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Utilising social network research in the qualitative exploration of gamblers' social relationships

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Abstract

Social Network Analysis (SNA) is often criticised for being too quantitative in focus and network scientists have commented on a lack of engagement from qualitative researchers. This article will contribute to these debates by critically reflecting on a qualitative study of gambling where social network research methods were adapted and applied to narrative interviews. Egocentric sociograms (maps of participant social networks, using a name generation question and concentric circles) were created for 23 participants. These sociograms were used as an interactive tool, with the addition of coloured dots, to stimulate discussion and so generate rich narrative and visual data on the impacts of gambling behaviour on participants' wider social networks. This approach represents an extension to existing SNA methods that has not previously been utilised.

Keywords

concentric circles, gambling, in-depth interviews, longitudinal qualitative research, name generation, social networks, social network analysis, social network research, sociograms

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Introduction

Social Network Analysis (SNA) is the study of relationships and connections most commonly, although not exclusively, between individuals (Christakis, 2010). Crossley (2010) describes social networks as 'social worlds' made up of various individuals with shared 'meanings, purposes, knowledge, understandings, identities' which affect how and who they interact with (Crossley, 2010). SNA seeks to understand what relationships look like and how networks are formed and create influence. Therefore, SNA has the potential to assist qualitative social scientists concerned with moving beyond individual determinants of behaviour and fits well with theories that seek to explore the importance of relationships and interactions between individuals and their social environment, such as Bronfenbrenner's (1992) ecological system theory.

Traditionally 'formal' SNA (Heath et al., 2009) developed within the quantitative paradigm, with statistical and, more recently, computer modelling, techniques that measure the number and frequency of connections between individuals (Tubaro et al., 2016). This has led to some criticisms that formal SNA may fail to capture the depth and diversity of social networks (Bellotti, 2015). Such criticisms can be seen as part of a broader epistemological and ontological gulf between the qualitative and quantitative approaches more generally. While concern with the latter for enumeration and prediction is rooted in the positivist tradition, the former's focus on the understanding of meanings and social contexts is part of the philosophical tradition of interpretivism and social constructivism.

However, despite this apparent paradigmatic impasse, many scholars have argued that not only can the two perspectives be reconciled in the study of social ties, but are actually complementary (Bellotti, 2016; Crossley and Edwards, 2016). Following Bhaskar's realist ontology, Crossley and Edwards (2016: 4) make a case for a mixed methods approach to social network analysis, arguing that the latter 'attends to patterns of connection, and thus to the social aspect of human life. It allows us to examine the impact of connection and thereby of social structure upon those participating in it and indeed of the impact of participants actions back upon structure'.

Indeed, the point has been made that SNA always has, and continues to, engage with what (Bellotti, 2016) calls 'both the formal and contextual aspects of social structures', it has been pointed out that early SNA studies actually drew on qualitative methods (Bellotti, 2015; Crossley, 2010; Heath et al., 2009). For example, Bott's study of social ties in London households in the 1950s, and Barnes study of Norwegian island parishes used ethnographic methods (Barnes, 1954; Bott, 2001). Building on this, in recent years there has been a 'cultural turn' in network science which recognises that networks are not just structures to be observed and measured but also have cultural formations with narratives that need to be understood (Knox et al., 2006). In this vein, recent qualitative SNA research has tended to focus more on the content and context of social ties, such as their meanings and the narratives that are used to express them, and less on the structure or mechanics of the relationships (Tubaro et al., 2016). In particular, several authors have noted the rise of data visualisation tools, such as sociograms, in qualitative and mixed method SNA and their important contribution to both data collection and analysis (Antonucci, 1986; Freeman, 2000; Hogan et al., 2007; Ryan et al., 2014; Tubaro et al., 2016). For example, Ryan's (2011) study of Polish migrant workers demonstrate the

value of incorporating sociograms into face to face interviews, arguing that it elicits 'richer data' by adding greater insight into the content and meaning of individual narratives.

It is increasingly recognised, then, that the content, as well as the structure of networks, needs to be understood; a process that requires attending to the meanings, as well as the form, of relationships. Such a requirement has the potential to undermine the traditional epistemological qualitative/quantitative divide, and to pave the way for greater use of qualitative approaches to the study of social networks, as well as to the mixing of methods to understand them. Tubaro et al. (2016) have described recent calls 'to view networks as both structure and process, beyond the conventional quantitative-qualitative duality'.

