



Putting graphic elicitation into practice: Tools and typologies for the use of participant-led diagrams in qualitative research interviews

Journal:	<i>Qualitative Research</i>
Manuscript ID	QR-16-0330.R1
Manuscript Type:	Standard Article
Keywords:	arts-based methods, data collection, diagrams, graphic elicitation, qualitative methods, interviewing, participant-led diagramming, stimulus material, visual methods
Abstract:	<p>The use of diagrams to stimulate dialogue in research interviews, a technique known as graphic elicitation, has burgeoned since the year 2000. Reviews of the graphic elicitation literature have relied on the inconsistent terminology currently used to index visual methods, and have so far drawn only a partial picture of their use. Individual diagrams are seen as stand-alone tools, often linked to particular disciplines, rather than as images created from a toolbox of common elements which can be customized to suit a research study. There is a need to examine participant-led diagramming with a view to matching the common elements of diagrams with the objectives of a research project. This article aims to provide an overview of diagramming techniques used in qualitative data collection with individual participants, to relate the features of diagrams to the aspects of the social world they represent, and to suggest how to choose a technique to suit a research question.</p>

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Putting graphic elicitation into practice: Tools and typologies for the use of participant-led diagrams in qualitative research interviews

For Peer Review

Abstract

The use of diagrams to stimulate dialogue in research interviews, a technique known as graphic elicitation, has burgeoned since the year 2000. Reviews of the graphic elicitation literature have relied on the inconsistent terminology currently used to index visual methods, and have so far drawn only a partial picture of their use. Individual diagrams are seen as stand-alone tools, often linked to particular disciplines, rather than as images created from a toolbox of common elements which can be customized to suit a research study. There is a need to examine participant-led diagramming with a view to matching the common elements of diagrams with the objectives of a research project. This article aims to provide an overview of diagramming techniques used in qualitative data collection with individual participants, to relate the features of diagrams to the aspects of the social world they represent, and to suggest how to choose a technique to suit a research question.

Key words arts-based methods . data collection . diagrams . graphic elicitation . qualitative methods . interviewing . participant-led diagramming . stimulus material . visual methods

Introduction

The use of images created by interview participants to represent and examine subjective experience has burgeoned since the year 2000 in the form of photography, drawing and diagramming. **Many diagramming techniques used by qualitative researchers originally emerged from disciplines such as psychological therapy and social work, offering ways of representing experience pertinent to therapeutic aims.**

As we translate these techniques into research methods, we need to consider how diagrams represent personal experiences and broader social processes. If we do not take a step back to consider this bigger picture, we limit our understanding of how to choose a diagramming technique which is appropriate to our research question.

A lack of clarity about the bigger picture has contributed to difficulties in establishing effective taxonomies of visual methods. Research using visuals appears under a range of broad terms, from 'image-based research' (Prosser, 1998) and 'creative' or 'arts-based' methods (Bagnoli, 2009; Buckingham, 2009; Sheridan et al., 2011) to 'visual elicitation' (Davison et al., 2012; Varga-Atkins and O'Brien, 2009) and 'elicitation techniques' (Haidet et al., 2008). These terms fail to distinguish between the type of visuals used, and whether they are generated by the researcher or the participant.

Treating all visual methods as a single entity obscures their different aims and

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8 emphasizes (Buckingham, 2009), and has contributed to the lack of clear protocols for
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10 diagramming – best described by the more specific term ‘graphic elicitation’ (Bagnoli,
11
12 2009; Crilly et al., 2006).
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16 Using participant-led diagrams to facilitate interview dialogue can avoid some of the
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18 limitations of drawing and photography. Participants sometimes perceive that drawing
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20 will require artistry, and can be reluctant to participate (Scherer, 2016). Drawings are
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22 often based on metaphors such as trees (Tasker and Granville, 2011) and rivers
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24 (Iantaffi, 2011), and experiences are then described in implicitly prescribed ways – for
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26 example, in terms of smooth water, rapids and waterfalls. While participant
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28 photography allows researchers to witness experiences which they may not otherwise
29
30 have considered (Hodgetts et al., 2007), it can be labour intensive, involving the
31
32 distribution and collection of cameras and the confidential transfer of images ahead of
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34 the interview. Levels of engagement may differ, some participants taking few photos
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36 and others many, some adhering to the brief and others diverging from it. Participants
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38 can feel a pressure to compose images for creative impact rather than to spark
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40 dialogue.
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46 Diagrams offer advantages. Subjective experience can be represented using a
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48 framework of simple elements such as lines and circles. The participant can focus on
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8 the content of the diagram and make their own choices about language and metaphor.

