7% of available media to communicate with their alters. With the exception of the IM, one-box model, the R5D generated networks with significantly more multiplexity than all other designs: one-generator, five-boxes (44.6%; p<.01), two-generators, five-boxes (40.6%; p<.001), and two-generators, one-box (44.2%; p<.05). The importance of alters elicited by the R5D was only slightly lower than for the IM stand-alone, one-box model (51.0%; p<.05). Given the lack of variability in the size of networks generated by the one-box, IM design, this is a noteworthy indication of the consistent importance of ties generated by the R5D. Given the larger, average network size, the modestly lower average alter importance is consistent with the expectation that mean importance would decline with network size and is not indicative of slippage in alter importance (Marin, 2004). As with the IM generator, presented alone with one name box, the elected alters appear to be among the most important members of the core network.

5.3.5 Diversity

The R5D elected networks that were consistently more diverse across measures than IM alone with one name box. R5D networks were nearly twice as likely to contain at least one non-spouse kin (p<.001), more likely to have more than one non-kin (p<.01), less likely to elicit a network of only kin (p<.001), less likely to have no sex heterogeneity (p<.001) and had more sex heterogeneity (p<.01). The proportion of R5D networks that list a spouse as the only member of their personal support network was not significantly different from the IM, one-box model. In comparison with the two-generator, IM with ES, one-box model, the R5D was more likely to list a spouse as the only alter (p<.001) and was more likely to have more than one non-kin (p<.01), but was otherwise not significantly different.

In contrast, compared with the IM five-box model, networks from the R5D were less diverse on some measures. The R5D was more likely to list a spouse as the only member (p<.001), more likely to have a network of only kin (p<.001), and was less likely to have more than one non-kin (p<.001), but was not statistically different in terms of the likelihood of containing a non-spouse kin, the tendency to have no sex heterogeneity, or average sex heterogeneity.

The R5D was consistently less diverse than the IM with ES, five-box model. The R5D was more likely to list a spouse as the only alter ($p<.001$), was less likely to contain a non-spouse kin ($p<.001$), more likely to have a network of only kin ($p<.001$), less likely to have more than one non-kin ($p<.001$) and was more likely to have no sex heterogeneity ($p<.05$), but did not have significantly different average sex heterogeneity.

5.3.6 Support

Unlike all other models, the R5D provides measures of social support. They include a measure of whether the ego discussed (received) each of five types of support related to career and work issues (96.3%); finances and money issues (97.4%); happiness and life goals (96.0%); health issues (95.5%); and family issues (96.6%). Participants reported nearly universally that they had received all five types of support. On average, alters discussed 2.44 (SD=1.41) topics related to important matters. Additional measures of support could be generated to explore variation by role, communication, relationship duration, etc.

5.3.7 Summary of R5D

Compared to a stand-alone IM generator or IM with ES, when presented using one or five name boxes, the R5D presents fewer threats to measurement validity. The R5D exhibits lower average density relative to other models. In combination with the observation that alters tend to be of high average importance, this suggests that the R5D enumerates consistently important core ties that likely came from multiple contexts (Figure 1f). This finding is unlike the stand-alone IM generator (Figure 1 b-c). It contrasts with models that tend to elicit core ties of gradually diminishing importance that are likely concentrated in the same context (Marin, 2004). The R5D elicits networks that are larger than the IM one-box model, but smaller than IM alone, or the IM plus ES with five name boxes. Unlike the IM one-box model, there is no indication that respondents tend to satisfice in response to the R5D. There is also no apparent heaping. The networks elicited by the R5D exhibit more heterogeneity than networks elicited by IM alone with one name box but are not as diverse as other models. Given the high average alter importance, this finding is consistent with the expectation that the core network is relatively homogeneous. The R5D also avoids constraints on measures of diversity imposed through satisficing on the stand-alone IM generator. Unlike other models, the R5D more closely adheres to the definition of the personal support network through a focus on multiple topics for the discussion of the importance that pertains to the mobilization of support. Given that respondents are refocused on multiple dimensions of important matters, the corresponding measure of social isolation is more reliable than those derived from the standard IM generator (Bearman & Parigi, 2004). The rarity of core networks that have no alters further reduces problems with internal validity and declining statistical power that are related to missing data (McKnight, et al., 2007). The R5D demonstrates considerably fewer threats to internal and construct validity than other models.

