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Noting the Ties after Tying the Knot:

Photo-Based Elicitation of Retrospective Personal Network Data¹

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Abstract

We report on an interview method using photo-based network elicitation and a landmark anchoring event to collect data on relationship change in ego networks retrospectively. Using the wedding albums of married or formerly married respondents, we populate a network from many years ago with persons pictured in the album and then collect data about each respondent's relationship with each person at the time of the wedding and at the time of the interview. This data collection method mitigates many of the problems associated with retrospective data collection and does not have the logistical difficulties associated with panel studies. Our findings show that this method is successful in collecting significant numbers of connections that have undergone change and especially reductions in activity along various dimensions.

Introduction

Studying change in personal or support networks poses particular methodological challenges. Although panel studies of personal networks may be ideal in some ways, conducting panel studies, especially over extended time periods, is expensive, burdensome for respondents, and worst of all, requires many years of waiting for final data to be available. Studying change through retrospective free-recall methods poses difficulties related to the vagaries of human memory. We introduce here an innovative method of retrospectively collecting network data using a single interview in which the network is populated not with a name generator but with visual cues found in respondents' wedding albums. We argue that this method and adaptations of this method using other naturally-occurring² alter lists can provide reliable retrospective data and expand the realm of possibility in the study of network change.

Researchers studying change in egocentric networks typically conduct panel studies in which they administer name generators to respondents at multiple points in time (Cornwell, Schumm, Laumann, Kim, & Kim, 2014; Marin & Hampton, Forthcoming; Morgan, Neal, & Carder, 1997; Brea L. Perry, 2012; Brea L Perry & Pescosolido, 2012; Small, 2017; Wellman, Wong, Tindall, & Nazer, 1997). When an alter who was named in one time period is not named in another, this indicates that the relationship is dormant and that the network membership has changed. While the panel study is many ways ideal for measuring network change in ego networks, it is also

² We use “naturally-occurring” in a manner analogous to its use in the phrase “natural experiment,” to refer to a roster that, though human-made, is not created by or for the purposes of the researcher.

expensive and burdensome for both respondents and researchers. Collecting data on network change retrospectively is easier on both respondents and researchers but the costs for data quality can be significant. This method requires respondents to accurately recall people who are no longer in their lives and to accurately remember the nature of their relationships in the past. Memories of social network connections are known to be potentially unreliable even for recent or active interactions and relationships (Bernard, Killworth, Kronenfeld, & Sailer, 1984; Killworth & Bernard, 1976). Furthermore, cognitive biases associated with forgetting network members may be exacerbated when dealing with relationships from the past. Retrospective data collection is known to arouse its own cognitive biases, in which respondents remember events as being more recent than they actually were, a process known as *telescoping* (Neter & Waksberg, 1964).

We demonstrate an alternative data collection method in which we used respondents' wedding albums to populate the ego network and then ask questions about the respondents' relationship with each alter at the time of the wedding and the time of the interview. In the following section we describe the panel and retrospective methods used to collect network data and the difficulties they entail, then we describe our proposed interview method, including providing the substantive context in which the interviews were done, finally we discuss our method of sampling and recruitment. We present data from our interviews demonstrating that this method is successful in collecting data on ties that have changed over time. We conclude by discussing the limitations of this method as well as its potential broader application.

Personal Networks

Personal networks include those people who are close to the respondent, called the *ego*, are in frequent contact, provide social support, or share important role relationships such as close-

kinship relations. Different network members may meet different sets of those criteria, and not everyone who meets a criterion on the list necessarily provides support (e.g. the coworker one sees every day or an estranged close family member may not provide meaningful support despite being seen daily or being immediate kin). Despite the internal variation, overall, personal networks have been shown to be immensely influential across domains in people's lives, impacting their physical and mental health (Berkman & Glass, 2000; Song, Son, & Lin, 2011), health-related behaviours (Gallant, 2003) voting behaviour and political opinions (Nieuwebeerta & Flap, 2000; Zuckerman, 2005) and connecting them to resources and aid (Hurlburt, Beggs, & Haines, 2001; Stack, 1974; Wellman, 1999).

Researchers studying personal networks typically sample a set of individuals and then consider each person as being the centre of their own network (Marsden, 2011; Perry, Pescosolido, & Borgatti, 2018). Once they have a set of egos, the researcher must find the network by identifying individuals with whom the ego has a personal relationship. This method of network study – the egocentric network method – allows researchers to study ties made in any context and across contexts. This method is often preferable to whole network research, which limits membership in the network based on a setting or researcher-selected criteria (networks within a school or workplace, for instance), because it leaves the boundary of potential network membership open and includes in the observed network anyone with the required relationship to the respondent. The use of egocentric network in social support research makes it possible to include in the observed support network anyone from anywhere. This audacious unboundedness is both the magic and the madness of egocentric network data.

Collecting Data to Study Change in Ego Networks

Personal network data are commonly collected using “name generator” and “name interpreter” survey questions (Marsden, 2011; Brea L. Perry, Pescosolido, & Borgatti, 2018). These surveys typically follow a procedure in which respondents are first asked one or more questions, the *name generators*, that require them to free-recall the names of people with whom they have a criterion relationship (Marsden 2011; Perry, Pescosolido and Borgatti 2018). This criterion relationship may be based on affect (e.g. who are the people you are close to?), role relationships (e.g. who are the members of your household?), or people with whom they exchange particular types of social support (e.g. who are the people with whom you discuss important matters?). The names elicited in response to these questions, called the *alters*, populate the ego network.

Following the name generator portion, personal network surveys ask a series of *name interpreter* questions about each of the alters named. These items include questions about the alters themselves, such as their sex or age, questions about the alter’s relationship with the respondent, such as their role relationship (parent, friend, co-worker etc.), how close the alter and respondent are, how often they communicate, or how long they have known each other. Finally, there may be a block of questions in which respondents are asked whether each pair of alters are known to one another (Marsden, 1990). People identified in response to name generators constitute the network membership and responses to questions about the relationships between alters provide the network structure. Responses to name interpreters are used to describe network composition and structure.