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10 **For example, in the techniques below, we consider how arrows (see Pictor, px) and**
11 **circles and lines (see ecomaps, px) can be combined with the spatial properties such**
12 **as distance and/or direction to represent the dynamics of social networks. We also**
13 **see how timelines can be combined with axes to represent the fluctuations in**
14 **subjective experiences such as emotion.**
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23 **The structure of a diagram can elucidate the scope of an interview at the outset, and**
24 **using the same or similar diagrams across a series of interviews can help to retain**
25 **focus on a research question and facilitate cross-case comparisons. For example,**
26 **social convoy diagrams (px) can allow the comparison of the nature or size of social**
27 **networks; timelines (px) can allow the examination of similar patterns of experience**
28 **across multiple participants. Whatever the approach, the simplest of diagrams can**
29 **introduce complexity to qualitative data as the participant moves beyond the**
30 **description of its contents to the comparison and evaluation of its elements.**
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42 It is widely agreed that work still needs to be done towards building a framework for
43 the use of diagrams in qualitative data collection (Crilly et al., 2006; Varga-Atkins and
44 O'Brien, 2009; Wheeldon, 2010; Umoquit et al., 2011). In particular, a lack of
45 comparison across diagram types means that there are currently no guidelines
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8 explaining how they relate to social phenomena. Umoquit et al (2013) have made
9
10 headway in carving out a niche for participant-led diagramming, and have called for
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12 further investigation into its dynamics. The aim of this article is to focus on participant-
13
14 led diagramming in one-to-one interviews: to illustrate the common elements of the
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16 technique and relate them to a range of lines of inquiry, examining how the syntax
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18 employed in diagrams can be used to operationalize the research questions that we
19
20 ask.
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25 **In delineating specific types of diagramming, we run the risk of accusations of**
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27 **prescriptiveness – especially given debates about the place of procedural guidelines**
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29 **in qualitative research (Chamberlain, 2000; Reicher, 2000). The concern is that**
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31 **emphasis on procedures may lead to a loss of creative, contextually-driven responses**
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33 **by researchers to the needs of specific studies. Equally, it is argued that**
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35 **inexperienced qualitative researchers – and those who commission research – may**
36
37 **be misled into equating the quality of such research with strict adherence to**
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39 **procedures associated with specific methodologies.**
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44 **We recognise this, but argue that an understanding of distinct approaches and their**
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46 **commonalities has advantages too. Firstly, defining types of technique allows for the**
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48 **development of vocabularies that aid the sharing of methodological knowledge and**
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8 **experience. Secondly, it allows us to highlight how particular ways of diagramming**
9 **are suited (or not suited) to particular research goals. Finally, accounts of typical**
10 **procedures can be useful in terms of scaffolding learning for those new to such**
11 **techniques. We are offering an explanation of procedures as a helpful starting point,**
12 **rather than presenting inviolable requirements.**

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20 In the sections below, we examine how the arrangement of graphic elements in
21 diagrams relates to the concepts at the heart of social research: social relationships
22 and subjective experience. We focus on the use of diagrams constructed by
23 participants, rather than researchers. We set out to answer some of the questions
24 posed by our own research: What are the benefits of participant-led diagramming?
25 What kind of diagrams have been used in qualitative research interviews, and how do
26 they work? What are the limitations of these techniques? Our aim was to clarify which
27 phenomena can be productively explored using diagrams, and suggest guidelines for
28 selecting techniques based on the focus of a research question.
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45 **What are the benefits of participant-led diagramming?**

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48 Mattingley (1998), writing about narrative research, claimed that life as it is lived lacks
49 plot, and that we have a desire to impose structure onto events in order to make sense
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8 of them. The happenings in our lives can be organized or emplotted by making
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10 associations between them (Ricoeur, 1984): diagrams can map these associations and
11
12 configure a narrative around them. Constructing a diagram requires the comparison
13
14 and evaluation of its elements, provoking critical thinking, spontaneous metaphors and
15
16 novel insights (Hurley and Novick, 2006). The act of construction also introduces an
17
18 element of dynamism into the linear structure of an interview, enabling amendment
19
20 and reconfiguration as the visual is explored. Simple diagrams also allow a level of
21
22 ambiguity in their interpretation (Stenning and Lemon, 2001; Davison et al., 2012) –
23
24 participants see alternative associations between events or concepts, or create new
25
26 meanings from the *Gestalt* (the whole) of the image (Bagnoli, 2009; Varga-Atkins and
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28 O'Brien, 2009; Crilley et al., 2013).
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34 **These spontaneous processes – the dynamic nature of diagramming alongside the**
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36 **encouragement of critical and ambiguous thinking – can enhance the complexity of**
37
38 **participants' narratives. Paradoxically, the simplicity of graphic representation can**
39
40 make reflection and meaning-making easier by reducing and organizing a large volume
41
42 of information into spatial and/or metaphorical locations (Cheng et al., 2001;
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44 Nickerson et al., 2013). **This paradox is recognised and exploited in models of learning**
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46 **taxonomy, which explore the cognitive strategies informing the way we feel, think**
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8 **and act (Gagné, 1985; Anderson and Krathwohl, 2001), and is examined in relation to**
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10 **visual methods elsewhere [Author 1, 2012].**

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Diagrams can also ease some of the practicalities of interviewing. The visual acts as a map of the participant's experiences, enriches dialogue, and offers prompts for the researcher [Author, 2011; Authors, 2012]. Diagrams can also approach sensitive topics tangentially, rather than through direct questioning (Wilson et al., 2007; Sheridan et al., 2011). Constructing an image introduces breaks into an interview, allowing the participant to control the pace [Authors, 2012]. It requires few resources, making use of flipchart paper, pens, and/or semi-adhesive notes or pieces of card.

The participant creates the diagram in stages, first thinking of the elements to include, then laying these elements out on a large sheet of paper in a way which reflects the associations between them. Dialogue begins with the participant's description of the visual, and moves on to comparison and evaluation. This is the act of elicitation – drawing out the spontaneous interpretation of past experience. Some of the studies we consider below have treated diagrams as data, in addition to interview transcripts (for examples see Rempel et al, 2007; Authors, 2013b), and those which reproduce participants' diagrams demonstrate that they can also be a useful tool for dissemination (for example, Bagnoli, 2009; van den Berg et al., 2017).