6. Conclusion

This paper addresses concerns in the deployment of Web surveys related to the selection and presentation of name generators. A restricted five generator model (R5D), a topic delineated version of the global important matters generator, was compared to four alternative models. Each model was explored for theoretical construct validity and related threats to measurement validity, including satisficing, slippage in alter importance, and concerns with internal validity that might result from missing data.

When combined with previous guidance that respondents should be presented with one name box per page (Vehovar, et al., 2008), the use of the stand-alone IM generator elicits networks that tend to be smaller and have a higher incidence of social isolation and lower diversity than all other models. The common occurrence of networks with no alters and a modal response of one alter contributes to unacceptably high rates of missing data when computing measures of network composition. When participants are presented with a larger number of initial name boxes – five boxes on a page – the IM generator elicits a larger and more diverse network. A presentation with five boxes has a modal response of five names. However, what has been interpreted as heaping is not a result of participants rounding up the number of names to include alters outside of the core. As would be expected of alters within a common domain (Marsden, 1987), the resulting networks tend to be as or more dense and of similar relationship duration. Slippage in average alter importance that is based on communication activity and more diversity is likely an artifact of enumerating core network members from a shared context (Marin, 2004). In comparing alters elicited from IM as a stand-alone generator with those elicited through a second generator for ES alters, there was less of the expected overlap in names with the one- than the five-box design (Straits, 2000). The IM generator with five name boxes avoids a one-and-done approach to naming alters that threatens the internal validity of measures of network composition and understates core network size.

Administering the IM generator along with a second ES generator does not substantively change measures of network size and composition, in comparison to IM as a stand-alone generator with five name boxes. The network that resulted when IM and ES were used together exhibited similar slippage in the average importance of ties, similar levels of network concentration, similar average relationship duration, and little additional diversity.

An alternative approach, the R5D, uses five name generators and collects only one alter per generator. Respondents provide a list of discussion partners who correspond to a multidimensional construct of the personal support network. The use of multiple generators serves to reset a respondent's mental focus and increases the diversity of contexts and alters sampled (Figure 1f). Compared to other models, network members tend to be less concentrated. Ties are of similar mean relationship duration, alters are of higher average importance, and networks are more diverse than those obtained through the use of IM as a stand-alone generator with one name box. In comparison to models that provided respondents with five name boxes per generator, lower slippage in alter importance likely constrains the tendency to enumerate alters that are more diverse. The resulting sample of the core better reflects the theoretical construct of the core as one that is relatively homogeneous but samples important alters from multiple contexts (Feld, 1981; Wellman & Wortley, 1990). The R5D also reduces satisficing and the appearance of heaping. It is the only approach that provides a measure of social support that is consistent with the construct of a personal support network.

Although researchers should rely on the specifics of their research question to guide the selection of a name generator design, the limitations of IM as a stand-alone generator cannot be ignored. It offers parsimony at the expense of measurement validity. The IM generator does not conform to the theoretical model of a personal support network (core network), which can only be elicited through a multiple generator approach (Marin & Hampton, 2007). When used in Web surveys with a single name box, there is considerable risk of measurement error. If IM is to be used as a stand-alone generator on a Web survey, it should be presented with multiple name boxes that do not require the respondent to click or move to an additional page to list names. Such an approach reduces satisficing, which dramatically affects measures of network size and composition. The presentation of IM with multiple text boxes is also in line with best practices for displaying Web survey questions that focus on presenting a complete question on one page without having to click to enter additional information (Stern, LeClere, & Fordyce, 2019).

The R5D offers superior construct validity. It is more closely aligned with the theoretical construct of the personal support network. The R5D reduces concerns over slippage in alter importance, which is the tendency to omit important core network members at the expense of including weaker social ties who are more interconnected (Marin, 2004). The use of multiple generators to enumerate alters from the most common topics for the discussion of important matters (Small, 2017) should also reduce potential bias that can result from topic-role dependency (Bearman & Parigi, 2004). Despite being a multiple generator approach, the restriction of recording one unique name per generator limits the time participants spend answering generators and interpreters. It makes the R5D a valid and parsimonious alternative to a global measure of IM.

