Abstract

The mechanisms by which talking therapies exert their beneficial effects is largely unknown. In exploring the process of a talking therapy, motivational interviewing (MI), when used to treat and prevent low mood in stroke survivors, we developed, what we believe to be, a novel approach to analyzing transcripts. We illustrate the method using qualitative data from MI sessions with ten stroke survivors. The approach, drawing on grounded theory, incorporated processes of parallel and serial memoing among a team of researchers to allow a process of validation. This enabled us to describe session content and to develop theoretical interpretations of what was occurring in and across MI sessions. We found that this process can be used to integrate different perspectives in theory building, allowing for a richer description and more robust theoretical interpretation. Others can use and adapt this approach to develop insights into their own enquiry.

Keywords

content analysis; coping and adaptation; psychology; qualitative analysis; stroke; theory development

Our earlier study demonstrated the effectiveness of motivational interviewing (MI), a talk-based therapy, in the prevention and treatment of depression after stroke (Watkins et al., 2007; Watkins et al., 2011). MI is a collaborative, person-centered counseling style for exploring and resolving ambivalence to increase motivation and commitment to change (Miller & Rollnick, 2013). Traditionally used to change health-related problem behaviors such as addictions, we adapted the approach for use in our study to increase stroke survivors' adjustment to life after stroke. The mechanisms of action that brought about the positive effect in our study have not been explored. This is important because we need to understand how MI works to optimize training and development, and to maximize the effectiveness of MI interventions. Previous attempts to identify the effective components of MI, in the context of addictions, have mostly used quantitative approaches to look for associations between therapist style or MI techniques and positive outcome (Apodaca & Longabaugh, 2009; Miller & Rose, 2009).

The major problem in using quantitative methods to examine the effective components of MI is the complexity of the intervention and the large number of therapist, client, therapy, and situational variables that might contribute to positive or negative outcomes. Qualitative approaches might yield different insights into the process of MI and how it works. There are a number of important considerations in designing qualitative research using MI and other talk-based therapies. These include the methodological approach, relationships with research participants, ethics, reflexivity (McLeod, 1996) and, not least, the risk of the outcome being an artefact of the research interaction rather than of the therapy itself (Woolgar, 1988).

There is no consensus about the effectiveness of qualitative methods of enquiry into talking therapies (McLeod, 1996). However, the grounded theory approach seems to be intuitively appealing for such an enquiry because it allows for the synthesis of a large amount

of data while retaining its richness. Grounded theory and other qualitative approaches such as interpretive phenomenology (Benner, 2008) and Framework Analysis (Gale, Heath, Cameron, Rashid & Redwood, 2013) may use a team approach to data analysis to develop consensual interpretation of the data. However, unless the team has a broad range of experience and diversity of academic base, then the interpretation of the data and study findings will be based on a limited range of perspectives. Structures, processes and guidelines should be put in place and adhered to in relation to team analysis (Fernald & Duclos, 2005) to avoid the process becoming muddled and the benefits of a number of analytical voices remaining untapped. Given the complex nature of a talking therapy intervention, where therapists themselves can direct the course of the therapy based on their interpretation of clients' discourse, we decided to try to incorporate a wide range of interpretations in the analysis of MI sessions to explore the mechanisms of MI. Furthermore, the MI intervention comprised four sessions, so we needed an analysis process that would allow us to explore the four sessions as a whole and understand what was occurring across the four sessions, for each participant and also across participants. There are not many established methods of conducting analysis that allows the examination of one participant's set of interviews over a period of time, and to explore not only the content (what participants say) of sessions, but also how the content changes over time. In this regard, our method has parallels with longitudinal qualitative research. In longitudinal qualitative research, change is a key focus of analysis, and individual narratives and trajectories are explored to uncover processes and changes across time (Calman, Brunton & Molassiotis, 2013). Our method of analysis can be considered a retrospective form of longitudinal qualitative research. Drawing on the principles and practices of grounded theory, we were able to analyze a large data set, using an iterative process to allow synthesis and theory generation.