Diagrams in qualitative research interviews: origins, uses and practical advice

Diagrams have a long history of use in professional practices such as education (Hay and Kinchin, 2006), health and social care (Parker and Bradley, 2014), and community engagement (Kesby, 2000) to assess the subjective experiences of clients. This background has made them ideal for translation into social research tools. Group diagramming techniques such as concept mapping (Trochim and Kane, 2005; Burke et al., 2005) and participatory mapping (Emmel, 2008; Emmel and Clark, 2009) focus primarily on collaboration and consensus in group interviews: these have well established epistemologies suited to participatory approaches and are not discussed here. Techniques used in one-to-one interviews cannot subscribe to the same frameworks, and are not innately 'participatory' any more than interview dialogue can be said to be so, but **they are used to investigate similar issues – social interaction, events and processes, and meaning-making. If the central focus of your research falls into one of these areas, diagramming may be a suitable technique for data collection.**

[Figure 1 near here]

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11 The choice of the right kind of visual to fit a research question requires a level of
12 familiarity with the syntax of diagramming. Basic underlying structures include the
13 chain, the hub-and-spoke, and the network (see Figure 1). These three structures are
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15 chain, the hub-and-spoke, and the network (see Figure 1). These three structures are
16
17 “rooted in the way we perceive and picture the physical world of everyday experience”
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19 (Richards, 2002: 87). Hub-and-spoke diagrams and networks are *relational* – they
20
21 depict interactions between multiple elements. Chain diagrams are *sequential* – they
22
23 depict processes or cycles. Both approaches have been used in interviews with
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25 individual participants, and are outlined below. **Each technique is presented with a**
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27 **description of its origins and its physical structure, examples of its use, and any**
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29 **advice gleaned from its practical application in a research context.**
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34 **The studies we examine fall across the disciplines of sociology, psychology,**
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36 **pedagogy, and broader applied health and social care research. In the research cited,**
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38 **theoretical frameworks vary, or are not described at all. While a chosen framework**
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40 **can dovetail with diagramming techniques (for example, symbolic interactionism is a**
41
42 **good fit with relational diagrams focusing on social interaction), theoretical**
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44 **perspectives depend upon the aims of research rather than its methods.**
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Relational diagrams

Relational diagrams can represent associations between people or concepts, and can be used to map out the ways in which social actors interact around a given task. They can be useful in investigating the features of social networks; they can also be used to explore the experiential details of collaboration, or to consider interaction based on specific critical events. Examples used in one-to-one interviews include the social convoy diagram, ecomaps and genograms, and the Pictor technique.

The social convoy diagram

Imaging social networks in qualitative research owes its origins to social network analysis (SNA), in which information is elicited about the connections between people and converted into visual maps (Borgatti et al., 2009; Knox et al., 2006; Freeman, 2000). Qualitative SNA ('QSNA') emerged in anthropology and sociology in the 1950s (Barnes, 1954; Bott, 1957; Young and Wilmott, 1957), but evolved into a quantitative science ('formal' SNA) investigating the strength, frequency and direction of social relations. One image from SNA has evolved into a participant-led elicitation tool in qualitative research: the convoy diagram.

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8 The layout of a social convoy diagram begins with a central circle, around which larger
9 concentric circles radiate outwards to create an image like an archery target (most
10 convoy diagrams include three concentric circles). They represent 'ego-centred'
11 networks (Knox et al., 2006): the participant places themselves at the centre and other
12 individuals or groups in the circles surrounding them, their significance indicated by
13 proximity to the centre. Questioning about the positioning of people or institutions
14 elicits information about the quality of the relationships.
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25 The intuitive nature of visual representations of social networks is demonstrated by
26 Bagnoli's *Young Lives and Times* study (2009), in which participants created visual
27 maps of the people who were important to them and their positive and negative role
28 models, with themselves in the centre. Diagrams which spontaneously emerged
29 included representations of social connections in spokes, like a wheel, and in
30 concentric circles. **Additional visual coding can be used – for example in Roseneil's**
31 **(2006) study of intimate relationships, participants used colour to differentiate**
32 **sexual relationships from friendships.** Social convoy diagrams can also be based
33 around a specific task or premise – for example, in Heath et al's (2009) study, they
34 were used to investigate the role of others in decision-making about higher education,
35 and in McCann and Roberto's (2012) study, to explore coping and emotional support.
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8 **Heath et al. (2009) and McCann and Roberto (2012) point out the possibility of**
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10 **“missing” people in convoy diagrams: network data is likely to be partial rather than**
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12 **complete. McCann and Roberto demonstrate a counterpoint: as people age, their**
13
14 **networks become increasingly complex, and convoy diagrams allow for the inclusion**
15
16 **of deceased network members. To examine changes in networks over time, the**
17
18 **diagram would need to be repeated longitudinally, and network boundaries would**
19
20 **need to be well defined at the outset of the study. One key limitation is that convoy**
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22 **diagrams are suitable for taking a snapshot of a network, but are limited in their**
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24 **ability to represent the nature of the interactions within it.**
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33 *Ecomaps and genograms*

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35 The ecomap has similarities with the principles of the convoy diagram, using concentric
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37 circles and the evaluation of relationship characteristics to construct an image (see
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39 Figure 2). The technique originated in the 1970s in the work of Hartman as a tool for
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41 family therapy assessment (1978; 1995). In research studies, construction is led by the
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43 participant under guidance from the researcher.
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8 Ecomaps explore the nature of networks, showing where an individual fits within the
9 context of larger social systems. A central circle or box represents an individual or a
10 family unit, and the participant arranges other circles or boxes around the centre to
11 denote external systems such as schools, peers, spiritual groups and key events. Lines
12 joining the outer circles to the central circle or box are coded to show the nature of the
13 relationships – for example, straight lines indicating harmony and jagged lines
14 denoting hostility. Ecomaps are often used in combination with family tree diagrams
15 known as genograms (Rempel et al., 2007) – a technique which also emerged from
16 family counselling (Bowen, 1978) and therapeutic assessment (McGoldrick and Gerson,
17 1985; McGoldrick et al., 1999).