Name generators were developed for studies of community and social support (e.g. Fischer, 1982; Laumann & Pappi, 1973; McCallister & Fischer, 1978; Wellman, 1979) but have since been added to large-scale broad-topic research projects as well, including the General Social

Survey (GSS) (Burt, 1984; Marsden, 1987). In 1985, 2004, and 2010, the U.S. GSS included, a name generator adapted from the Northern California community study (Fischer, 1982; McCallister & Fischer, 1978). This GSS name generator, “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? Just tell me their first names or initials” has become the most well-known name generator (Marsden, 1987). It has been adopted and adapted frequently since then (Brashears, 2011; Cornwell, Schumm, Laumann, & Graber, 2009; Hampton, Sessions, & Her, 2011; La Due Lake & Huckfeldt, 1998; Marin & Hampton, Forthcoming; Renzulli & Aldrich, 2005; Small, 2013, 2017; Small, Deeds Pamphile, & McMahan, 2015), and has itself been the study of extensive methodological research (Bailey & Marsden, 1999b; Bearman & Parigi, 2004; Brashears, 2014; Byungkyu & Bearman, 2017; Eagle & Proeschold-Bell, 2015; Marin, 2004; Marsden, 2003; Straits, 2000). The number of name generators used and the choice of which name generators to use shapes the composition and structure of the network data collected (Campbell & Lee, 1991; Marin & Hampton, 2007; Van der Poel, 1993).

Although name generators solve the important problem of eliciting network members when no list of network members and no roster for recognizing alters exist, they nonetheless have numerous problems, including high respondent burden, and biases caused by forgetting and other respondent cognitive processes, interviewer or survey design effects, and question order (Bailey & Marsden, 1999a; Brewer, 1995b; Brewer & Webster, 1997; Marin, 2004; Marin & Hampton, 2007; Marsden, 2002; Tubaro, Casilli, & Mounier, 2014; Valente, Dougherty, & Stammer, 2017). There is thus a long tradition of researchers adapting or adjusting name generators to address these difficulties. Changes have included reducing respondent burden by limiting the

number of alters elicited, the number of name interpreters administered, or making interviews more enjoyable (Burt, 1984; Campbell & Lee, 1991; Hogan, Carrasco, & Wellman, 2007; Marin & Hampton, 2007; Van der Poel, 1993); adding qualitative components (Bidart & Cacciuttolo, 2013; Small, 2017); using context-focussed name generators to ensure broad network coverage (Bidart & Charbonneau, 2011), and fixing the number of alters to be listed (McCarty, 2002).

Change in network membership is typically operationalized as alters being named in one wave of the study and not in others. For example, Ikkink and van Tilburg (1999) define a relationship as discontinued if it is identified at the time of the first interview but not named during a later observation. Suitor and Keeton (1997) define support ties as not persisting if they are listed as discussion partners at one time period and not at a second time period. Wellman et al. (1997) consider only those ties that provide support as continuing to exist within the network. Nonetheless, this operationalization of network change and of dormancy has several problems.

First, respondents may not have been listed simply because they were forgotten. Forgetting is known to be a significant problem in free-recall of names in response to name generators (Brewer, 2000; Marin, 2004). When in-person interviews are used, this potential problem can be addressed by including follow-up questions in which respondents are asked why individuals named in a previous time period are not named again (e.g. Brea L. Perry, 2012). This checking of potentially-forgotten ties is important, but most easily possible for in-person interviews. Computer-based surveys can achieve a similar goal by asking providing a list of previously-mentioned alters and asking respondents if these alters have provided each support (Fischer, 2018).

In addition to the problem of forgetting, this elicitation-based understanding of network change assumes that ties that are not named at some second wave for a specific kind of support

are no longer in the respondent's personal network at all. Individuals not named for providing a particular type of support may still be important in the respondent's life but no longer be providing the particular kind of support elicited. This may happen either because the relationship between the respondent and the alter has changed, because the alter is no longer capable of or suited for providing a particular kind of support, or because the respondent has not needed that kind of support. For a name-generator panel study to distinguish between relationships that no longer exist and relationships that have changed in their support provision, it would need to include a variety of name generators and interpreters that cover a range of support and relationship characteristics, a requirement that adds considerably to respondent burden.

Panel Network Data Collection

Panel studies, in which respondents report on their networks at two or more points in time, are commonly used to study network change.

The problem of respondent burden is significant for all social network surveys and this problem is only heightened for longitudinal panel studies. Social network surveys that use name generators and name interpreters are notoriously tedious. These questions are repetitive. Many, such as questions about each respondent's gender or age, are not particularly interesting. And there are lots of them. The more names are generated as part of the survey or interview, the more name interpreters respondents are typically asked. Name interpreters about relationships between alters increase *exponentially* with the number of alters named.

Panel studies also require that the same respondents be willing to complete surveys or interviews multiple times. While panel studies of all types can face difficulties due to respondent attrition (Marsden & Wright, 2010), the tedious nature of the survey may exacerbate attrition

and/or compromise the quality of the data collected. Respondents who have been through this interview procedure may be reluctant to re-enact the experience multiple times. Further, where respondents *do* complete multiple interviews, their experience in the first interview may incentivize them to name fewer alters and thus shorten the interview. When respondents are aware that their responses will be used to create recursive questions they may limit the number of names they give (Fischer, 2012). This might bias the sample by creating the impression of more network change and more frequent tie dormancy than actually exists.