We wanted our approach to be highly reflexive, dialogic and to incorporate conceptual and theoretical thinking. We based our approach on memoing, a tool frequently used in qualitative research. As a team, we felt that memoing would allow us, as Birks et al. (2008, p71) state, to "articulate, explore, contemplate and challenge [our] interpretations when examining data". We did not limit ourselves to particular memos; although, because we were drawing on grounded theory, we were interested in conceptual and theoretical memoing to help us derive meanings and develop a deeper conceptual appreciation of the data (Glaser, 1992). Memoing is usually described as a solo and iterative activity, with the researcher moving back and forth through their memos, revising and editing insights and ideas, and gaining in complexity and precision (Groenewald, 2008), and perhaps sharing their memos with members of their research team. However, we aimed to adopt a more collaborative and deliberative approach, with different members of a broad analysis team each bringing their own interpretations of both the data and previous memos. We have called our approach parallel-serial memoing.

The aim of the study described here was to explore the process of MI through qualitative analysis of the content of a sample of MI sessions with stroke survivors. We have developed, what we believe to be, a novel method of qualitative analysis. In this article we aim to describe and evaluate this method in the context of exploring what occurred in MI sessions.

Methods

Design

Secondary qualitative analysis using parallel-serial memoing on transcripts of MI sessions with stroke survivors from our randomized controlled trial (RCT) of MI (Watkins et al., 2007). NHS ethical approval was obtained for the original trial and the secondary analysis from the University's Research Ethics Committee.

Sample

In our RCT, 137 randomly selected voice files of MI sessions were transcribed verbatim for use in the assessment of MI quality, validity and fidelity. Within these, there were complete sets of four transcripts (as the intervention in the RCT was four sessions of MI) for 22 patients. For this analysis, we purposively selected ten of the 22 complete sets, based on the interviewing therapist and the stroke survivors' age, sex, severity of stroke and presence or absence of depression. We anticipated that ten sets (40 transcripts) would provide sufficient data for us to approach or achieve data saturation. We could draw on the remaining 12 sets if data saturation had not been achieved. We achieved data saturation after analyzing ten sets of transcripts, so no further sets of transcripts were sampled for analysis. The ten selected sets included a range of therapists, and a diversity of patients and positive and negative adjustment to life after stroke. The duration of the MI sessions comprising the 40 transcripts ranged from 11 to 64 minutes (median = 42 minutes). The combined duration of the four sessions for each of the ten participants ranged between 74 and 228 minutes (median = 158 minutes). The word count for individual transcripts ranged from 2325 to 10626 words (median = 5144 words).

Procedure

The analytical process is outlined in Figure 1. Each set of transcripts was considered as a case and analysis was conducted by a case-team comprising three researchers. A minimum of three members of a case team is recommended to provide a variety of perspectives (Hill et al., 2005). We intentionally used people from different backgrounds and a range of approaches, including cognitive, phenomenological, and psychotherapeutic, so as not to be biased to one perspective. Each case-team was composed of one researcher from each of three researcher levels. Level 1 (L1) researchers had not been involved in the original MI study, but had knowledge of MI and stroke and had backgrounds in psychology. Level 2 (L2) researchers

were involved in the original MI study as MI therapists and had stroke nursing or psychology backgrounds. Level 3 (L3) researchers had little knowledge of MI prior to this analysis, but had a high level of experience of qualitative data analysis and had nursing (non-stroke) or philosophy backgrounds. There were two Level 1 researchers, three Level 2 researchers, and three Level 3 researchers: for each case, a different combination of researchers was selected to form the case-team. These individuals, along with the lead researcher, comprised the steering group for the analysis.

Parallel processing. Each member of a case-team independently read the set of four transcripts for a participant, and independently developed their own interpretation of the content of each of the four sessions, as well as their impressions of what was occurring across sessions overall. The Level 1 researcher then wrote memos, consisting of a synopsis of their interpretation for each of the four sessions. They also wrote a fifth and final 'cross-session' memo to summarize the key topics (frequently discussed topics across all sessions) and to outline how discrepancies were (or were not) addressed over the four sessions. This process was followed for all ten participant transcript sets.