7. Discussion

Many of the problematic issues associated with IM as a stand-alone generator apply not only to Web surveys but across modes of administration. They include misalignment with the construct of a personal support network, unsystematic variation in how respondents interpret "important matters," and slippage in alter importance. And possibly, satisficing. Some properties of the R5D – the use of multiple generators that extrapolate to supportive exchange – are broadly applicable to overcoming the limitations of using the standard IM generator in egocentric research. Other properties of the R5D – recording one name per generator – may also help overcome specific issues with satisficing and in comparing data collected through other modes of administration, including face-to-face and telephone-based surveys.

Respondents may satisfice less on egocentric Web surveys than in face-to-face interviews (Fischer & Bayham, 2019), which suggest that satisficing may be a broader issue in the administration of the IM generator. Recent face-to-face and telephone surveys using IM as a stand-alone generator using representative US samples continue to find smaller and less diverse core networks than that which was found with the 1985 GSS. These surveys often find a remarkably similar spike in the number of respondents who report one core tie (Brashears, 2011; Hampton, et al., 2011; Hampton, Sessions, Her, & Rainie, 2009; McPherson, et al., 2006). Numerous explanations have emerged, and a combination is likely responsible. They include question placement (Paik & Sanchagrin, 2013), a broad shift toward a small number of core ties as supportive generalists (Small, 2013), and increased specialization in supportive exchange that is not captured through a global IM generator (Hampton, et al., 2011). Variation in how the IM generator has been administered, face-to-face (McPherson, et al., 2006), over the telephone (Hampton, et al., 2011; Hampton, et al., 2009), and online (Brashears, 2011; Small, 2017), have further complicated efforts at comparisons over-time and across surveys.

An additional contributor to the small, constrained networks generated through recent surveys that utilizes a single-name generator may be a large-scale change in how people respond to surveys and, in particular, how they respond to egocentric surveys. Cooperation with surveys in general has declined, and complex survey questions are particularly susceptible to satisficing (Glaser, 2012). The question, "With whom do you discuss important matters?" may be increasingly interpreted across modes as a request for a single name – a one-and-done response. Satisficing in egocentric surveys may not be related only to question placement within a survey (Paik & Sanchagrin, 2013). It may also be part of a trend of lower survey cooperation. Core networks may not have changed, but egocentric surveys using only one generator may lead increasingly to satisficing. The solution is the same for reducing satisficing in online egocentric surveys: adopt multiple generator approaches, such as the R5D, to enumerate core networks.

The R5D may also increase the ability to compare egocentric data across modes of administration. Fischer and Bayham (2019) suggest that mode effects between face-to-face and Web surveys are specific to name eliciting and measures of networks size. Again, the presentation of a larger number of name boxes was found to elicit a more complete network. Through an analysis of audio recordings of interviews, Fischer and Bayham (2019) found that the primary source of variation between in-person and Web surveys was an interviewer effect that was related to the extent of probing for name eliciting. They found unsystematic variation between interviewers: low-prompting face-to-face interviewers asked for "a" name without reference to how many names could be recorded, and high-prompting interviewers explicitly revealed the maximum number of names they could record (p. 205). Prompting style accounted for much of the mode effect; high-prompting interviewers elicited networks of the size found through Web surveys. The key to reducing mode effect is to reduce variation in prompting related to the number of names that can be recorded through name generator elicitation. The R5D provides a simple solution: restrict the variation in the number of names that can be recorded per generator – record a maximum of one name. The R5D is a modest twist on traditional, multiple generator approaches to enumerating the personal support network. It offers an alternative that is a parsimonious, valid, and reliable measure of the core network.

Table 1. Comparison of name-generator models in a Web survey.