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32 In combination, ecomaps and genograms can offer a holistic overview of relationship
33 dynamics and social support. This makes them suited to investigations of family
34 patterns which cascade through generations – for example, chronic health conditions
35 (Ribeiro et al., 2015), domestic violence (Watts and Shrader, 1998) and property
36 inheritance (Helling and Stovers, 2005). They have also been used to visualise social
37 support in family caregiving (Ray and Street, 2006; 2007; Rempel et al., 2007;
38 Washington, 2009), and to investigate health promotion within social networks
39 (Zanchetta et al., 2007; Rocha et al., 2009; de Oliviera et al., 2010; Correa et al., 2011).

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8 **In many of these studies, the stated aim of ecomaps and genograms is to explore the**
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10 **composition of networks, rather than to enrich participant accounts. Articles show a**
11
12 **wide variation in the level of interpretation in their thematic analysis, with some**
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14 **studies unearthing abstract concepts and others remaining almost wholly**
15
16 **descriptive. Ray and Street touch on experiences of emotional loss (2007) and subtle**
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18 **aspects of embodiment (2006), Washington (2009) on contextual issues and their**
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20 **counterpoints, examining social isolation, stress and spirituality. In contrast, de**
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22 **Oliviera et al. (2010) and Correa et al. (2011) offer a largely descriptive analysis of**
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24 **social support, with themes such as ‘social networks’, ‘kinship networks’ and ‘family**
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26 **roles’. In the studies of health promotion by Rocha et al. (2009) and de Oliveira et al.**
27
28 **(2010), diagramming was used to record information rather than to enrich interview**
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30 **data.**

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36 **Further potential limitations are reported. Swainson and Tasker (2005) point out that**
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38 **genograms subscribe to Western cultural norms about the nuclear family, and**
39
40 **extend the technique to represent families of choice in lesbian relationships. Watts**
41
42 **and Shrader (1998) point out that genograms do not note the timing of events –**
43
44 **diagrams must be cross-referenced with transcripts and/or field notes to take**
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46 **temporality into account – an approach later taken by Rempel et al. (2007). One**
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48 **further limitation of ecomaps and genograms is the training required to instruct**
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8 **participants to compile them – they are more complex than the other diagrams**
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10 **described here, and accuracy of construction is a more significant issue.**
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16 *The Pictor technique*

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19 Pictor takes a different focus, primarily representing a network collaborating over a
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21 task such as social support or health care. The technique uses arrows to represent
22
23 professional and social networks (see Figure 3). Its focus is on mapping episodes of
24
25 collaborative working and/or social support [Authors, 2013a] (van den Berg et al.,
26
27 2017) – for example, health care professionals can use Pictor to map out an episode of
28
29 collaborative working, and patients and carers can use it to map out networks of
30
31 support. The technique developed from a family therapy procedure using arrow-
32
33 shaped cards to represent relationships (Hargreaves, 1979). Its use in research is
34
35 grounded in an approach to psychology known as personal construct theory (PCT),
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37 based on the understanding that every individual construes the world through a
38
39 unique framework of values and perceptions which are not readily available on a
40
41 conscious level (Kelly, 1955).
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8 Participants are given a stack of semi-adhesive arrow-shaped notes and an A1 (59.4 x
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10 84.1 cm) sheet of paper (this can be folded in half if space is limited). They are then
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12 asked to call to mind a specific case or incident of collaborative working or social
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14 support, to write down the role of each person or group involved on a separate arrow,
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16 and to arrange the arrows in a way which represents the story of the case or incident.
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18 The visual is known as a Pictor chart. The semi-adhesive arrows can be reconfigured
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20 during the interview dialogue. Pictor allows for a snapshot of a single event, or the
21
22 exploration of impressions gleaned over the longer term – for example, representing a
23
24 patient case over the course of a few weeks within a single diagram.
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29 The majority of participants arrange arrows in networks to represent a significant
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31 event or episode, using the direction of the arrows to suggest links between the
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33 people they represent. Dialogue about the direction and/or mutual proximity of the
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35 arrows facilitates an investigation of the nature of the relationships. For example,
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37 arrows placed overlapping can represent issues such as emotional alliance or close
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39 collaboration, and arrows facing one another can represent support or conflict [Author
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41 1, 2011]. Arrows distant from the centre of a chart can indicate a disinterested
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43 observer, or the unintended absence of someone significant. The participant's
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45 explanation of arrow positioning is vital to understanding the dynamics of the
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8 Pictor was first used in research to investigate working relationships between health
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10 and social care professionals [Author 2, 2005]. It has since been used to investigate
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12 professional and patient experiences of cancer and long term conditions [Authors,
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14 2013a] and end-of life care [Authors, 2012; Authors, 2015; Author 1, in press],
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16 **teaching and learning in medical education (van den Berg et al., 2017; Berkhout et**
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18 **al., 2017)**, and reflective practice in nursing and midwifery [Author 1, 2011]. Studies
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20 have demonstrated that the technique can prove helpful in sensitive interviewing
21
22 situations – for example, with patients who are unwell or dying. Pictor allows the
23
24 participant to control the pace, and produces a physical picture of an emerging
25
26 narrative, acting as an *aide-memoire*. Although Pictor was conceived as a network
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28 diagram, participants sometimes place arrows in chain arrangements where they see
29
30 chronological ordering as the best way to represent their experience [Authors, 2013b].
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32 Others incorporate lines and networks on the same chart, or elaborated their chart
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34 with freedrawing.
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41 **Limitations outlined by [Authors, 2013a] include the insight that while some**
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43 **participants adapt quickly to the technique, others take time to understand what is**
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45 **required, and that it is advisable to allow for the modification of the diagram during**
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47 **the interview. Where participants are too unwell to place arrows, the researcher can**
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49 **do this on their behalf, but must avoid leading the agenda. The specific qualities**
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8 **which make a Pictor chart work well depend on an adequate brief [Author 1, 2011].**
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10 **Participants should be encouraged to choose a specific episode of care, rather than a**
11 **generic example of an event, to ensure a focus on roles and relationships as enacted**
12 **in practice rather than in the abstract. The chart also needs to include as wide a**
13 **range of interactions as possible – the more complex the diagram, the richer the data**
14 **that flows from it.**
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26 ***Sequential diagrams***