Serial processing. Within the case-team, the session and cross-session memos written by the Level 1 researcher were then sent to the Level 2 researcher, who added comments based on their own interpretation and identified areas of disagreement with the Level 1 researcher's memos. The Level 2 researcher then passed the annotated memo to the Level 3 researcher who added their comments. This generated four final meta-memos (one for each session) and a cross-session meta-memo. Once all three levels of comments were complete, the case-team then met with the research steering group, discussed the meta-memos and the interpretations they contained, and produced a final single consensus theoretical memo for each participant (see Figure 1). Following this procedure allowed more than one interpretation to be included in the analysis and provided a process of validation of the

researchers' interpretations. If disagreement between researchers' interpretations occurred, these were discussed by the case-team, and also by the steering group at analysis meetings, until a consensus was reached. These meetings allowed all researchers to share their ideas to further explicate the thinking underpinning the memos, creating a greater depth of understanding by individuals, and across the group.

The final theoretical memos then underwent thematic analysis using a method of constant comparison, carried out by two researchers, using qualitative data analysis software (Atlas-ti). This analysis was at a higher level of abstraction than the memoing process for individual participants, and was intended to enable exploration of general themes and patterns across all theoretical memos.

INSERT FIGURE 1 ABOUT HERE

Results

Parallel-serial memoing

The parallel and serial memoing processes resulted in 50 meta-memos comprising the researchers' interpretations of individual sessions and the four sessions overall, for each of the ten participants. Each meta-memo combined the interpretations of three researchers, one from each of the three levels (L1, L2 and L3). Meta-memos varied in length: individual session meta-memos were generally up to a page in length; cross-session meta-memos were generally between one and two pages. We illustrate our parallel-serial memoing in Table 1, through extracts from the full memos for one participant's set of transcripts. This participant was a 37 year old woman who had had a mild stroke. She had low mood at baseline, prior to receiving MI, and normal mood at three months after the stroke. This participant's MI sessions were, on average, 35 minutes long. Her main concerns related to returning to work and her relationship with her partner. The extracts in the table provide examples of agreement, disparity and augmentation between the different levels of researchers, which

were characteristic features of our parallel-serial memoing method. We discuss each of these in turn.

INSERT TABLE 1 ABOUT HERE

Agreement. Within the meta-memos, there was mainly agreement between the L1, L2 and L3 researchers' interpretations. For the first transcript set we analyzed, there was no additional annotation to memos if there was agreement; however, it was unclear if the lack of annotation indicated that the subsequent researcher had made the same interpretation, or if they had initially made a different interpretation but thought the alternative interpretation was a more appropriate one. Therefore, for subsequent transcript sets, we decided to explicitly state agreement. Agreement between researchers is illustrated in this extract from the session 1 meta-memo:

> L1: The respondent is frustrated with her speech problems and being in hospital. Her main goal is to be able to drive again. She also wants to return to work. The respondent agrees with the therapist that she feels she has no control at the moment.
>
> L2: I agree, she is frustrated and is keen to get her life back to normal as soon as possible. She is finding the lack of control difficult and gives the impression that she was a very independent person.

Disparity. Meta-memos also contained disparity between L1, L2 and L3 researchers' interpretations, where there was a direct contradiction to an earlier interpretation. Sometimes, disparity was resolved within the meta-memo, as illustrated in this extract from the session 2 meta-memo:

> L1: She feels there has been an improvement in function which might also be related to her feeling better in herself.

L2: She suggests she is making improvements in her function but seems to brush over the issue of her health problems and I think they are more important to her than she is saying and might not really be feeling better in this respect.

L3: I agree, that she oddly does not outwardly express concern about the longer term effects of other health-related issues.

There were also instances of disparity that remained ambiguous within the meta-memos. These were then discussed at analysis meetings, and a consensus was always reached. An example of disparity is shown in this extract from the session 3 meta-memo:

L1: The respondent is waiting for a confirmation of diagnosis of MS but is not worrying about it as there is no point worrying about something you don't know.

L2: I wonder if this is her brushing over the issue and appears to be coping but really she is worried.

L3: There is almost a Blitz spirit in the way she regards the threat of MS. It is not obvious that she is not worrying despite the assertion.

Augmentation. Meta-memos also contained instances where L2 and L3 researchers augmented earlier interpretations with more depth or with a similar interpretation from an alternative perspective. An example of this is shown in this extract from the session 4 meta-memo:

L1: She is more willing to delay returning to work. She talks freely and openly to the therapist about her relationship, commenting on grievances with her partner.