Finally, to effectively study long-term changes in personal relationships, such studies also require that researchers allow enough time to lapse to give the networks a chance to change. In other words, if the goal is to understand long-term patterns of change rather than short-term fluctuations, researchers must wait years if not decades. Factors such as research funding structures, which may require that researchers seek new funding sources for each wave of a study, the desire to see outputs of the research, and even the span of researchers' own careers can make this waiting impractical or difficult for many researchers.

Retrospective Data Collection and the Problem of Memory

Studying ties retrospectively, the alternative to panel-studies, comes with its own challenges. This seemingly simpler research design is risky and is likely to be especially risky when respondents are being asked to free recall social relationships. While some retrospective studies of network change ask general questions about how networks have changed (e.g. (Statistics Canada, 2010), researchers have shied away from asking respondents to free-recall the names of alters from the distant past likely because of the difficulties such a design would pose for collecting accurate data.

Asking respondents to free-recall people to whom they were connected in the past presents an extraordinarily large cognitive burden. Extensive research has documented respondents' propensity for forgetting to list relevant individuals even when name generator data are collected contemporaneously (Marin 2004, Brewer 2000). Furthermore, this forgetting is not random. People are more likely to forget people with whom they share less intimate relationship types and people to whom they are less close (Brewer 2000, Marin 2004). Alters are also more likely to be forgotten if they are less embedded in the respondents' network. The problem of forgetting would likely be especially serious when asking about relationships that are many years old. These memory biases are particularly significant when considering retrospective data since ties that are less close, in particular role relationships, and less embedded in respondents networks are precisely those that also more likely to become dormant (Burt, 2000; Feld, 1997; Marin & Hampton, Forthcoming). If ties that are more likely to be forgotten are also more likely to become dormant, then retrospectively collected data are likely to underestimate tie dormancy and overestimate network stability. Further, the current state of relationships may, itself, be an additional source of bias, with respondents more likely to remember old relationships that continue to exist and forget those that have since faded. If this is the case, the data could underestimate dormancy because ties that ultimately became dormant are not listed when considering the network of many years previous.

Name interpreters in retrospective surveys may be especially difficult for respondents to answer reliably. They run the risk of telescoping – underestimating time that has passed and list more distant things as happening more recently (Gaskell, Wright, & O'Muircheartaigh, 2000b; Neter & Waksberg, 1964). The amount of network activity in the past may be overestimated in

retrospectively-collected data because respondents may not telescope the same amount for all ties, and would instead likely telescope each relationship to its relatively active period.

From Free-Recall to Recognition using Photo Elicitation

To address many of these difficulties, we developed a photo-based method of eliciting retrospective personal network data. We use wedding albums from weddings that took place at least fifteen years before the interview to populate a network of persons who were in the respondent's life in the past. We then use name interpreters to learn about their relationships at the time of the wedding and at the time of the interview.

The problems of memory bias and name generators are well-known. When studying whole networks or ego networks within bounded contexts, recognition techniques are oft-cited antidotes to the well-known vagaries of human memory (Marsden, 2011; Sudman, 1985). Recognition technique can take many forms, with rosters (lists of names) surely being the most popular. Participants are presented with a list of all members of a group (usually in the form of a roster), and are asked to provide information about each of the ties they recognize (Marsden, 2011). Research shows that finding networks using rosters instead of name generators reveals larger networks and more weak ties (Ferligoj & Hlebec, 1995; Sudman, 1985). This method shifts the burden of recall away from the respondents and makes it easier for researchers to collect network data. However, because personal support networks are unbounded, a roster of potential network members does not typically exist.

Unlike a roster, which consists of lists of *possible* network members, photo albums include primarily people who are *presumed* network members. While a small number of people may be completely unknown to the album-holder, there is, at least, a very weak tie with the

overwhelming majority of those pictured. Co-appearance in photos and the retention or display of such photos implies a social connection (Golder, 2008; Lewis, Kaufman, Gonzalez, Wimmer, & Christakis, 2008). The use of photo albums, therefore, allows researchers to populate a network from the past without the problems created by retrospectively-targeted name generators and without the existence of a roster. Further, pictures spark memory. When people see a photo they remember more than that the thing, place, or person exists: they call to mind associated memories (Berger, 1992). In the case of respondents in personal network studies, these associated memories can aid respondents in answering the retrospective name interpreters that follow.

Methods

Interviews are being conducted as part of the “Theorizing Dormancy Study” which seeks to understand the nature of dormant ties. We conceptualize tie activity as existing along multiple dimensions which we divide into three categories: 1) *interaction*: frequency of contact, as well as the actual exchange of resources between the ego and alters; 2) *attachment*: the emotional intensity of a relationship even if there has been no recent interactions; 3) *awareness*: ego’s knowledge of their ties and their ability in maintaining contact with and awareness of the tie. Along each dimension that ties can be active, they can be inactive. The study seeks to develop a deeper understanding of what combinations of active and inactive dimensions characterize active versus dormant ties and to understand the predictors of both dormancy and tie re-activation. While we hope to ultimately develop a deeper understanding of tie dormancy, for the purposes of this article, we consider ties dormant along a given dimension if it was active along that dimension at the time of the wedding and is not active along that dimension at the time of the

interview. Our conceptualization of tie inactivity or dormancy requires us to have detailed information on the nature of the relationship at multiple points in time.

Sampling and Recruitment

We sampled respondents by purchasing a sample list from a survey sampling company, requesting adults aged 45-64 who are married and living in the City of Toronto. All persons in the sampling frame were included by virtue of having agreed to make themselves available to participate in academic research. We contacted people listed in our sampling frame by mail in small batches. Letters sent to potential respondents explained that they were being contacted as part of a project “looking at the way relationships with people we know change over time” and provided the eligibility requirements, including the requirement that a wedding album be available. All respondents must be or have been married with the wedding taking place at least fifteen years ago. They also must have retained a photo album of pictures from the wedding. We do not require that respondents still be married to the spouse wedded in the focal album.