	Restricted five design	Important matters (5-box)	Important matters (1-box)	Important + Significant (5-box)	Important + Significant (1-box)
Network size (proportion usable cases)[2]	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)
0	0.9	8.4	15.0	4.6	10.3
1	22.0	7.1	37.3	5.1	20.6
2	26.9	14.7	26.3	11.1	25.2
3	30.2	14.4	13.0	13.4	16.5
4	10.3	11.4	4.1	10.1	9.9
5	9.7	44.1	4.3	26.8	12.4
6	-	-	-	13.2	3.4
7	-	-	-	7.1	1.4
8	-	-	-	3.0	0.0
9	-	-	-	3.0	0.2
10	-	-	-	2.5	0.0
Mean	2.56	3.46	1.67	4.48	2.54
Mode	3.00	5.00	1.00	5.00	2.00
SD	1.24	1.69	1.25	2.27	1.74
Tie characteristics (proportion usable cases)[2]	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)
Spouse	56.0	49.4	37.0	54.4	43.3
Parent	38.8	33.2	23.7	41.8	34.3
Sibling	22.5	28.9	16.1	37.2	24.2
Child	7.8	15.4	8.6	24.6	17.5
Other family	11.5	22.0	7.6	26.3	13.0
Co-worker	21.7	20.3	10.6	23.0	12.0
Member of group	8.7	7.3	2.9	8.9	4.4
Neighbor	6.6	8.9	2.2	10.1	2.5
Friend	51.4	63.0	37.5	67.8	48.1
Advisor	3.8	3.8	0.7	5.1	1.3
Roommate current/previous	7.7	10.4	8.8	12.2	9.1
Classmate current/previous	16.3	25.6	13.3	29.1	15.8
Professional relationship	8.8	4.6	2.2	6.3	3.0
Met on the Internet	24.3	20.0	11.2	23.5	12.9
Stranger	0.6	1.3	0.0	1.3	0.0
Other	2.7	3.8	2.4	4.6	3.8
Spouse is only alter	14.6	3.3	13.6	2.3	6.1
At least one non-spouse kin	58.7	64.3	30.8	74.7	55.5
Non-kin = 0[1]	45.0	33.2	59.8	28.6	48.1
Non-kin = 1[1]	23.9	21.3	26.6	20.8	29.9
Non-kin >1[1]	31.1	45.5	13.6	50.6	21.7
Other Tie Characteristics (proportion usable cases)[2]	(.99)	(.92)	(.85)	(.95)	(.90)
Relationship length (years)	18.01	18.93	20.35	18.64	20.47
Relationship length (SD)	10.60	10.38	12.24	10.47	11.19

Network Characteristics (proportion usable cases)[3]	(.77)	(.85)	(.48)	(.90)	(.69)
Density (mean)	.34	.54	.45	.56	.43
Density (SD)	.34	.28	.23	.26	.17
Sex heterogeneity = 0	21.2	20.1	35.9	15.4	20.8
Sex heterogeneity .01-.90	44.2	38.3	20.3	48.50	38.8
Sex heterogeneity >.9	34.6	41.6	43.8	36.1	40.4
Sex heterogeneity (mean)	.72	.69	.61	.73	.71
Sex heterogeneity (SD)	.38	.37	.46	.34	.38
Communication (proportion usable cases)[2]	(.99)	(.92)	(.85)	(.95)	(.90)
In-person (%)	84.7	82.23	85.91	77.37	85.00
Email (%)	44.2	39.13	45.80	37.03	42.23
Cell phone (%)	77.9	72.88	85.01	68.26	83.75
Text message (%)	78.0	75.41	85.59	70.09	82.99
Landline phone (%)	30.1	24.12	33.57	23.13	30.52
Card or letter (%)	15.0	13.59	16.23	12.97	16.91
Other medium (%)	4.1	4.88	4.52	4.13	4.11
Media multiplexity[3]	47.7	44.6	51.0	40.6	44.2
Media multiplexity (SD)	17.1	15.9	17.6	16.8	17.8
Social Support Received (proportion usable cases)[2]	(1.00)	-	-	-	-
Discussed career/work issues (%)	96.3	-	-	-	-
Discussed financial/money issues (%)	97.4	-	-	-	-
Discussed happiness/life goals (%)	96.0	-	-	-	-
Discussed health issues (%)	95.5	-	-	-	-
Discussed family issues (%)	96.6	-	-	-	-
Types of support received (mean)	4.81	-	-	-	-
Types of support received (mode)	5.00	-	-	-	-
Types of support received (SD)	0.73	-	-	-	-
Social Support Characteristics (proportion usable cases)[2]	(.99)	-	-	-	-
Types of support per tie (mean)	2.44	-	-	-	-
Types of support per tie (SD)	1.41	-	-	-	-
Time +/- minutes (mean)	+4.01	+2.29	0.00	+5.10	+3.59
N	360	395	261	395	261

[1] The operationalization of number of non-kin reported here is stricter than that used by McPherson, et al. (2006) and Marsden (1987). Participants who indicated that they were both non-kin (e.g., co-worker, friend, etc.) as well as kin (e.g., spouse, parent, sibling, child, etc.) were not considered non-kin.