This article is situated within this emerging orientation, and seeks to critically reflect on our experience of incorporating network research into qualitative inquiry. Our aim was to draw on SNA tools to enhance data collection and analysis for the final wave of a five-year study of gambling behaviour. In doing this, we hoped to contribute to qualitative research methods by exploring the potential for SNA approaches to enhance the depth and understanding of social relationships.

We begin by describing the research study in which we applied social network visualisation tools. We then discuss the findings that we generated through this approach, and conclude by considering the contribution that our study has made to network science.

The study

We aimed to apply some of the techniques and insights of SNA into the final phase of a longitudinal qualitative study of gamblers and problem gamblers living in and around Glasgow, Scotland, entitled *'Situating Problem Gambling'*. People with gambling problems are a particularly interesting focus for network inquiry. Their social ties are often complex, and are characterised by issues around concealment and guilt. In addition, they tend to be a 'hidden' population: as well as comprising less than one percent of the population (Wardle et al., 2010), their visibility is reduced by issues of stigma and shame, meaning that many go to great lengths to conceal their behaviour from families, friends and colleagues (Hing et al., 2016; Reith and Dobbie, 2012). However, those social contacts also suffer when someone close to them has difficulties with gambling. Problems can cascade through social networks to generate, amongst other things, familial disruption, marital breakdown, negative impacts on children, and general loss of trust. It is estimated that approximately ten people are affected for every one person who has a gambling problem (Valentine and Hughes, 2010). On the other hand, however, those very people are often crucial for the recovery from problematic behaviour, with family and friends playing a significant role in supporting and encouraging changes in behaviour. We were aware then, that social networks could play a particularly important and complex role for this group, something that we found throughout our study, and have discussed elsewhere (Reith and Dobbie, 2011).

We recruited 50 individuals who gambled both recreationally and problematically, and interviewed them four times in-depth over a period of five years. Interviews were conducted by the authors as well as three highly experienced, qualitative researchers.

Ethical approval was granted from the National Centre for Social Research, Ethics Committee and participants gave written informed consent. Owing to the difficulty in recruiting such a traditionally 'hard to reach' or hidden population, we utilised three approaches: face to face recruitment by interviewers within gambling venues; advertising in the local press and community venues, and advertising and snowballing within problem gambling treatment agencies. For more information on details on the methodology and findings of this study see Reith and Dobbie (2013).

By the time of the fourth interview, we had amassed a considerable amount of information about our participants' lives. However, we wanted to generate a deeper understanding of their wider social networks, and it was at this point that our interest in SNA developed. Initially, we were drawn to the ideas of Spencer and Pahl (2006) who used concentric circles to explore kinship and friendship networks. This work drew us to the SNA literature on 'egonets'. An egonet, also called an egocentric or personal network, is most commonly (although not exclusively) the network of one individual (the ego), with members of their network called 'alters'. Egonets are usually represented using visualisation techniques such as sociograms (Robins, 2015). We felt that incorporating egocentric sociograms as part of the fourth wave of data collection could help to generate rich data by triggering reflections, bringing unanticipated issues to light, and stimulating discussion amongst our participants (Tubaro et al., 2016). Mapping such as this is common in network science and is generated through a 'name generation question', which has been used since the 1960s (Hogan et al., 2007). Our approach to creating the sociograms was to use concentric circles, a hierarchical mapping technique (Antonucci, 1986), primarily because they were simple and easy to use and have been used and refined by other scholars (Hogan et al., 2007; Ryan et al., 2014; Spencer and Pahl, 2006).

At the end of participants' fourth interview, a simple process, using pen and paper, was employed to create the egocentric sociograms. Participants were given a blank piece of paper with four concentric circles drawn on and asked to write their name in the smallest circle in the centre. Using the following name generation question: *'*please think about the important people in your life right now*'*, participants were encouraged to write the names of people who they felt were important at the time of the interview. We framed the name generation question around the people who were *currently* an important part of the participant's life, rather than anyone who had *ever* been a part of their life. This was partly in order to establish parameters around the network and to help minimise the amount of time it took to produce the sociogram. When adding names to their sociograms participants were told to position people they felt closest to nearest to their name in the centre circle, with those they felt less close to further away. Participants were also asked to write down their relationship to each person (e.g. father, son, partner etc.). In line with similar studies which have used sociograms we did not set any limits on the number of alters that could be included, as we felt this may have compromised the richness of the data (Heath et al., 2009; Ryan et al., 2014).