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29 Sequential or chain diagrams can be used to represent processes or events. They can
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31 be useful in investigating how a series of actions or steps fit together, or where these
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33 processes break down or become contentious. They can also be used to take an
34
35 overarching view of multiple events to allow comparisons to be made, facilitating the
36
37 investigation of abstract processes such as change and development over time.
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44 ***Timelines***

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47 Timelines are representations of experiences set out in chronological order. Their aim
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49 is to record significant events and elicit the subjective feelings associated with them.
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8 The events themselves can be the focus of the research, as in Marshman and Hall's
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10 (2008) study of the significance of cleft palate surgery; alternatively, events can act as
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12 cues for recalling feelings about patterns of experience, such as the development of
13
14 identity (Jackson, 2013). Significant global events can also be used to prompt
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16 associated personal memories (Cohen et al., 2005). The graphic representation of
17
18 events across time in research interviews began with 'life story work' (LSW) – for a
19
20 review of this area, see McKeown et al. (2006). In common with other participant-led
21
22 graphics, timelines have been used in therapy, for example to examine access to
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24 mental health services (McKenna and Todd, 1997). They have also been used to
25
26 investigate health behaviours (Abusabha et al., 2001; Enright and O'Sullivan, 2012).
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32 Introducing an axis adds an extra dimension to timelines – for example, a vertical axis
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34 can be set against a horizontal sequence of events to allow the freedrawing of a line to
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36 represent “ups and downs” over time (see Figure 4). This can be used to plot concrete
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38 issues such as weight change (Sheridan et al., 2011) or subjective feelings such as high
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40 or low mood (Leung, 2010), and can provide a sensitive way to elicit narratives about
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42 the 'wobble in the line' (Sheridan et al., 2011: 563) without direct questioning.
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Freedrawn timelines can be annotated with events, memories or learning points, elaborated into spirals or circles to represent metaphorical thinking. For examples of freedrawn lines, see Orland's (2000) investigation of teachers' professional development, and Bagnoli's (2009) investigation of turning points with young adults, in which timelines were projective as well as retrospective, continued onwards into an imaginary future. **Timelines can also be layered to form a grid, displaying simultaneous parallel aspects of participants' social worlds. For example, Wilson et al (2007) used this technique to examine the effects of parental substance abuse across multiple arenas: participants (young adults) produced grids with parallel timelines representing home life, school life, care responsibilities, service use, illness or employment history.**

Continuums

A continuum is a line drawn between one extreme and another, representing every incremental difference in between. Its use in social research is confined to the Salmon line – initially conceived as a reflective tool in educational settings (Salmon, 2003) [Author 2, 2010]. [Author 2, 2005] used this method to uncover personal meanings about team work, with a line representing good team working at one end and poor team working at the other; the elements (people, in this case) were subjectively

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8 assessed against the two extremes and positioned along the continuum accordingly.
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10 The interviewer then asked what it would take for specific people to move along the
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12 continuum towards better team working, to elicit the participant's perceptions about
13
14 what constitutes good team work.
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18 **Timeline and continuum techniques focus solely on individual frameworks of**
19
20 **meaning. They are one-dimensional, and limit diagrammatic representation to a**
21
22 **single chronological or linear order. This can be complexified using grid lines, but in**
23
24 **making any diagram more complex, ease of conceptualisation for participants must**
25
26 **be retained. To ensure comparability between points on timelines, it is imperative to**
27
28 **be selective and consistent in what you ask participants to record. For example, do**
29
30 **you wish them to simply compare and contextualise concrete events or episodes in**
31
32 **their life, or are you asking them to take a step further and identify a series of**
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34 **subjective moments over time – for example, experiences of development or**
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36 **transition?**
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42 **In our own work, we have discovered the value of piloting diagrams to investigate**
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44 **any difficulties before rolling out the technique across a project [Authors, 2012]. In a**
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46 **study investigating professional development on undergraduate work placements**
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48 **(known as work integrated learning, or WIL), we trialled grid and continuum**
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8 techniques based around professional development, but found that these elicited
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10 little about changes over time. We then chose to focus on the temporal: participants
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12 with experience of multiple placements displayed these along a timeline;
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14 participants who undertook a single, longer placement used the timeline to display
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16 significant events during the placement. We sought to explore key learning moments
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18 and the development of professional skills and personal philosophies of work, and
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20 the comparison of placements and events elicited the data we were looking for.
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28 *In summary: Diagramming social and personal worlds*