[2] The maximum proportion of usable cases for the following measures.

[3] The proportion of available media used to contact a tie over the prior six months.

Note: A hyphen "-" indicates that these data are not available from the relevant survey.

Figure 1. The core network as sampled through different name generator approaches.

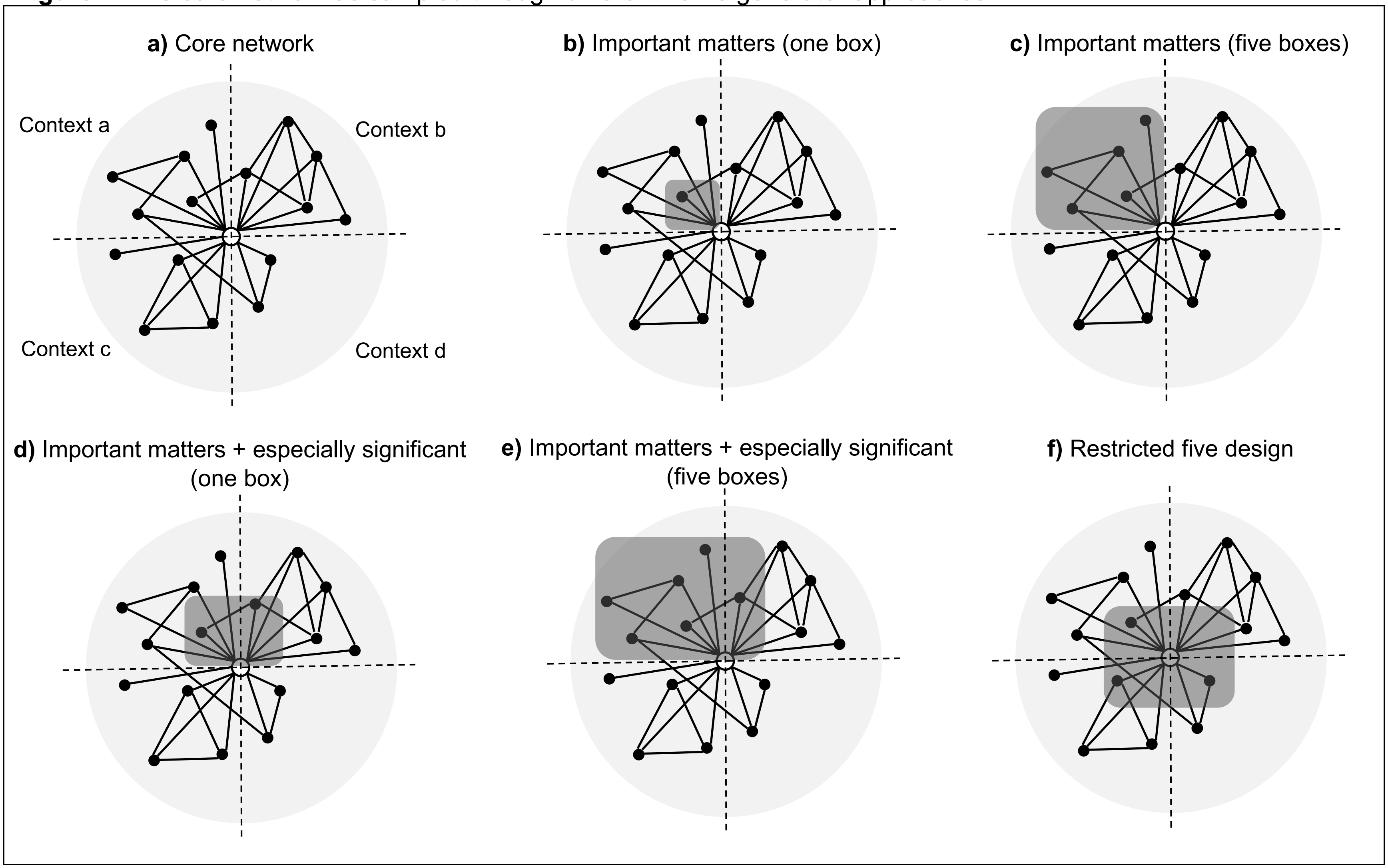
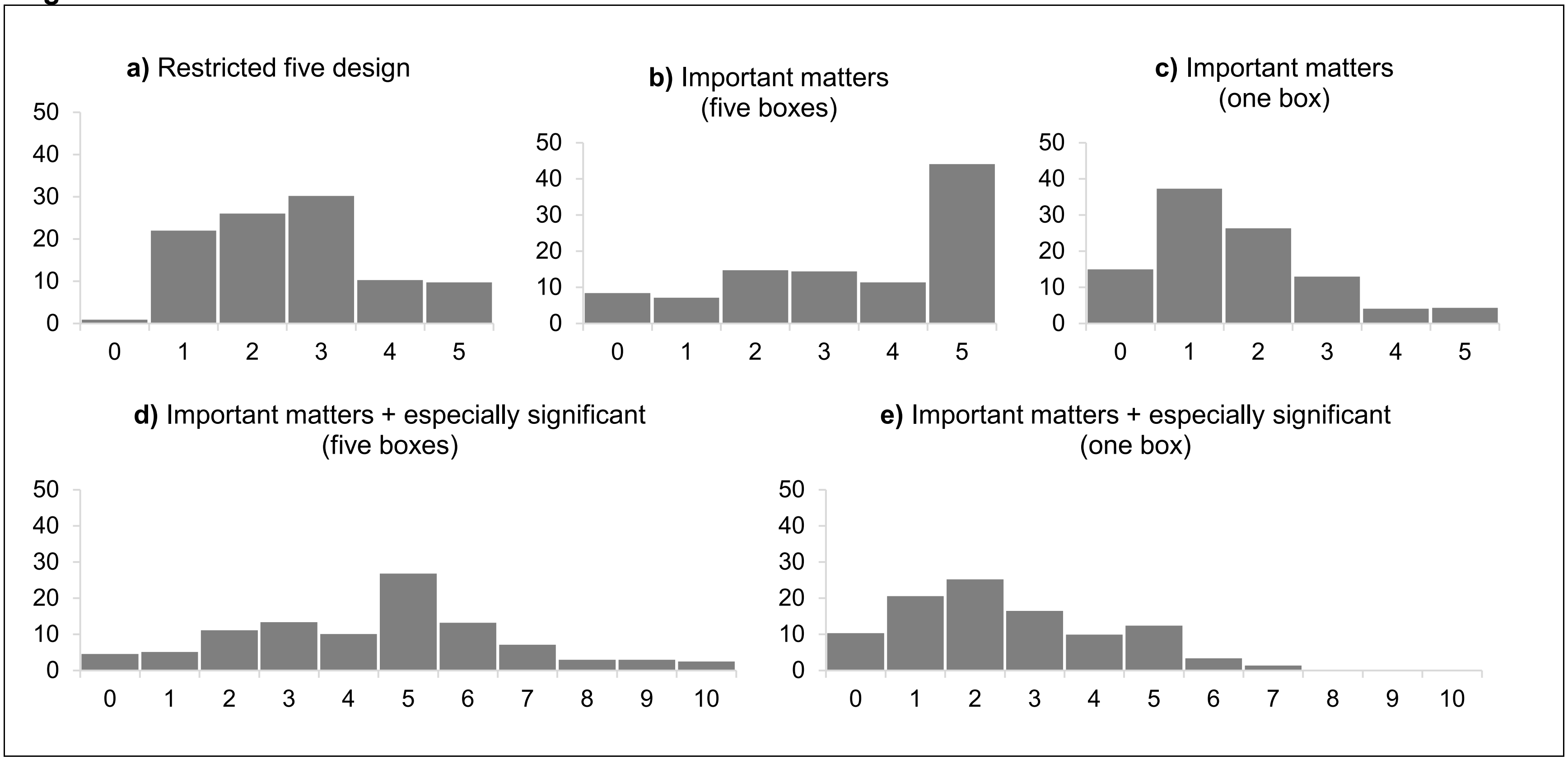


Figure 2. Network size



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