We took a broad view of what constituted a wedding album – it need not be professionally-taken pictures or a professionally-prepared album, but even a shoebox of wedding pictures would be acceptable. For couples who eloped, we would accept pictures from post-elopement parties to celebrate the wedding. We decided ahead of time that any album from a same-sex couple’s non-legally binding commitment ceremony would also be acceptable, since same-sex couples could not marry in Ontario until 2003. That said, we did not find this to be an issue. We encountered neither albums that were not albums (though some were relative-taken pictures in a home-compiled album), nor parties that were not technically weddings.

Three to five days after the mailing of the letters, we contacted the respondents by telephone to further explain the goals of the study, determine eligibility and schedule interviews with

eligible persons who agreed to participate. The estimated response rate among those eligible was 41%. We report here on the 24 interviews conducted as part of the pilot study.

The Interviews

We developed a method of computer-assisted personal interviewing (CAPI) in which the network is populated using respondents' wedding albums, rather than using name generators. This method provides an effective strategy for identifying network members who were once meaningful but whose status in the network might have changed. Because this method does not rely on respondents' memories of who was in their network at the time of the wedding, it is not subject to biases created by the free-recall of names used by name generators. Anchoring the baseline time to a specific and memorable time in the respondents' lives reduces the cognitive complexity of remembering what their relationships were like at an arbitrarily-selected time and reduces the problem of telescoping (Belli, 1998; Loftus & Marburger, 1983; van der Vaart & Glasner, 2011)³. Furthermore, getting married marks the start of significant changes in personal networks (Kalmijn, 2012; Wellman et al., 1997), this means that using wedding albums as a name generator instrument ensures at least some of the ties sampled would have been important relationships around the time of the wedding and likely to have experienced significant changes.

³ Van der Vaart and Glasner (2011) find that landmark events work best for anchoring memory when they are personal, domain-relevant, and important. Respondent weddings meet all three of these criteria. They are undoubtedly personal and important. Furthermore, because weddings are events that bring together significant portions of the couple's social networks and because they are known to be turning points in the evolution of social networks (Kalmijn, 2012; Wellman et al., 1997), they are domain relevant for social support networks.

Finally, this method has the added advantage of making it possible to sample both very strong ties (e.g., bridesmaids and groomsmen) and also the somewhat weaker ties (e.g., coworkers) that would likely be forgotten more than a decade later. Some ties sampled may even be nascent or potentially-nascent ties if they were, at the time of the wedding, connected to the spouse or parents but not the respondent. These ties may have developed into shared ties, may continue to be connected primarily to the spouse or parents, or may have fallen away all together.

We interviewed respondents either in their homes or at the University as preferred by the respondent. Each respondent received \$20 CAD honorarium for their participation, and those who travelled to the university for their interview were also provided with two transit tokens to cover their travel costs. Interviews consisted of the photo-based elicitation portion of the interview, followed by name interpreters for each person named, and finally a series of questions about the respondent including their demographic information and information about important life events since the time of the wedding.

All interviews are conducted with a laptop running Qualtrics survey software. The interview begins with the interviewer confirming the pictures are of the respondent's own wedding, which took place at least 15 years ago and that the album contains pictures of both family and non-family members. Next, the interviewer has a brief discussion about first the wedding and then the wedding album, prompting the respondent to describe the size of the wedding, the year of the wedding, the location of the wedding, and whether some of the guests needed to travel far to attend the wedding. For the album, the interviewer prompts the respondent to indicate if the pictures were taken by a professional photographer, if the album was compiled by a photographer, the respondent or someone else and how the album is organized. This portion of

the interview is conducted using open-ended questions to keep the opening tone conversational and engaging for the respondent.

After discussing the wedding in general terms, the interviewer looks through the album with the respondent and asks them to identify and answer questions about the people pictured. The interview begins on the first page of the album which often contains a picture of the family. The interviewer moves through the album from there, selecting wedding guests to add to the respondent's network.

Because the survey includes lengthy name interpreters, we do not enumerate every person in the album, but instead work through the album selecting wedding guests for inclusion in a quasi-random manner. In pictures that include the bride and/or groom and one other person, the other person is added to the network. For pictures with more others, the interviewer alternates between selecting the second non-bride/non-groom person from the left, and the second non-bride/non-groom person from the right. If the selected person was not yet an adult at the time of the wedding or is deceased at the time of the interview, or if the person was a family member and sufficient family members have already been added to the network, no alter is added from that picture. Alters are selected from every third picture. If at the end of the album a minimum of ten alters are not selected, something that could happen from very short albums or where the persons selected from individual pictures were children or now deceased, the interviewer returns to the front of the album, selecting individuals from the same pictures, but this time selecting from the opposite side of what was initially selected. The resulting network includes ten to fifteen alters with at most half of those alters being family members. Selecting a random subset of alters ten from a larger list, in this case all of the guests are the wedding, can reliably measure the structure

and composition of the network (Marin & Hampton, 2007; McCarty, Killworth, & Rennell, 2007), while limiting maximum to 15 reduces respondent burden.

As the interviewer and respondent are going through the album, the interviewer collects four pieces of information about the alter: whether this is a kinship tie, sex, current age, and timing of the most recent contact. These pieces of information are collected at this point in the interview, first, because they are easy to elicit in a conversational manner and second because they are necessary for determining if the alter is eligible for inclusion in the network. The interviewer can usually infer the sex of the alter from the picture and need only confirm it while entering the data into the computer. Current age confirms that the alter was already an adult at the time of the wedding and if the alter is deceased the respondent will provide this information rather than a current age. This allows us to omit alters who were children at the time of the wedding or who have since died. Timing of the most recent contact provides a second opportunity for respondents to indicate that the alter is deceased. To limit kin to 50% of the network, we need to determine if each person is a family member. This information is often provided spontaneously when respondents identify the alter to whom the interviewer points by saying, for example, “That’s my sister, Maya.” These data are also well-suited to collecting at this point in the interview because, unlike the remaining name interpreters, they are collected about a single point in time, rather than once for the time of the wedding and once for the time of the interview.