We also adapted our sociograms with an additional element. Three differently coloured dots were used to represent different types of relationships: Red dots were used to identify people who had been affected by participants' gambling; green dots were people who had helped them overcome a period of problem gambling; and yellow dots indicated

people who did not know that the participant gambled. Once participants had created their sociogram they then added the coloured dots, generating additional data that allowed us to explore map composition.

As we noted earlier, there are particular complexities involved in gamblers' social networks, with many of the people in them negatively affected by the ego's behaviour, as well as often being instrumental in helping to resolve it. At the same time, many are sometimes unaware of the ego's behaviour, in relationships that involve concealment and deceit. The use of coloured dots helps to represent some of this complexity in a straightforward manner, so allowing the participant and researcher to visualise the different levels of relationships in a clear way. To the best of our knowledge, this approach has not been utilised before, and so can be seen as a potentially innovative technique, especially when used in the context of discussion of sensitive topics.

An example of a sociogram is shown in Figure 1.

As with any longitudinal study, attrition was inevitable. By wave four, 38 participants were eligible to participate, of which productive interviews were completed with 28. Of these participants, 23 produced a sociogram, and it is these participants who form the sample for this analysis. Participants were aged between 25 and 74 years old, around half were employed (n=12), five were unemployed and six were retired. More men took part than women (19 men compared with four women). Interviews were fully transcribed and observation notes written immediately after each interview. These were analysed by the authors in NVivo 10, which incorporates 'Framework' matrices. Framework is a matrix-based approach to qualitative

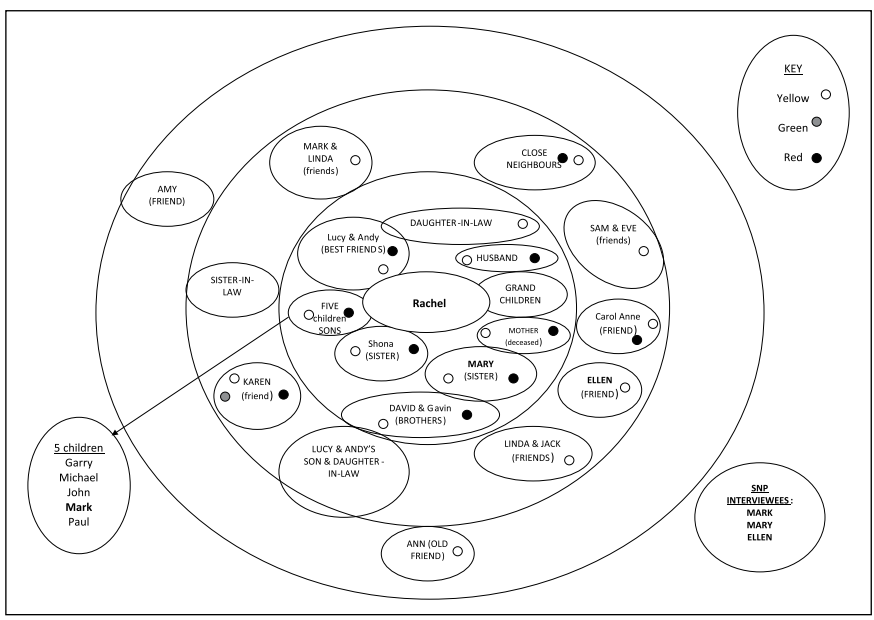

Figure 1. Example of a sociogram.

data analysis which uses a consistent method for synthesising and condensing verbatim transcripts, allowing for thematic and case-based analysis (Ritchie et al., 2013).

We should make clear here that it was not our intention to conduct network analysis itself as part of this study. Rather, our aim was the more modest one of simply exploring the utility of incorporating social network visualisation tools to assist in the process of data collection and analysis of qualitative interviews. In the context of this more exploratory approach where we have not conducted any analysis of the network structure, Heath et al (2009) would describe our study as an example of qualitative social network *research* not qualitative social network *analysis.* In the following section we will, therefore, present results using the term social network research (SNR) rather than social network analysis.

Findings

Constructing networks: reflexivity and co-production

As network scholars have noted, sociograms have a dual aspect, acting as both as a trigger for reflection and discussion during the interview process, and also as a form of visual data in their own right (Bellotti, 2016; Ryan et al., 2014). In our study, as participants constructed their maps, we were aware of them working through their relationships in ways that we could both hear – through narrative dialogue –as well as see – through the physical act of placing and moving their alters and coloured dots. This visual dimension provided us with unique insights into participants' social networks that in-depth interviews alone would not have provided. At the same time, however, we were very aware of our own reflexive role in producing sociograms in this study. We were involved in a constant process of providing reassurance, guidance and engaging in dialogue with participants as they talked through their thoughts and feelings while they placed their alters. Such a process afforded us insights into how people actually respond to the task of translating complex, shifting human relationships into a visual form, so providing a window into what Tubaro et al. (2016: 4) describe as the 'dynamic interplay between visual and narrative data.'

