The use of focus groups as a tool in nursing research is becoming increasingly popular (Happell, 2007), and guidance for conducting focus group research is widely available (Morgan, 1997, 1998). Focus groups generate distinct data through the process of group interaction (Kitzinger, 2000); through interaction, focus group participants discuss issues they feel are important and explore topics that may not have materialized in a series of one-to-one interviews. The resulting data rely on group processes and context; any agreement between participants is a product of the group context rather than a simple aggregation of individual views (Sim, 1998). Focus group research is often criticized for failing to use data explicitly from the group dynamics. Instead, the write-up often represents a range of views to include the commonalities and differences in opinions expressed but not how these views were explored through the interaction of the group members (Reed & Payton, 1997).

Unfortunately, although analysis methods for one-to-one interviews have been well-defined (Burnard, 1991), few techniques have been posited for the analysis of focus group data to account for group processes (Lehoux, Poland, & Daudelin, 2006). This situation is being addressed, and a number of articles have highlighted issues that the focus group analyst should attend to. Examples include analysis at the intragroup and intergroup levels (Morrison-Beedy, Côté-Arsenault, & Feinstein, 2001), the context of time and influence of dominant members (Reed & Payton, 1997), the interpretation of the “common ground” (Hydén & Bülow, 2003), the interpretation of silence and dissent (Sim, 1998), the appropriate presentation of quotes (Barbour, 2005), the impact of the moderator (or facilitator) on the group dynamics (Crossley, 2002; Smithson, 2000), and the demarcation of power status and the influence of this on group dynamics (Lehoux et al., 2006). Picking out these issues from reams of transcriptions can be a daunting process, and although a certain sense of how much each focus group member contributed to the discussion can be gained from tables of word frequency counts or average number of words per turn (Hydén & Bülow, 2003), such tables fail to provide details on how the conversation turn taking developed as well as who interacted with whom.

Visual Representation of Group Interaction

Graphical representation of qualitative data is useful for seeking patterns and obtaining further clarity of analysis issues (such as those highlighted above) and for presenting information to an audience (Chi, 1997). The adapted use of a sociogram is proposed here to demonstrate the flow of conversation as it passes around the
group, with weighted arrows to depict the number of times the conversation passes from one individual to another. A sociogram is a chart plotting the structure of interpersonal relations in a group situation. Sociograms are commonly based on people’s ratings of who they do and do not like and are used to recognize alliances between people, identify people who are rejected by others, and detect isolated people. Sociograms have been used for a long time in educational contexts to understand classroom dynamics (Brickell, 1950), and their use can also be found in other disciplines, such as information systems research (Willis & Coakes, 2000) and research in psychiatric settings (Taiminen, Kallio-Soukainen, Nokso-Koivisto, Kaljonen, & Helenius, 1998). Yet, sociograms have not emerged as a tool in focus group analysis.

Preparation
To make an assessment of group dynamics, it is essential to know who is talking; this requires preparation prior to conducting the focus groups. Distinguishing individual voices on an audiotape is difficult, and there are a number of potential means of aiding the process: video recording; assistant note taking during each focus group (i.e., noting down the participant number and first few words spoken); recording a reference of each participant’s voice at the start of the session (i.e., asking participants to say their name or number and favorite food); and asking participants, if they can remember, to speak their participant number each time before they contribute to the discussion (e.g., “number one, I think that…”). Each of these approaches can have drawbacks and in turn may affect group dynamics; the utilization of one or more of these suggested techniques will depend on the focus of the research and the participants involved.

Drawing the Sociogram
To draw the diagram, a count is needed each time conversation flows from one person to another. This can be achieved by preparing a table listing every possible direction of the conversation flow (e.g., P1 to P2 and P1 to P3) then scrolling through the focus group transcript, making a tally of every time the conversation moves from one person to another. A decision is needed as to whether to include instances where a person utters attentive words (such as yeah or okay) while someone else is speaking without affecting the conversation flow. Once the count of turns is accomplished, drawing the diagram can be achieved using a word processor. An icon for each member involved in the focus group discussion can be mapped in the seating position during the focus group. Arrows representing conversation exchange can then be plotted, editing the weight of each arrow drawn to align with the tally of turns (e.g., for every change of turn, increase the arrow weight by 0.5 point). Therefore, if the conversation never passes from one person to another, no arrow will be present, and thicker arrows will indicate more exchanges between those individuals. Tabulating the number of words contributed by each focus group member will add a further dimension when presented alongside the diagram.