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31 To summarise, participant-led diagramming may be worth considering for research
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33 studies focused on social interaction, events and/or processes, or meaning-making.
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35 Relational diagrams can help participants to articulate their experiences of social or
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37 professional networks and interactions, and can be used as a framework for
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39 exploring support or collaboration based around a specific task or event. They can
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41 also examine patterns of social interaction over time, in particular in studies
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43 investigating family dynamics. Sequential diagrams can help participants to examine
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45 how a series of actions fit together, the points at which processes work or break
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47 down, and more abstract processes such as change and development. Laying out a
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8 **graphic representation can reveal how events (such as medical consultations) or**
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10 **elements (such as the behaviours of other people) might link together to form**
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12 **personal frameworks of meaning.**
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18 19 **The limitations of diagramming**

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22 There are some general caveats to bear in mind when using participant-led
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24 diagramming. A key consideration is whether all of your participants will be able to
25
26 draw on a similar range of experiences. Piloting your technique is vital to identify
27
28 potential problems – either in the focus of the data that a specific diagram will elicit, or
29
30 in the flexibility of approach your project may require. Piloting ensures that the data
31
32 gathered will be appropriate to your research aims, and alerts you to ways in which
33
34 diagrams might be customized by participants.
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39 Sensitivity in developing a diagramming protocol is required – participant vulnerability
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41 must be considered. Interviewees can experience distress if they are asked to reflect
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43 on events in their past which touch on difficulties experienced in the present (Sheridan
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45 et al., 2011; McKeown et al., 2006). Techniques which request recall can be difficult for
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47 participants with cognitive difficulties: Bagnoli (2009) found that timelines were not
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49 effective with people with mental disabilities, who could not conceive of time in a
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8 linear way. The conceptualisation of overarching concepts such as time can also be
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10 dependent upon the cultural background of participants (Ancona et al., 2001) – some
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12 cultures, for example, conceive of time as a circle or spiral (Orland, 2000; Hinterhuber,
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14 2002).
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21 ***Conclusion***

22
23 **The current literature on diagramming covers a limited range of techniques, and**
24
25 **takes a top-down approach, focusing on fixed diagram structures used by specific**
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27 **disciplines rather than examining the process of diagram creation and how this might**
28
29 **capture social phenomena and personal experience. Our central argument here is**
30
31 **that qualitative researchers would benefit from basing their choice of diagrammatic**
32
33 **elicitation techniques on an understanding of how particular forms of diagramming**
34
35 **work in practice – what they afford and what they inhibit. We offer researchers a**
36
37 **typology to help with such choices, in terms of the physical structure of diagrams**
38
39 **(hub-and-spoke, network, chain), the types of data they typically elicit (relational or**
40
41 **sequential) and the strengths and limitations of specific techniques.**
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47 **We are aware of the risks of any typology of qualitative methods, in that they can be**
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49 **seen as simple formulae that will automatically prescribe the “right” technique in**
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8 response to a few basic characteristics of any proposed study. This risks the kind of
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10 methodolatory that has been condemned by many writers (Eakin, 2016; Gough and
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12 Lyons, 2016). We have sought to emphasise that the choice of diagramming
13
14 technique is more open and nuanced than such a prescriptive approach would allow.
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16 However, defining types of diagramming can be helpful in terms of clarity of thinking
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18 and communication, so long as what is offered is guidance rather than prescription.
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20 In addition, our typology helps to draw researchers' attention to a wider range of
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22 options than is typically considered, and encourages careful thought about how
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24 particular types of technique can be best adapted to suit the needs of a project.
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29 We would like to close with suggestions both for methodological research and for
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31 substantive empirical publications using diagrammatic elicitation. For the former, we
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33 would encourage researchers to explore in more depth how different types are used
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35 in practice by participants, in particular to consider how the use of diagramming
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37 impacts on and is affected by the participant-researcher relationship, and how the
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39 diagrams that are produced might go beyond their role as an elicitation tool and
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41 contribute to data analysis. Turning to publications reporting the findings of research
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43 using graphic elicitation, we would like to see authors clearly justify their choice of
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45 techniques, reflecting an understanding of the characteristics of different types of
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47 diagram. We would also encourage the inclusion of sufficient detail about the
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8 **diagramming process to allow the reader to evaluate its strengths and weaknesses in**
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10 **specific settings and for specific methodological approaches.**
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16
17 **Funding:** This research received no specific grant from any funding agency in the
18 public, commercial or not-for-profit sectors.
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21
22 **Declaration of conflicting interests:** The authors declare that there is no conflict of
23 interests.
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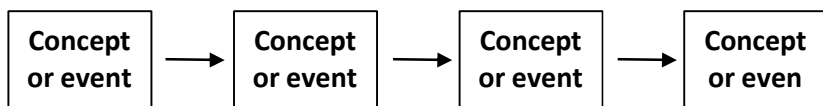
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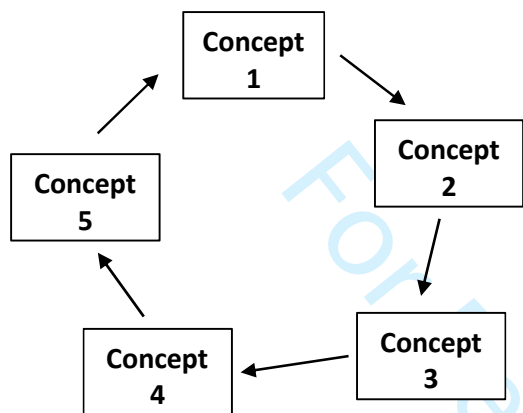
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22 **FIGURE CAPTIONS:**