In studies of skilled French migrants in London, Ryan (2014) and colleagues emphasised the reflexive nature of sociogram construction, drawing attention to the multiple ways that interviewers influence the process as part of an 'interactive dialogue between interviewer and research participant'. They further insist that visualisation tools are not regarded as a 'neutral tool for collecting data about a pre-existing network', but rather ask us to consider 'how the interview questions and visualisation tool may influence how social relationships come to be depicted as a "network"' (Ryan et al., 2014). We concur with their assessment of the importance of the role of the visualisation tool and the reflexive nature of its production, and came to similar conclusions with our own study. In fact, we feel that the longitudinal dimension of our study, in which the visual mapping exercise is embedded may actually have intensified some of these features.

To be more specific, this aspect meant that we, as interviewers, had built up a considerable body of knowledge of the social networks of our participants over a four-year

period. Where possible, the same interviewer carried out interviews with the same participant, and so we are aware that our fairly extensive knowledge of participants, as well as the trust and rapport we built up with them, influenced sociogram production. We could draw on our knowledge of previous interviews to encourage recollection, prompt discussion and, sometimes, to explicitly steer participants in particular directions. Many researchers have noted that 'recall is a key problem for network research' (Tubaro et al., 2016), and pointed to the role of visual tools as triggers for memories of friends and relationships. In our case, the detailed knowledge that we already had of participants' social networks played a mitigating role in problems of forgetfulness. In the following excerpt, an interviewer drew on her knowledge of previous discussions to remind a participant about an alter they had not mentioned:

Interviewer: Now you mentioned a friend from other interviews ….?
Male: Yes.
Interviewer: Do you still have contact with her?
Male: In fact … Aye. The fact that you mention it… I saw her about a fortnight ago for the first time in a long time.

This dimension of our study also has implications for capturing the fluidity of relationships. One of the criticisms of sociograms has been that they are static and fail to capture the dynamism of relationships over time (Conway, 2014). However, Tubaro et al. (2016) counter that, when combined with an interview, sociograms can actually facilitate discussion about how relationships have changed over time. We suggest that this aspect is magnified when a sociogram is embedded in the final phase of a longitudinal study, as it was here. At this point, the interviewer has already built up a body of knowledge of participants' social networks and history (in this case, over four years); an understanding that encourages a more dynamic representation of social ties.

The following extract illustrates how the fluid nature of relationships unfolded throughout narrative discussion, with an interplay between hesitancy on the part of the participant and prompting and guidance on the part of the interviewer involved in attempts to articulate a participants' shifting relationship with his son and grandson.

Male: And I've got my son…my son he's got…but I don't see him much he's a busy man, and I've got a grandson who I was with last night at the football, he's 20 but I don't have a lot of contact with him.
Interviewer: Are they still important to you in your life?
Male: Oh aye.

As discussion continued it became apparent that just because the participant did not see them often, they were not viewed as any less important as other alters whom he did see more regularly, thus their position on his sociogram changed.

Male: It's not that they are not important to me but I don't…
Interviewer: You don't see them as much?

Interviewer: So they're still important in your life so in fact even though you don't see them as much maybe they should still be in that circle there but we can…we've got a rubber and we can always change that around.

This exchange demonstrates the active co-production of a sociogram, which we can both hear and see as the participant talks through their visual map. But just as importantly, the act of physical positioning that it involves – the uncertainty, hesitancy, the moving around - highlights the ability of sociograms to represent fluidity when they are created in conjunction with narrative discussion. In this, we can see the value of sociograms as a trigger for discussion, as well as a source of data in their own right. Indeed, as Tubaro et al. (2016) have pointed out, combining narrative and sociograms in this way generates insights 'not only into how networks are composed now, but also how they have changed over time'.