After the network has been elicited the interviewer administers name interpreters, which include detailed questions about the respondents relationship with each alter at the time of the wedding and the time of the interview. These questions are designed to tap into the ways in which their relationship is active or inactive at each time point. We consider ties active along three relationship dimensions: attachment (ego’s subjective assessment of closeness, importance,

and capacity (Brashears & Quintane, 2018) of the tie), interaction (providing and receiving various kinds of support), and awareness (ego's ability to contact the alter and awareness of the alter's life). For each alter identified, we asked respondents,

Attachment

- Would they characterize their relationship with the alter as “active,” “inactive” or “no relationship.” This question is asked before the others to avoid biasing the responses with respondents' reflections on the other dimensions of the relationship.
- Whether the respondent felt close to the alter
- Whether the alter was important in the respondent's life
- Whether the respondent would do a large favour for the alter if asked
- Whether the respondent would feel comfortable asking the alter for a significant favour that the alter was uniquely positioned to do
- Whether the alter would loan the respondent a large sum of money, say \$1000.

Interaction

- Whether the respondent discussed important matters with the alter
- Whether the alter did small favours for the respondent
- Whether the respondent did small favours for the alter
- Whether they respondent and alter socialized regularly

Awareness

- Whether they were aware of the alter's life happenings and circumstances, with respondents able to answer they aware day-to-day activities, just big events like new jobs or marriages, or not aware.
- Whether they have a phone number, email address, or home address for the alter

- Whether the respondent is confident they could acquire a phone number, email address, or home address for alter if they did not already have it.

We also included a number of measures of relationship characteristics that we expect may be predictive of dormancy, such as role relationships, frequency of communication, propinquity, places of interaction, frequency of conflict, and embeddedness, all measured both at the time of the wedding and the time of the interview.

Following the name interpreters, respondents answer questions about themselves. These begin with demographic questions including sex, year of birth, education, occupation, and current marital status. Currently married respondents are asked to confirm if their current spouse is the same spouse they married in the focal wedding album. For those not currently partnered⁴, they are asked if they have had a common-law spouse or married spouse other than the one pictured in the album since the marriage pictured in the album. Finally, respondents are asked to indicate which significant life events they have experienced since the time of the wedding, selecting from a list of eleven items. When the interview is complete, the interviewer asks respondents if they have any questions about the research or the interview.

Interview Results

We report here on findings from 24 interviews collected as part of the pilot project portion of the study, which was funded by an American Sociological Association Grant from the Fund for

⁴ Although we requested a sample of married respondents, some people may have separated or divorced between the time the sampling company created their listing and the time of the interview. Our sample included on divorced and one separated respondent. Neither had re-partnered.

the Advancement of the Discipline. Interviews for the pilot project were collected between January 2017 and April 2018.

Each interview collected data on 10-15 alters for a total of 257 alters. Interviews lasted a mean of 64 minutes, with the shortest interview completed in 41 minutes and the longest taking 137 minutes. Respondents seemed engaged, in particular during the portions of the interview that used the photo album. They typically reported that being interviewed was a pleasant experience that gave them a chance to revisit good memories. While the questions were repetitive, as name interpreters often are, few respondents seemed annoyed by the repetition, perhaps because the most annoyingly repetitive questions – demographics – were integrated with the photo album viewing. Questions about the nature of relationships may be inherently more engaging and raise more interesting memories and thus be less burdensome to repeat.

Respondents were overwhelmingly female, with 23 women and 1 man completing interviews. The average mean and median ages of respondents were 54.4 and 56, respectively, which is not surprising given that we sampled only people who married at least fifteen years ago. Respondents' mean education level was college/university degree with 91.7% of respondents having completed at least college diploma or university degree.

Both the weddings and the wedding albums varied greatly. Weddings ranged from small family affairs to elaborate events with more than 300 guests. Albums were similarly varied. We viewed professionally assembled albums including pictures of both the ceremony and reception in addition to posed photos as well as albums compiled from family pictures. One respondent, whose professionally-assembled album included only posed pictures of the wedding party itself, brought along additional family pictures showing the assembled guests at the ceremony and reception. Among the 11 weddings for which we recorded the wedding date, weddings took

place between 18 and 44 years ago, with the mean time since the wedding being 33 years and a standard deviation of 8 years.

Not surprisingly given that these alters were invited to the respondents' weddings and appeared in their wedding albums, alters identified by this method had very active relationships at the time of the wedding. Table 1 shows the proportion of ties that were active along each dimension. Dimensions that we classify as awareness-related show the highest levels of activity in both time periods. At the time of the wedding, respondents had contact information for 95.8% of alters identified in their wedding albums and had or could acquire contact information for 99.2% of them. This explains how these alters were able to receive wedding invitations and attend the wedding, presumably. The small number of alters identified in the albums whom respondents could not contact tended to be plus-ones brought along by invited guests, or guests invited by in-laws. Relationships were not as active along dimensions classified as attachment, though they were still quite active. Respondents described 72.2% of alters identified as close and considered 76.8% of them to be important in their lives. Relationships were least active along interaction dimensions, though the levels of activity here varied. Respondents socialized regularly with 74.5% of their alters but discussed important matters with only 48.3%. Respondents' subjective assessment of their ties' status are consistent with these numbers. Ties are overwhelmingly perceived as active at the time of the wedding with 85.2% categorized as active by respondents and only 3% as non-existent. At the time of the interview, respondents still consider just over half of their ties still active and more than a quarter are inactive, though a significant minority of ties have become less active. Respondents classify 27.3% of their ties as inactive and 17.4% as non-existent.