L2: It would appear that she felt patronized by her partner and did not deal well with others doing part of her role. She reflects how she was unrealistic with her goal of

returning to work as soon as possible. It is unclear if this is due to the therapy or the fact that she is physically better so can look back and see how ill she was.

Augmentation might have been a result of having the different perspectives of the three levels of researchers, which were apparent in the meta-memos. In the following extract from the cross-session memo written by the L1 researcher, who had knowledge of MI, the change seen in the participant is suggested as being a result of the MI process and the relationship between the participant and therapist:

> The relationship between respondent and therapist progresses throughout the sessions, with the respondent disclosing more by session four. The respondent initially lacks control but since being able to drive she has a greater sense of control and a more positive outlook.

When the L2 researcher, who had knowledge of stroke and a nursing background, added to this cross-session meta-memo, a different perspective was presented, suggesting that recovery from the stroke and dealing with issues relating to the participant's self-identity were reasons for the change seen in the participant:

> The issues of her role/self-identity and feeling a sense of worth also came across, especially as she got better. It would appear she feels the need to contribute and not be treated like a child, especially by her partner.

The L3 researcher, who had a background in philosophy, added the following to this cross-session meta-memo, presenting a summation of the MI sessions and the importance of reframing the stroke:

> The net effect across the sessions is playing up strengths and resiliencies and putting the stroke in some sort of future-directed context.

As a result, the theoretical memo for this set of transcripts incorporated the alternative perspectives offered by the three researchers:

> Control is a prominent issue, which is underpinned by the need to be treated like an adult by her partner and to remain in a strong and respected position in her work environment. Self-worth was diminished post-stroke but adjustment led to increased confidence allowing for concerns, relating to health and relationship, to be addressed and control regained. During reflection, the realization that initial goals were unattainable in the short term brought a sense of relief. Patient-therapist relationship developed and a willingness to talk about concerns increased across sessions.

The results of the thematic analysis of the theoretical memos are presented in a separate article (manuscript in preparation).

Discussion

This method of parallel-serial memoing facilitated an in-depth exploration of what occurred during, and across, MI sessions with stroke survivors that was underpinned by a range of different academic and disciplinary perspectives. It encouraged us to explore not only the data but also encouraged, as Collier and colleagues note, us to explore and determinedly make explicit and tangible the spaces that existed between our various analyses, understandings and theorizing (Collier, Moffatt & Perry, 2015). The result of this process was a set of theoretical memos which then became the basis for a thematic analysis.

The process of parallel-serial memoing enabled a more in-depth analysis of MI sessions than had previously been conducted. One particular strength of the method was the

incorporation of alternative perspectives through the different professional backgrounds and experiences at each of the three levels of researcher during analysis, to allow for a range of interpretations. This constructivist approach may have helped to challenge paradigmatic thinking, as different paradigms were in play, and at the same time, provide a robust and credible final synthesis. In this example, it has allowed us to describe the process of adjustment in stroke survivors. The method could be applied in other areas of qualitative health research, for example, by using patient, carer and professional perspectives in analysis, to provide a more comprehensive interpretation of the data.

Our parallel-serial memoing followed traditional memoing principles, with memos being edited and revised and increasing insight being gained (Groenwald, 2008). Our approach was novel because rather than this process being carried out by one individual, it was conducted across a team of people and where that team of people had been deliberately selected to reflect both topic expertise and topic naivety.

Our approach differs from other approaches to team analysis of qualitative data. Often teamwork approaches have previously been limited to systematically coding data, where the use of multiple coders enabled the assessment of reliability through intercoder agreement measures (MacQueen, McLellan, Kay & Milstein, 1998). Whilst there is arguably not a clear distinction between codes and memos and some qualitative researchers will use both, we focused on the creation of reflexive dialogic memos rather than codes. The focus on memos gave us freedom to be reflexive and attain a deeper level of reflectivity. In a similar way to Collier et al.'s (2015) 'extended conversations', our serial memoing gave us the opportunity to adapt and respond to each other's suggestions, thoughts, queries and perceptions in our move towards a coherent, cohesive and shared conceptual interpretation of the data.