Generating names

Several authors have highlighted the importance of an appropriate name generation question to collect information on social networks (Bearman and Parigi, 2004; Hogan et al., 2007). Our name generation question was conceptualised by participants in different ways, which in turn influenced the placement of alters. For example, Michael created a sociogram in which he placed his current partner, children and ex-partner in the same circle. In his previous interviews he had presented a narrative of a troubled and difficult relationship with his ex-partner, so we were surprised when he put her in the same circle as his current partner and children. However his rationale for her position was simple – she was the mother of his children and he knew how important she was in their lives and, so, by extension, his own life. The process of constructing his sociogram highlighted the complexity of egonets. He told us:

> [W]hereas, a few years ago, she [ex-partner] wouldn't have been on that bit o' paper, you know? I had so much resentment. But I care about her a lot today because if my kids have no mother, you know? So [it]'s really important that she's safe and well for me today.

Michael also placed friends from Gamblers Anonymous in the inner circle, and again the same rationale applied: without their support he would not have access to his children. This highlights the importance of choosing an appropriate name generation question, as well as the need to be aware that interpretation of it will vary. Simply asking participants to think about whom they felt close to in a general sense may have produced very different sociograms, and so different data, in this study. However, asking the more specific question about people who were important to them *at the current time* generated different sorts of understanding. For example, observation notes from the interviewer of Mark, described the network visualisation process as straightforward but noted that he did not include his ex-girlfriend on his map *'*despite the fact that she had been one of those who had been most affected by his gambling'. The interviewer thought this was unusual but the omission makes sense in light of previous discussion about the name generation question. Mark was asked to include people who were important in his life *right now*, not when he was gambling which was several months prior to creating his sociogram. Thus,

despite his ex-partner being significantly affected by his period of problem gambling, they were no longer together so Mark did not include her in his sociogram. As Ryan et al. (2014) suggest, participants may be more likely to focus on current relationships, even though past ones will have been important, and so combining a visualisation map with in-depth interviews can work to highlight such apparent inconsistencies. In addition, in our study the light that was cast on Mark's social dynamics through understanding the nuance of the name generation question highlighted the importance of time- and context-sensitivity of follow-up probes/questioning when mapping egonets. Had this question been included as part of a self-complete survey, for example, there would have been no opportunity to explore the deeper drivers behind omissions, elisions and inclusions – the reasons why some people are chosen, and others left out –of meaningful social relationships.

The colour of social ties: using coloured dots

We found that using sticky coloured dots to prompt further discussion around relationships acted as a powerful means of representing nuance in a straightforward, visual manner. The very act of assigning colours to different kinds of social ties helped to make those relationships appear more concrete, encouraged participants to think about them in particular ways, and so facilitated teasing out the details of their more fine-grained aspects. In this, we feel that our coloured dots act as a particularly vivid example of what Tubaro et al. (2016: 3) describe as 'the capacity of visualisation to appeal to the senses'.

In keeping with research that points to the complexity of gamblers' social relationships, many of our participants indicated that their alters had dual roles in terms of both being negatively affected by participants' gambling as well as helping them to recover from it. This emerged in the narrative of Rosemary who identified this duality through her simultaneous placement of different coloured dots:

Interviewer: [F]or each person that you think has helped you overcome your gambling, we're going give them a yellow dot. So who's helped you get over your gambling?
Female: See all they reds?
Interviewer: Mhm. they're all to get a yellow.
Female: Mhm.
Interviewer: So every single person that's been affected has also helped you get over it?
Female: Aha. Aha. See, that just shows you how lucky I am, in't it?

This exchange highlights the nature of some relationships in which alters can act in more than one capacity. More than this, it demonstrates, in a very visual manner the way in which coloured dots can act as a clear way of representing the complexity of the multiple ties involved; rendering overlapping and sometimes contradictory relationships tangible and visible, and so opening them up to narrative discussion. In this, the visualisation of social ties, as Ryan et al. (2014) have pointed out, allows exploration of 'not just network structure…but also the ways in which participants constructed

their social relationships through talk and images' (Ryan et al., 2014). In the case of Rosemary, we can see these two dimensions working in tandem, with one stimulating and reinforcing the other.

As we noted earlier, sociograms do not simply reflect relationships but rather shape the way networks are visualised and perceived. This aspect was highlighted in Peter's narrative around the production of his sociogram, and particularly his placement of coloured dots, which encouraged him to reflect on the impact his gambling had on his friends. In the following extract we hear him audibly reflecting on his relationships as he considered where to place his red dots; his narrative shifting from being equivocal about the impact of gambling – 'possibly' - to more certain – 'it must have affected them' - in the course of the discussion.