<Table 1 about here>

At the time of the interview, relationships were decidedly less active, though many were still quite active. With relationships this active and the passage of at least 15 years, it is also not surprising that overall relationships became less active over time. The second column of Table 1 shows that the dimensions of tie activity ranked similarly, though fewer ties are active along all the dimensions. Respondents could still acquire contact information for an overwhelming majority of their former alters (94.6%) and have current contact information for 80.3% of their alters. More than half of relationships were strong along attachment dimensions, particularly along those dimensions suggesting relationship capacity (Brashears & Quintane, 2018). Respondents would do significant favours for 74.9% of their alters and would feel comfortable asking for a favour from 64.9% of them, even though only 59.5% and 64.9% of those alters are people whom they consider close or important in their lives, respectively. Interaction-based activity levels are the lowest, particularly regular socializing, which respondents only do with 32.4% of their alters at the time of the interview. The most active dimension of interaction is doing small favours for alters, which respondents report doing for about half their alters.

Change in the number of alters active along each dimension does not necessarily tell us how many individual relationships have changed, however, since the relationship active along a dimension at the time of the wedding are not necessarily the same ones active at the time of the interview. Figures 1 to 3 show how individual relationships have changed or remained constant along individual dimensions of activity. Each pane represents one dimension of tie activity. The height of the bars on the left indicate how many ties were active (darker colour) and inactive (lighter colour) along that dimension at the time of the wedding. The height of the bars on the right indicate how many were active and inactive at the time of the interview. The height of the flows shows how many relationships changed or remained stable along that dimension. Figure 1

shows how relationships have changed in their activity along interaction-based dimensions. Along each of these dimensions significant numbers of alters become less active and a smaller number of become more active. Figure 2 shows changes for dimensions related to attachment. A decline in closeness is the most common relationship change portrayed and increases in tie activity are uncommon. Figure 3 shows changes in relationships along awareness dimensions. These show that respondents rarely gain the ability to contact alters, suggesting that these very weak ties from the time of the wedding do not tend to strengthen. However, awareness of alters lives shows significant amounts of relationship change.

<Figure 1 about here>

<Figure 2 about here>

<Figure 3 about here>

Because we are most interested in tie dormancy and thus reductions in activity, we show precise numbers for the proportions of relationships that have ceased to be active along each dimension in

Table 2. What is apparent from both the figures and the table is that while along each dimension most relationships stay active, significant minorities of relationships are no longer active along all dimensions except those related to the ability to contact. Besides contactability, tie capacity shows that the fewest ties to move to inactivity are those that could not be called upon in times of need. Only 16.1% of alters for whom respondents would have done a significant favour at the time of the wedding are people for whom the respondent would no longer do a significant favour. This is significant because it confirms our intuition that even ties that are inactive can serve as reservoirs of resources if the need arises.

<Table 2 about here>

In addition to showing the weakening of tie activity, Figures 1 to 3 also show that while relationship activity fades more often than it strengthens, it does sometimes strengthen. For each dimension of relationship activity there are small numbers of ties who were not active along the dimension at the time of the wedding but are active at the time of the interview.

Finally, Figure 4 shows that most ties remain at roughly the same activity level, but significant numbers become less active overall and a few ties have become more active in the years since the wedding. We studied 11 dimensions of relationship activity and the mean alter was active along 8.35 dimensions at the time of the wedding, with a standard deviation of 2.83. At the time of the interview the mean relationship was active along 6.45 dimensions with a standard deviation of 3.69. The most active relationship was active along all eleven dimensions and the least active was not active along any dimensions. Figure 4 shows how individual relationships have changed in their levels of activity. We divide alters based on the number of dimensions along which they are active, 1 to 6, 7-10, 11 or 12. These cut points were selected such that each bin included about one quarter of alters at the time of the wedding.

<Figure 4 about here>

Our purpose in collecting these data is not to determine what proportion of ties are active along various dimensions for a population, but rather to collect data on ties that vary in their levels of activity and in particular in the ways and amounts in which their activity has changed over time, with a particular focus on reductions in tie activity. We seek to understand how these dimensions of activity relate to one another and how they relate to overall levels of tie activity and to respondent's subjective perception of tie status. These brief descriptive tables and figures show that our interview method has been effective in eliciting ties with a variety of trajectories over time.

Discussion

Our experience with this interview format shows that it has a number of benefits. Most significantly, it allows the collection of data on change over time without the expense and difficulties associated with panel studies. Data can be collected in a single round rather than multiple waves which, besides being a boon for the impatient researcher, can have significant benefits for data quality: Panel studies suffer from respondent attrition, in which respondents may be difficult to locate or choose not to participate in subsequent survey rounds (Marsden & Wright, 2010). Further, even where respondents do participate in subsequent waves, they may learn in the first round that the interview will be considerably shorter if they name fewer contacts, thus biasing data in subsequent survey waves.

Data quality is a significant issue with retrospective network data. Using the wedding album to enumerate network members and the wedding as an anchoring event mitigates two of the most significant sources of bias in retrospective data. First, because the network is populated from the wedding album rather than through recall there is no bias caused by free-recall processes (Brewer, 1995a, 2000; Brewer & Yang, 1993; Brewer & Yang, 1994; Marin, 2004; Sudman, Bradburn, Schwarz, & Gullickson, 1997). Second, anchoring the baseline time to a specific and memorable event in the respondents' lives reduces the cognitive complexity of remembering what their relationships were like at an arbitrarily-selected time and reduces the problem of telescoping (Gaskell et al., 2000b; Loftus & Marburger, 1983; van der Vaart & Glasner, 2011). Furthermore, using the wedding album, particularly for respondents who had large weddings, also makes it possible to sample both very strong ties (e.g., bridesmaids and groomsmen) and also the somewhat weaker ties (e.g., coworkers) that would likely be forgotten more than a decade later. Collecting information about these ties retrospectively without the memory aid

would be ill-advised since weaker ties are precisely the ones most likely to be forgotten (Brewer, 2000; Burt, 2000; Feld, 1997; Marin, 2004). The use of a memory aid to ensure weaker and less embedded ties are included is especially important given our interest in dormant ties because it is precisely those that are weak or loosely embedded in the network, the very ties likely to have since become dormant, that are most likely to be forgotten (Marin 2004).