There are some parallels between our approach and the team-based approach used in interpretive phenomenological analysis (IPA). In IPA, multiple researchers separately code

the same data after which discussions take place among the researchers to develop convergent themes and to provide validation of the analysis (Callary, Rathwell & Young, 2015; Levy, Polman & Nicholls, 2009). Our approach differs because although each researcher initially memoed independently, their memos were not kept separate from the other researchers within their case-team and there was discussion among the case-team within the memos themselves, followed by further discussion with the steering group. Our approach was discursively dialogic with the memo writers iteratively engaging with both the transcripts and the memos, thus generating a rich and insightful exploration of the process of adjustment in stroke survivors but also of the nuanced understandings and interpretations of the previous memo writers. Our memoing contributed to our ongoing collaborative and auditable scholarly conversations and to the "collaborative process of meaning making" (Paulus, Woodside & Ziegler, 2008, p240).

In the process we followed, having previous memos available was a strength because it provided a point of reference; for example, a point from which to agree or disagree. Often, Level 2 and 3 researchers would comment that they could see why a particular viewpoint had been presented in a previous memo, but would then question that perspective, encouraging further discussion and the presentation of alternative perspectives. This was facilitated by having a clear procedure and guidelines for conducting the parallel-serial memoing, which are necessary for team analysis (Fernald & Duclos, 2005). Allowing researchers to disagree or interpret differently, and leaving two potentially alternative interpretations for a third researcher to consider, enabled a process of validation of interpretations. We used our reflexive memos as a means of challenging each other's thinking, considered important for team analysis (Guest & MacQueen, 2008), and widening our conceptual understanding, and focused on what was resonating with us from the data we were analyzing. We were deliberate

in our creation of what Charmaz (2006, pp81-82) calls “a space and place for exploration and discovery”.

The serial nature of the memoing could also be considered a potential limitation. Despite the Level 2 and 3 researchers reading each transcript before editing each memo and meta-memo, they may have been primed by the content of the initial Level 1 memo, leading to a consensus. On examination of the individual researchers’ contributions to each meta-memo (facilitated by the use of different colored fonts by each researcher), we were unable to discern a priming effect.

Individual subjectivity is a recognized bias in qualitative research; we tried to adjust for this by having three researchers memoing serially to obtain a synthesis of perspectives. Had the memos been written by only one individual, the subsequent theoretical memos and thematic analysis would have been based on one interpretation. Team analysis provided a richer interpretation. Arguably though, our approach could be critiqued for replacing a single subjectivity with a form of inter-subjectivity, albeit one where we have a clear audit trail of the dynamic process through to a negotiated, consensus interpretation.

We found that there was sometimes disparity in interpretations between researchers, so it is possible for individuals to read transcripts and interpret them differently. Disparity, as well as agreement and augmentation within the meta-memos, enriched the analysis. We resolved disparity in interpretations through discussions during analysis meetings. Consensus was always reached, although this was often after a lively debate. Consensus was not a dilution of ideas or a dismissal of positions, ideas or perspectives presented in the memos; rather, it was reached after a conscientious consideration and critique that valued a diversity of differences. This aspect of our approach is similar to elements of consensual qualitative research, in which several individuals are involved in the data analysis process and consensus determines the interpretation of the data (Hill et al., 2005). Following consensus, we

developed theoretical memos as final interpretations; however, we cannot be sure that our final interpretation reflected what actually occurred for participants. Ideally, we would carry out a process of respondent validation to check our interpretations, but this was not possible in our study.

The parallel-serial memoing process was developed as a way of overcoming the shortcomings of alternative methods that had previously been used to explore the process within MI sessions. It enabled us to discover more about the nature of the adjustment process from the perspective of stroke survivors. The method could be used for in-depth analysis of transcripts that constitute a series of interactions in other contexts, to uncover processes and changes that occurred over time. Therefore, it could be used to uncover the progression of, and potential mechanisms for, other talk-based therapies which are practiced in a similar fashion to MI. Increased understanding of these aspects of talk-based therapies can lead to better training and potentially more effective practice of the intervention. The method could also be used in other areas of qualitative research, for example, in analyzing interviews or focus groups, as a method of group qualitative analysis that allows interpretations to be drawn and incorporated from a range of perspectives.