Interviewer: Anybody on the map that you think has been affected by your gambling?
Male: Been affec…?
Interviewer: It's had any impact on them at all. It can be good or bad.
Male: I mean it possibly had an effect on T and E.
Interviewer: Right.
Male: I mean I suppose it must have affected them to see me going back gambling; and it's maybe in a good way, that it's let them see that gambling's there for them to go back to. It's maybe had a positive impact in that sense.

Overall, the visual differentiation of different types of relationships through the use of coloured dots stimulated discussion around the perceived impact of gambling on wider social networks. In this, we feel that the technique highlights the dual role of sociograms, both as a visualisation tool as well as a means of eliciting rich narratives, in a particularly effective way.

Omissions and inclusions

Sociograms also served as an aid to tease out the complexities and nuances of social interactions by revealing multiple perspectives on relationships. For example, when Robert was making his sociogram he revealed details about his gambling network that he had not discussed in previous interviews.

Interviewer: What about any work colleagues? Would you put any of them in there, or…
Male: Oh. Aye. There's a couple o' work colleagues. I've no mentioned, but …I kinda forgot all about it.

We also learned that his parents did not know about the frequency of his gambling or that he that he had lost a large sum of money in the past.

> My mum and dad wouldn't know that I gamble every week, but they know… If you asked them, they would say I gamble…..there is one time I had a big gamble an' I got a really good

> tip, and it failed, and I obviously was thinking, "Oh my God. What have I done?" And I never told my mum and dad.

These omissions are an aspect of what Heath et al. (2009) call 'gaps and silences' in social networks, whereby informants chose not to reveal, or overlook, alters. Heath suggests that such elisions are significant and, given that Robert's 'gaps and silences' revolved around issues such loss of money, concealment and deceit, we would tend to agree with their suspicion that 'such gaps and silences may or may not be significant, but…probably are'.

Of course the larger point here concerns the way that the process of visualising and physically representing social relationships through a sociogram, carried out in conjunction with a narrative interview, can illuminate aspects of relationships that were previously hidden (whether intentionally or otherwise). Tubaro et al. (2016) describe this as the ability of sociograms to allow 'unanticipated aspects [to] come to the fore, stimulating reflection'. In Robert's case, three previous interviews had not revealed the narrative richness that was elicited by the dialogue that accompanied his sociogram. These details cast fresh light on social ties – and indeed, on the narrative of the previous three interviews.

Problematic positioning

The process of creating a sociogram was not a straightforward task. It required participants to identify and rank relationships which in reality were often fluid and subject to change. We describe this as 'problematic positioning', which conveys the uneasiness many participants felt when trying to place their alters. Ryan et al. (2014) were also aware of the potential of sociograms to create discomfort, and pointed to the ethical dimensions involved. These issues also affected our study. For example, Shona started her sociogram with her children but then felt guilt for not placing her husband first, and looked to the interviewer for guidance on what to do. This was in the context of a private discussion between participant and interviewer, where no one would have known where she placed members of her network or who she placed first, yet she still felt disloyal.

Female:	Who's the closest to me? …Err… I think it's my sons.
Interviewer:	Right. So they're closest to you. Then who's next closest to you would you say?
Female:	My hubby.
Interviewer:	So we'll put him here.
Female:	Should he not have been first?!
Interviewer:	Well, no. It's up to you. We can change it.
Female:	Mhm. Aye. Could you.

As the exercise progressed it was clear that Shona found it increasingly difficult to separate or rank her alters and wanted to put everyone in her inner circle - family, friends, neighbours, in-laws, grandchildren, Gamblers Anonymous contacts and even her dead mother. Throughout, the interviewer tried to explain the placement strategy, but she

resisted: her relationships did not work like this, and she rejected the spatial placing that we had constructed for the task. She found it very hard to leave anyone out and creating the ego map was difficult for her.

Interviewer: Are you finding this quite hard?
Female: It is quite hard. It's quite hard to place all the people that… See these ones here? They shouldn't be there. And you're… I'm finding it hard to leave people out.

The placement of close relatives where there was minimal or no contact could also be problematic. For example Robert had a daughter from a previous relationship, whom he thought about constantly but no longer had any contact with. He was unsure whether he should add her to the map or not, saying.

> Beth, who's my daughter, but at the same time I don't have… I don't have a relationship with her, so… as much as that affects me, and it's something that I think about constantly, we don't have a relationship, so… At the end of the day, she doesn't know who I am, so I don't think there's any point in me putting that down.