In addition, and not insignificantly, interviews are enjoyable for respondents, something that cannot often be said of egocentric network surveys. This is obviously a benefit for respondents, but it is a benefit for researchers as well: respondents are forthcoming with their answers. Alter demographic characteristics, which are often the most tedious questions for respondents are collected in a conversational manner while looking at the album. Respondents do not appear to suffer from fatigue and do not seek to shorten the interviews, which is important because these respondent motivations can compromise findings (Pustejovsky & Spillane, 2009; Roberts, Eva, Allum, & Lynn, 2010; Yousefi-Nooraie et al., Forthcoming). In fact, they are forthcoming with their answers. As a result we are able to ask about many different aspects of the relationships without taxing respondents' patience.

The wedding album elicitation method gives our data a unique structure and richness that will allow us to examine network and relationship change over varying lengths of time. While at least fifteen years have passed since the wedding of all our respondents, the exact amount of time varies. The earliest wedding studied here took place in 1974. Unlike panel studies, which normally have uniform intervals between study waves, we have variation in the time periods elapsed between focal moments and will be able to examine how network change operates at different time intervals within this variation. We will be able to explore how relationships change in varying lengths of time further with the qualitative data that we are adding to the full study

now under way. This portion of the study will ask one third of respondents to provide a detailed history of three relationships that have shown varying levels of dormancy, including at least one that has been dormant and reconnected at least once.

Finally, the wedding album interview method is well-suited to our study because of our specific interest in dormant ties, tie dormancy, and tie reactivation. For other areas of focus, the photo-elicitation method could be modified to use other photo-sources and approaches. For example, studies of social convoys (Antonucci, Ajrouch, & Birditt, 2014), which examine how people's ties develop, adhere, or dissolve as people move through the life course, could use social media account linkages as a source of alters active at various life stages. While we have argued that photographs have particular advantages, other sources of lists of potential alters might also be useful. Researchers interested in whether and when ties persist after life-transitions or after leaving significant foci could use high-school yearbooks, not just using pictures as a roster, but also considering the list of people who have signed the yearbooks as people to whom the respondent was once connected (Giordano, 1995). Researchers using qualitative methods where uniformity across respondents is less important might also use idiosyncratic retrospective lists of alters: calendars or diaries, holiday card lists, dinner party or game-night logs, or archived correspondence.

Limitations

Despite its benefits, a wedding-album-based interview study has a number of disadvantages. First, most obviously and perhaps most seriously, only respondents who have been married and retained albums may participate. This not only limits research to a portion of the population, it also biases the data, given the declining popularity of marriage. In Canada 46.4% of the population aged 15 and over was legally married in 2011 compared to 60.9% in 1981 (Milan,

2013). Further, not everyone is equally likely to marry. People with more education (Ferguson, 2016), and higher income persons are more likely to marry (Cross & Mitchell, 2014). Given that maintaining connections can require time and resources, people who are married may differ from unmarried persons in their tendency to have ties go dormant, even apart from those differences related to the different routines or support needs of marriage. Within the population of those who have been married, there may also be biases created by requiring that respondents have wedding albums. Those who have separated or divorced are, at most, half as likely to have an album. Some couples may not have made albums at all and this subset may differ systematically from the others. Although only 7% of potential respondents we contacted were disqualified for having no album, we cannot know if or how their networks differ from those of the album-havers. Finally, we have also had greater success in recruiting female respondents, possibly because women are the photo album keepers.

While the wedding album does help in populating the network without relying on the vagaries of human memory, name interpreters are still based on respondents' memories of their relationships many years ago. Research suggests that anchoring these memories to a specific, memorable moment in time reduces the cognitive load of this task and improves accuracy (Gaskell, Wright, & O'Muircheartaigh, 2000a; Loftus & Marburger, 1983; van der Vaart & Glasner, 2011). However, we have no means of verifying that respondents' relationships were as they report or examining how cognitive processes might bias these reports.

This method shares with other methods of network elicitation the limitation that it cannot elicit a truly random set of alters, even alters at the time of the wedding. In some ways the biases will match those common in name generators: stronger ties and more embedded ties will be more

likely to be invited to and attend a wedding and to be photographed and included in the wedding album.

Our data do not allow us to calculate network measures as basic as network size or the numbers of people providing different kinds of support. For those interested in studying network change more broadly, not simply dormant ties, the method may be problematic: While we are able to glimpse ties that were at least minimally active many years ago, ties that were inactive or as yet unknown will forever remain invisible in our data. We cannot study the addition of new ties and because we cannot study new ties we cannot examine changes in the overall characteristics or supportiveness of the network.

Based on the results of the successful pilot we have left the overall structure of the survey largely unchanged, though we have added a small number of questions. The date of the wedding was something previously raised in the open-ended less-structured opening the interview and is now an explicit question. We also added questions about when and in what settings respondents first met each other and whether they are connected to each other named on social media.

Conclusion

Ego network analysis is distinguished from whole network analysis most frequently and primarily by the unbounded nature of the networks. When connections can span all manner of settings, organizational contexts, and geographical boundaries, determining who is in the network that we study can be more than half the challenge. Indeed, since ego network studies so often focus on composition rather than structure, who is in the network is often essentially one of the research questions (McCarty, 2002). Determining who *was* in the network is an even trickier proposition, often increasing the burden on respondents and leaving the study at risk of a greater number of human errors and of errors with greater significance. We present here a creative

approach to meeting this challenge and argue that despite the potential drawbacks, photo-based network elicitation is an effective method of retroactively collecting network data for researchers interested in how individual relationships change over time.