The parallel-serial memoing process, used here to conduct a retrospective form of longitudinal qualitative research, also has the potential to be useful in clinical practice where a talking therapy is being delivered as an intervention. Parallel-serial memoing could be used as part of group clinical supervision if it was conducted prospectively after each therapy session. Insight could be gained into the content of the session that is not the interpretation of only one individual (the therapist), which could then be useful in subsequent therapy sessions. In this context, it might be possible, with some individuals, to check the interpretation with the person receiving the therapy, although this could present a challenge both emotionally and cognitively as it would involve presenting individuals with

interpretations of their thoughts. This might be appropriate in the context of a therapy session but might not be so in the context of an exploratory interview.

We developed a method of group qualitative analysis that enabled us to develop theoretical interpretations of what was occurring in MI sessions. The method has the potential to be used by others to gain insight into their own enquiry, and could also be adapted for use as part of a talk-based therapy intervention.

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Table 1. Extracts from the Memos for One Participant's Set of Transcripts

Memo	Extract from memo[a]
Session 1	L1: The respondent is frustrated with her speech problems and being in hospital. Her main goal is to be able to drive again. She also wants to return to work. The respondent agrees with the therapist that she feels she has no control at the moment. L2: I agree, she is frustrated and is keen to get her life back to normal as soon as possible. She is finding the lack of control difficult and gives the impression that she was a very independent person. L3: Frustration dominates this session. She describes herself as stubborn.
Session 2	L1: The respondent still feels she is lacking control and is now doing activities when her partner is not there that her partner would otherwise do for her, so her feeling better might be related to an increased sense of control. She feels there has been an improvement in function which might also be related to her feeling better in herself. L2: It may also be a feeling of self-worth that is making her feel better, having discussed with her partner the issues about doing activities and being more independent. She suggests she is making improvements in her function but seems to brush over the issue of her health problems and I think they are more important to her than she is saying and might not really be feeling better in this respect. L3: I agree, that she oddly does not outwardly express concern about the longer term effects of other health-related issues, and talks more about shorter term independence issues.
Session 3	L1: The respondent is waiting for a confirmation of diagnosis of MS but is not worrying about it as there is no point worrying about something you don't know. Although there are many positive things that have happened since session one (visit to workplace, return to driving), the tone of this session is quite subdued, perhaps because she is waiting on a confirmed diagnosis and is in a state of limbo. L2: I wonder if she is brushing over the issue saying there is no point worrying, and appears to be coping but really she is worried. I agree, she does focus more on the health issues in this session. Again, she reiterates that getting back to normal as soon as possible is essential. L3: There is almost a Blitz spirit in the way she regards the threat of MS. It is not obvious that she is not worrying despite the assertion.
Session 4	L1: The respondent has made progress, visiting work where she has more social contact and ultimately feels like she has got some control back. She is more willing to delay returning to work. She talks freely and openly to the therapist about her relationship, commenting on grievances with her partner. L2: The respondent seems more at ease and trusting of the interviewer. It would appear that she felt patronized by her partner and did not deal well with others doing part of her role. She reflects how she was unrealistic with her goal of returning to work as soon as possible. It is unclear if this is due to the therapy or the fact that she is physically better so can look back and see how ill she was.
Across sessions	L1: The respondent shifts from frustration in earlier sessions to increased acceptance by session four. The relationship between respondent and therapist progresses throughout the sessions, with the respondent

	disclosing more by session four. The respondent initially lacks control but since being able to drive she has a greater sense of control and a more positive outlook. L2: The issues of her role/self-identity and feeling a sense of worth also came across, especially as she got better. It would appear she feels the need to contribute and not be treated like a child, especially by her partner. L3: The net effect across the sessions is playing up strengths and resiliencies and putting the stroke in some sort of future-directed context.
Theoretical	Control is a prominent issue, which is underpinned by the need to be treated like an adult by her partner and to remain in a strong and respected position in her work environment. Self-worth was diminished post-stroke but adjustment led to increased confidence allowing for concerns, relating to health and relationship, to be addressed and control regained. During reflection, the realization that initial goals were unattainable in the short term brought a sense of relief. Patient-therapist relationship developed and a willingness to talk about concerns increased across sessions.

[a]L1, L2 and L3 refer to Level 1, Level 2 and Level 3 researchers