Joe faced a similar dilemma with his son who lived in Australia, and emerged from interviews as a constant source of worry. It was clear from Joe's narrative that he felt he could not place his son in the same circle as his other two children, but he struggled with this decision. This triggered a long narrative about his son's troubles. Joe clearly felt guilt and wanted to justify why he had not placed his son in the same circle as his other children.

Male: Och…I don't know where to put him he means everything to me, I would do anything for him but…we'll put him here [not in the inner circle]
Interviewer: Right. OK.
Male: Maybe I shouldn't do that but…

Ryan et al., (2014) noted the 'potential of visualisation to introduce tensions', and described at length the responsibility they felt as researchers for generating unease among participants. Like them, we were also concerned about how frequently we needed to offer reassurance and support. It was clear to us that the process of generating sociograms created considerable discomfort for many participants, invoking negative emotions and often stimulating guilt in ways that raise serious ethical considerations. Ultimately, as Ryan et al. (2014) put it, 'It is apparent that the material act of visually depicting social relationships and ranking ties in degrees of closeness, makes some participants feel uncomfortable and exposed in ways that did not occur when we previously interviewed them without this tool'. Our experience was similar. Indeed, the use of coloured dots as a means of exploring and demarcating types of relationships actually seemed to exacerbate this feature. The placement of red dots to indicate people who had been affected by an ego's gambling was particularly troubling for some. In one instance, for example, Richard stood back to look at his sociogram, which was patterned with red, reflecting on the impact his gambling had on his social network and acknowledging the guilt that he lived with as a result.

> [W]ith everybody there [on his ego map] … err… you know the guilt. You never fully, you know, get over that when you do think about it. You know? You're never fully able to repay the support you get, or support you had as well, because it's not just the financial thing. So… yeah. You do… It's… it's a period o' life which you would love never happened…… you're racked with guilt about the whole thing.

The generation of the visual map was clearly difficult for him, and appeared to be a process that compounded his guilt by making it concrete, giving it a focal point - and even a colour. Ryan et al. (2014) have talked of the 'disempowering potential' of visual mapping among their highly skilled sample, where participants felt their competencies challenged. We would argue further that this issue also – and perhaps to an even greater extent – applies to individuals in vulnerable groups; to people whose networks are compromised by the kinds of difficulties of those in our sample, such as, for example, gambling, concealment, and deceit.

However, at the same time, we noticed that the process could also have unexpectedly positive impacts, too. For example, for Rosemary, the very act of generating a sociogram made concrete the extent and depth of her social relationships, and allowed her to see how many people she had in her life, which, she said, made her feel 'very humble'.

> That was brilliant [making sociogram]. And you've let me see how close people are to me… and I always felt dead lonely, that I was on my own, and I'm no' when I've got all that [alters on her ego map]. It's making me feel very, very humble.

Discussion and conclusions

By critically reflecting on our experiences of introducing a visual mapping exercise into the final phase of a broader, longitudinal study, we have shown some of the potential benefits of incorporating SNR into qualitative enquiry. First, we have responded to calls from network scientists for more engagement in SNR from qualitative researchers, and second, we have made a contribution to the field by expanding existing tools to visualise egonets.

We found that visualising social networks facilitated the generation of rich data by stimulating dialogue, triggering memories and encouraging deep narratives. The very process of making a sociogram – the physical moving and rearranging of names on the diagram, and the addition of coloured dots to it – promoted the generation of new data which, combined with narrative dialogue, allowed the exploration of topics in new depth, as well as discussion of others which, up until this point, had not been mentioned at all. Together, both of these aspects provided us with new and deeper insights into our participants' social networks, including the impacts of their gambling on themselves and others, capturing, as Tubaro et al. (2016: 7) describe, 'the dynamic interplay between how people talk about and visualise their social lives'.

The visual aspects of sociograms provided us with a source of new data, and this is particularly the case with the application of coloured dots to represent different levels of relationships. Although the incorporation of sociograms into qualitative and mixed