- 23 **Figure 1** Generic structures for diagrams include (a,b) chains, (c) hub-and-spokes, and
24 (d,e) networks.
25 **Figure 2** An ecomap, with the format or thickness of lines denoting characteristics of
26 the relationships (for example, strength or conflict).
27 **Figure 3** The Pictor technique, used here to represent a health care professional's
28 perspective on collaborative working to support a patient.
29 **Figure 4** Using an axis to elaborate a timeline.
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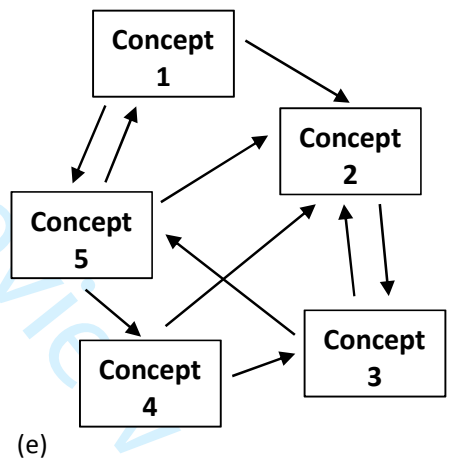
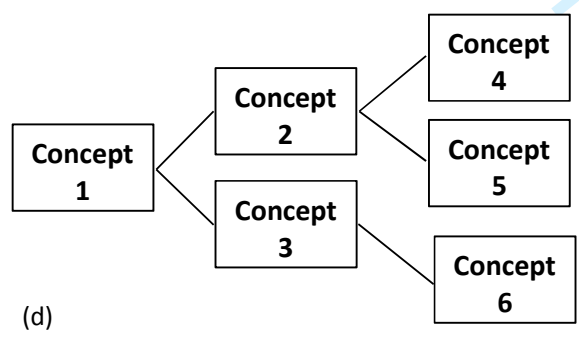
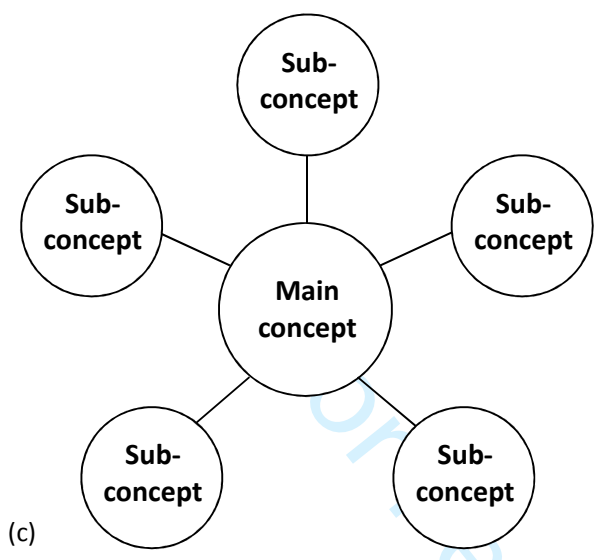
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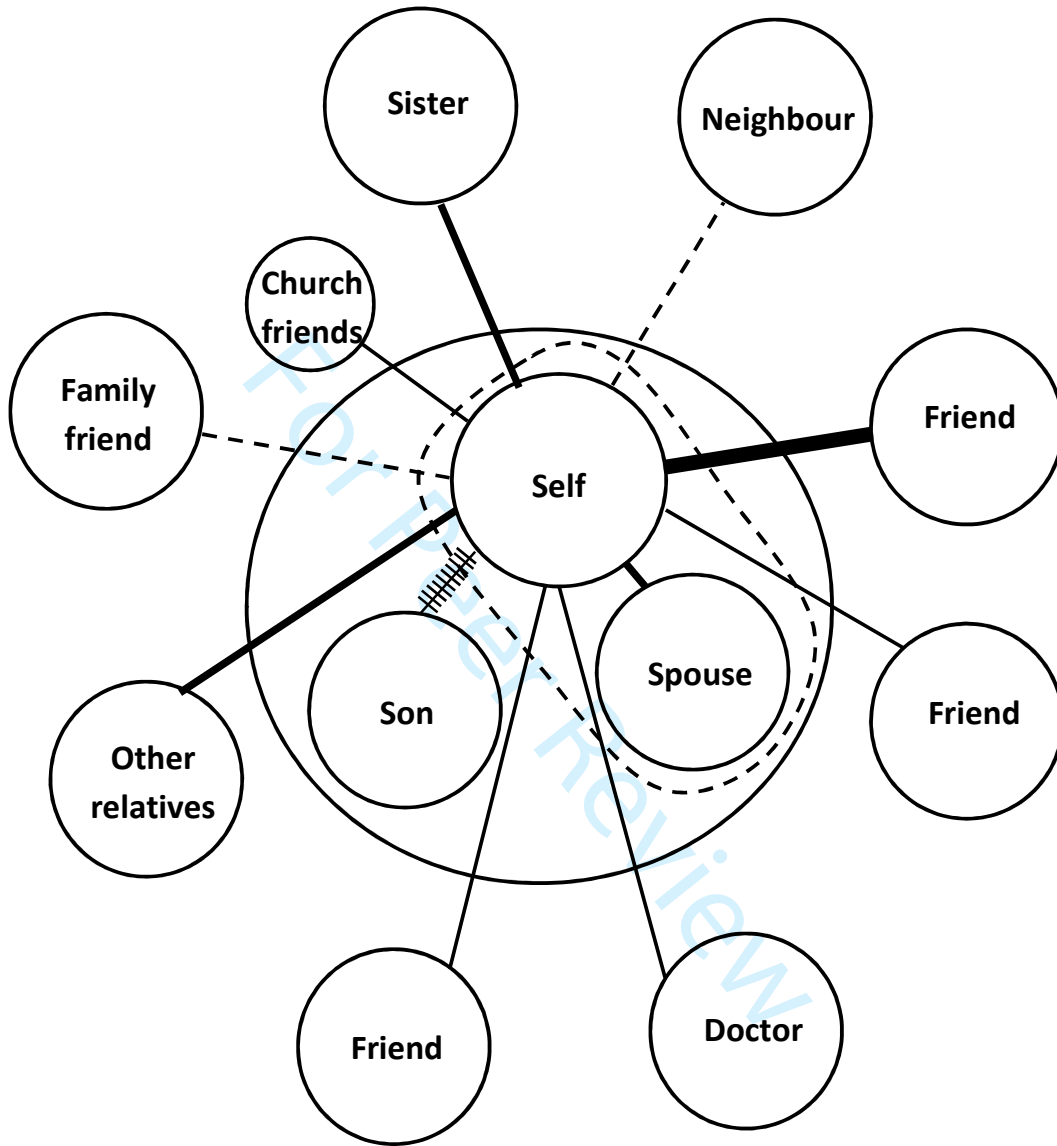
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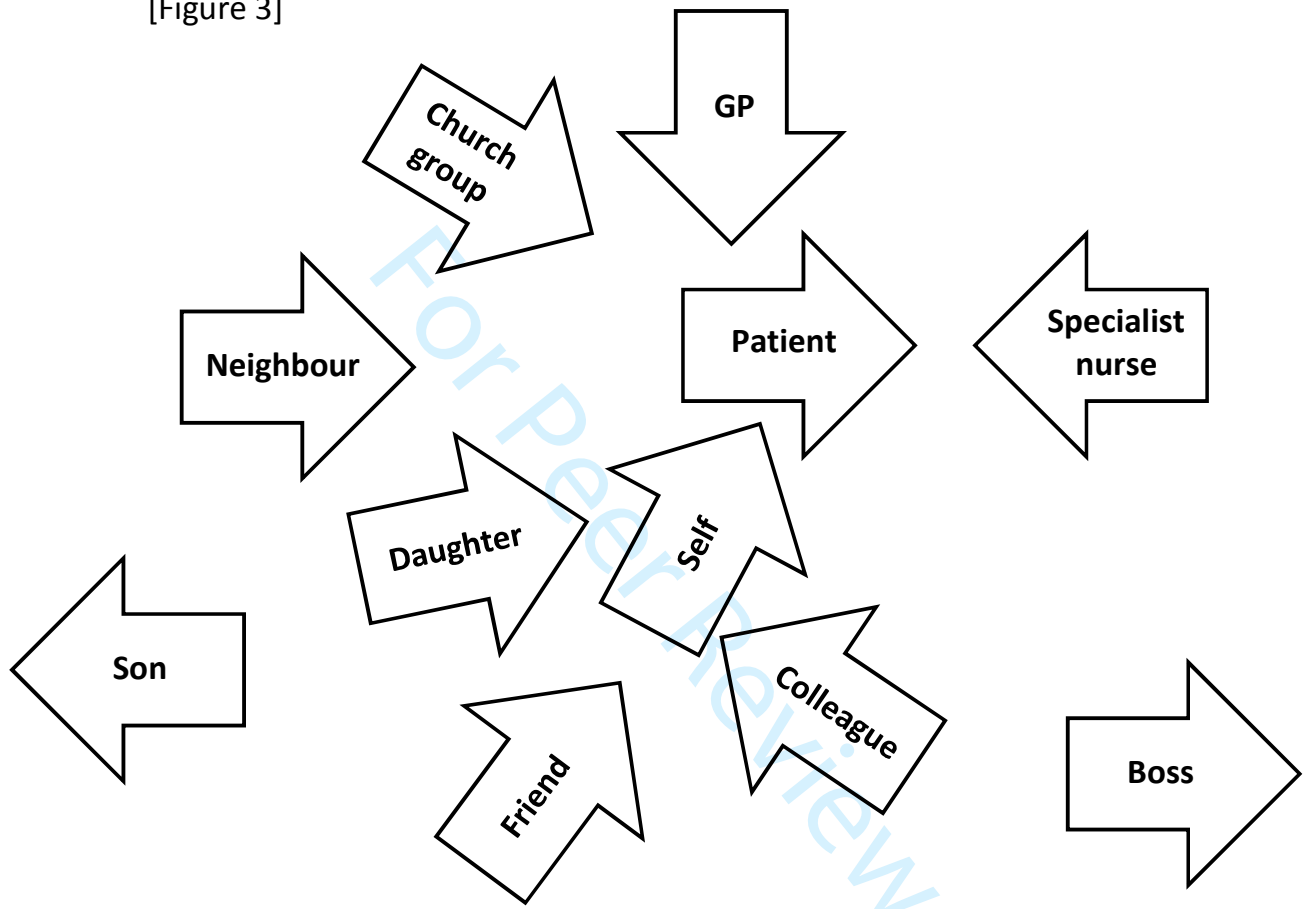




[Figure 2]

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[Figure 3]



[Figure 4]