The photo-based network elicitation method we have developed is designed to meet the theoretical needs of our research agenda. We seek to study the ways in which ties change over time and in particular the dimensions along which they remain active or become dormant over time. As such, we require a set of relationships that were relatively strong, and a few that were somewhat weaker, many years ago. The use of wedding albums for network elicitation makes it possible to collect such ties. The method as used here would be less useful for researchers whose interest in past networks includes very weak ties or whose interest in network change focuses on tie formation, the strengthening of social bonds, or the ways in which the overall structure or composition of the ego network change over time. Our findings show that a well-selected photo-archive can be a rich source of network ties that does not rely on flawed or biased memories.

Conflicts

Authors have nothing to disclose.

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Tables

Table 1: Proportions of Alters Active along Each Relationship Dimension (N=257)

	At the time of...	
	The Wedding	The Interview
Interaction		
Regular socializing	0.745	0.324
R does Small favours for alter	0.730	0.506
Discuss Important Matter	0.483	0.386
Alter does Small favours	0.718	0.456
Attachment		
R considers Alter Close	0.722	0.506
Alter is important in R's life	0.768	0.595
R would be comfortable ask for favour	0.834	0.649
R would do a significant favour for alter	0.838	0.749
Alter would lend R money	0.517	0.463
Awareness		
R knows daily events in alter's life	0.502	0.534
R knows big events in alter's life	0.437	0.212
R could contact alter	0.958	0.803
R could acquire contact info	0.992	0.946
Subjective Relationship Status		
Active	0.852	0.553
Inactive	0.109	0.273
No Relationship	0.039	0.174

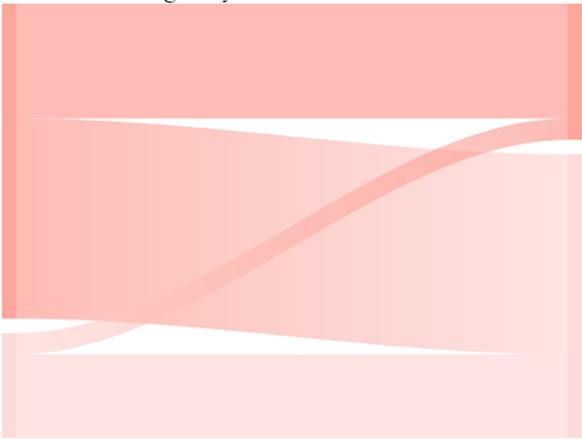
Table 2: Proportion of Ties Active Along Each Dimension at Time of Wedding No Longer Active at Time of Interview (N=257)

	Proportion No Longer Providing
Interaction	
Regular socializing	0.632
R does Small favours for alter	0.370
Discuss Important Matter	0.347
Alter does Small favours	0.419
Attachment	
R considers Alter Close	0.376
Alter is important in R's life	0.253
R would be comfortable ask for favour	0.259
R would do a significant favour for alter	0.161
Alter would lend R money	0.233
Awareness	
R knows daily events in alter's life	0.618
R knows big events in alter's life	0.282
R could contact alter	0.178
R could acquire contact info	0.043
Subjective Relationship Status	
Active	0.392
Inactive	0.264

Figures

Figure 1: Relationship Change for Interaction-Based Activity Dimensions

A: Socialize Regularly



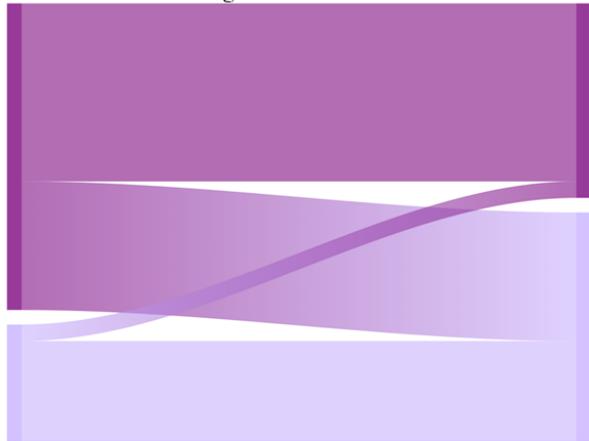
B: Small favours to alter



C: Discuss Important Matters



D: Small favours to ego



Darker colour indicates ties active along each dimension. Lighter colour indicates inactive tie along each dimension.

Figure 2: Relationship Change Along Attachment-Related Dimensions

A: Is close



B: Is important



C: Comfortable asking for favour



D: Capacity



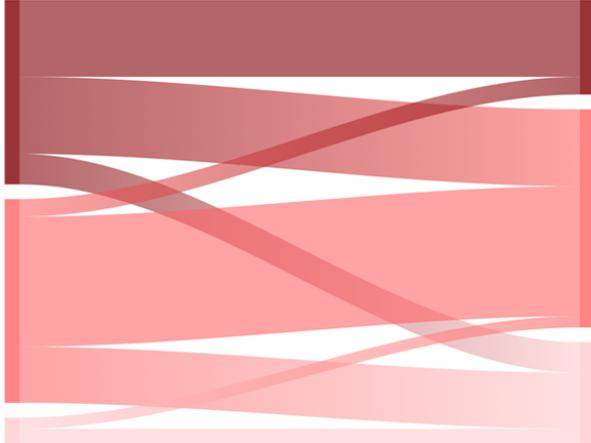
E: Alter would lend R Money



Darker colour indicates ties active along each dimension. Lighter colour indicates inactive tie along each dimension.

Figure 3: Relationship Change Along Awareness-Related Dimensions of Activity

A: Awareness



B: Has contact info



C: R could acquire contact info



Darker colour indicates ties active along each dimension. Lighter colour indicates inactive tie along each dimension.

Figure 4: Change in Number of Dimensions Along Which Ties are Active