Interpreting the Sociogram
Although every focus group will be unique, there are a number of patterns the analyst may observe more easily using the sociogram. These patterns may include the following: evenly weighted and distributed arrows (a perfect group), asymmetrical irregular arrows (a normal group), heavily weighted peripheral arrows (a proximal turn-taking group), and heavily weighted moderator-to-participant arrows (a serial-interviewing group). Each of these patterns will be discussed in turn. Observing patterns of interaction can serve a variety of functions in the analysis, including conceptualizing group dynamics, drawing comparisons between focus groups, and reflecting on moderator technique.

A sociogram will show irregularities, and it is important for the focus group analyst to explore these quirks to understand why they emerged and how they may have affected the themes arising from the discussion. One would expect that a focus group with “perfect” group dynamics (in which each member contributed equally and there was a healthy exchange of views) would produce a sociogram showing evenly weighted arrows criss-crossing symmetrically around the diagram. However, an asymmetrical sociogram would by no means undermine the worthiness of the findings. It may be quite normal, for example, to see irregular patterns arise from having individuals who were shy or isolated from the discussion or who may have responded only to the moderator; alternatively, more dominant or central members of the group might be associated with heavily weighted arrows coming in and out from around the group. Assessing the sociogram in conjunction with the word counts for each individual may reveal other insights, such as individuals who talk at length but have relatively few turns or vice versa.

A sociogram may reveal other patterns, such as heavily weighted peripheral arrows and thinner arrows dissecting across the group. This would indicate a dynamic of proximal turn taking, whereby individuals were more inclined to follow the person sitting adjacent to them and possibly indicating that participants were patiently waiting their turn as the conversation was passed orderly around the group (serial turn taking). To understand this pattern, the analyst will need to assess the transcript to see the order in which conversation was passed around the group; for example, perhaps there is a relationship between the physical seating arrangement of participants and the subsequent participant interaction. One might expect serial turn taking to occur at the beginning of the focus group session or at the end during a summing-up period; but if this occurred throughout a focus group, the analyst should explore the reasons behind this through analyzing what was actually said.

One further pattern may arise of heavy arrows flowing to and from the moderator and each individual participant, with less exchange occurring between participants. This depiction will reflect a serial interviewing dynamic, with the conversation heavily reliant on the moderator. In this situation, the analyst will need to explore the verbal content to understand why the focus group was steered in this way and how this may have affected the thematic content arising from the discussion.
Methods

Example data were drawn from two focus groups, moderated by the same individual, that were conducted in 2005 as part of an investigation on the use of audiovisual distraction for pain and anxiety relief during minor surgery (Figures 1 and 2). Both groups comprised individuals who had participated in a randomized controlled trial on the use of nature sights and sounds during minor surgery; all participants had experienced the audiovisual distraction during the trial, and this was to be the main focus of conversation.

A combination of approaches was used to aid participant identification: focus groups were audiotaped, with a research assistant (who sat to the side of the group) taking notes on who was speaking; participants tried to remember to use their participant number each time they spoke; and participants additionally introduced themselves at the beginning of the tape to aid voice recognition. The calculations omitted instances where the moderator uttered words of encouragement.

Results and Discussion

Conceptualizing Group Dynamics

In Figure 1, it can been seen how P8 is little engaged in conversation flow with other participants, with most conversation involving P8 directed to and from the moderator (who was left responsible for engaging P8). Few focus group members followed up on what P8 had to contribute, and P8 rarely directly followed up on other people’s contributions. In fact, the word count of P8 only contributed to 6.3% of the total participants’ conversation, so she was a particularly quiet member of the group. Other participants were embedded much more in the conversation flow; for example, the turns in conversation that preceded and followed P5’s contributions were distributed much more evenly across the group. Once identified through the sociogram, an exploration of the verbal content of this focus group sheds further light on this dynamic. The first question put to the group was broad and inadvertently enabled participants to define their background and experience in the area of hospital environments. By outlining their expertise, participants either differentiated themselves from the group or facilitated group cohesion.