methods research is not new, our inclusion of coloured dots into the mapping exercise is a novel approach which, to the best of our knowledge has not been used before. Our three colours acted as a striking means of differentiating the ways that alters had been influenced (or not) by the ego's gambling, and also served as a prompt for further discussion. Ryan et al. (2014) have argued that sociograms help 'mitigate the abstract nature of some topics'. We would suggest further that the simple utilisation of coloured dots can enhance this dimension still further. By simplifying what can be complex and emotionally problematic relationships, this technique can be used to facilitate the fine-grained exploration of different types and levels of relationship, and can act as a means of representing nuance in a straightforward way. The placement of coloured dots in this study acted to distinguish different levels of relationship, and demarcate social roles in a direct visual manner. In this, it helped to generate new data, and to tease out meaning from it, by facilitating the discussion of key themes as part of a narrative that was produced alongside the sociogram itself. We found this simple approach to be highly effective, for both participant and researcher. We suggest that it may have particular utility when researching sensitive topics, and/or working with potentially vulnerable groups, whose relationships may be complicated. Both of these considerations apply to our sample of problem gamblers, whose relationships were often interwoven with financial problems and issues of concealment and deceit. In such cases, the use of colours to highlight particular kinds of relationships may provide a good starting point for discussing difficult, emotionally complex, issues.

The process of visualising and mapping social networks can raise difficult issues and expose participants to troubling emotions, particularly feelings of remorse and guilt. What we called 'problematic positioning' illustrated the uneasiness and difficultly some participants experienced when they were trying to position and rank members of their social network. We feel that these issues are particularly pressing when dealing with sensitive topics, such as gambling, which present specific problems relating to, for example, stigma, concealment and deceit, in which gamblers' social relations are often entangled. As such, researchers must navigate these issues, and remain sensitive to the unique problems that the concretisation of social relationships can produce. On the other hand, however, there can be a positive dimension to the production of sociograms, with some participants finding them a rewarding experience that reminded them of the depth and extent of their social networks. As Rosemary told us, the process 'makes me feel humble'.

Given the sensitivity of the subject of gambling problems, we were surprised, and heartened, by the number of participations who were willing to map their personal networks for the study. Like previous studies using this approach (Ryan et al., 2014), we found that interviewer influence was an important factor in sociogram development. For example, interviewer rapport, which had been developed over several waves of data collection, was an important factor in the high completion rate of sociogram creation. Had we asked participants to compete their social network sociogram in the first interview we suspect that the completion rate would not have been so high. The level of trust developed over the years aided sociogram creation with interviewers being able to assist by prompting for additional alters who had been discussed in previous interviews. This can be seen as a benefit of embedding visualisation tools into the final phase of a longitudinal study.

Ryan et al. (2014) have noted that the sociograms that emerge from qualitative narratives are not a neutral production, and furthermore, that the very production of a construct

such as a sociogram shapes the way that social networks themselves are visualised. Indeed, in this study, we found that the generation of sociograms sometimes amounted almost to a joint enterprise between researcher and participant; the result of a dialogue between questioning and guidance; uncertainty and reassurance that was often influenced by researchers' detailed knowledge of participants' that had built up over repeated interviews. This dynamic needs to be considered when considering the kind of data that results.

This leads us to an epistemological point. The kind of knowledge generated by our research process, as with qualitative research in general, was not about uncovering objectively verifiable 'facts' or 'explanations', but rather about exploring various perspectives and layers of complexity. The multiple levels of meaning that sometimes emerged as we listened to, as well as watched, our participants working through their sociograms, took these issues a stage further, however, allowing us a unique insight into the ways that their social networks were constituted from a variety of complex, shifting, and sometimes seemingly contradictory, perspectives.

Like any research, this study had its limitations. Our name generation question that located the visual maps in the present means we may have missed what Pahl (2000) describes as 'fossil friendships', for example, friends who were an important part of the egonet's life at a different time but are now on the periphery. This means that the sociograms created may only provide a partial account of the ego network and its influences. Such 'gaps and silences' (Heath et al., 2009) are recognised as a wider problem of network research in general. However, we also feel that the longitudinal dimension of the larger study our mapping exercise was embedded in enabled interviewers to prompt for past alters, which may have mitigated this tendency to some extent. Another issue also relates to this particular dimension of the study. Although the network exercise was not in itself longitudinal, as we have noted, the final phase of the study that it was embedded in was. This gives the exercise unique characteristics relating to, for example, researcher understanding and rapport with participants, and, therefore, researcher influence on sociogram production, as well as gratifyingly high sociogram completion rates. While these can of course be regarded as advantages, we recognise that such designs are not typical, and we hypothesise that similar advantages may not be found in a more traditional qualitative approach in which only one interview takes place.

Overall, we feel that this exploratory investigation has at least shown some of the advantages of utilising SNR in qualitative inquiry, specifically its ability to enhance data collection and enrich analysis, thereby enhancing understanding of the depth and meanings of social relationships. As part of a growing body of work that calls for greater engagement of qualitative researchers with network research, we hope that our contribution may open up discussion to further debate and analysis.

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