Five of the participants positioned themselves as frequenters of hospitals and highlighted their knowledge of hospital environments through describing the hospitals they had visited. Homing in on the cohesion formulating among group members through their substantial experiences, P8 then differentiated herself as a nonexpert by stating “I haven’t been in and out of hospital.” To this comment, other group members merged with responses such as “lucky you,” further consolidating themselves as a group and P8 as an outsider. The status of individuals emanating in part from this preliminary demarcation process appears to impact the interaction process throughout the ensuing conversation (Figure 1).

Drawing Comparisons Between Focus Groups

When a series of focus groups are conducted, there is usually a need to compare the interaction within and between the different group discussions. Although verbatim transcriptions can provide contextual information (or words) to describe the interaction, the use of the sociogram can provide additional information to visualize the interaction that took place and support the analyst’s write-up. Indeed, in the summary of such interaction, the visual representation of the interaction can provide an instant description that a thousand words cannot portray. By comparing Figures 1 and 2, the differences between the two focus groups are instantly apparent, and the reader’s understanding of the group dynamics that took place when the data were being collected is facilitated.

Figure 2 stands in stark contrast to Figure 1; these two groups had very different dynamics. On reflection, the moderator felt that the second group was quieter and harder to moderate; this feeling was confirmed when studying the sociograms of conversation.

![Sociogram Diagram](image_url)

**Figure 1.** Conversation flow during the first focus group.
flow and taking a look at the word count for participants. The moderator was central to the data generated by this second group, as seen by the thick arrows in the sociogram flowing to and from the moderator and the relatively slim arrows flowing between participants (Figure 2). The participants rarely followed one another, although P4 in particular appeared to integrate more with what other people had to say (despite not speaking as at length as P1 and P2).

This pattern of serial interviewing continued throughout the discussion. The conversation later revealed that the topic of the focus group did little to inspire the participants. This group complacency, which greatly affected the group dynamics (resulting in the moderator having to constantly probe participants and introduce ideas that had been generated by the previous group), had important implications for the findings of the research. The very fact that these participants were not motivated to pick up on each others’ comments and continue the conversation is demonstrative of the low value they placed on the conversation topic. The first focus group generated many themes through the process of interaction, which added much breadth to understanding the experiences of participants who took part in the trial; the second focus group’s complacency toward the study’s intervention offered a poignant explanation of perhaps why the trial’s findings were nonsignificant (i.e., the intended distraction may not have been sufficiently engaging).

Reflecting on Moderator Technique
The role of the moderator is to facilitate the discussion, encourage participation, and listen to what is said. Recommended principles of moderating (such as showing positive regard, playing to your strengths, and not becoming actively involved in the discussion) have been outlined by Krueger (1998). The sociogram can prove a useful tool for reflection, particularly in the early or pilot stages of the research when the moderator is gaining confidence. Although the analysis of the script can provide a sense of how the moderator verbally steered the conversation and counting of text units can provide evidence of moderator domination, the sociogram can provide a visual representation of the moderator technique, which can then be explored in more depth. The sociogram provides a discussion point for the trainee moderator to analyze and reflect on his or her actions. In the example sociograms presented here, the moderator is noted as taking a central role in both discussions (particularly the second; Figure 2). On reflection, the moderator was able to determine that in the future she should attempt to leave longer and more frequent pauses (even if they do appear uncomfortable) to encourage more participant engagement and to try to withhold from intervening after each participant’s contribution to enable participants to follow conversation leads that they find interesting.

Conclusion
The sociogram is offered here as one tool that a focus group analyst and moderator can use to formulate impressions and thoughts and reflect on group dynamics. Interpreting the sociogram requires further investigation and understanding of the verbal content of the discussion it represents. Dynamics influence the themes arising from a group discussion and may leave some thoughts unheard. The use of a sociogram can aid the conceptualization of these dynamics to help the analyst visualize how the themes emerged.

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