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A Practical Example of How to Apply Constructivist Grounded Theory Methodology: Exploring Patient Experiences During Paramedic Led Healthcare

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ABSTRACT

Application of qualitative enquiry is necessary to improve the understanding of patient experience during paramedic-led healthcare. Grounded Theory (GT) is acknowledged as a rigorous qualitative methodology useful for exploring social processes present during healthcare, particularly when little existing knowledge or theory exists. Despite wide use of GT in other health disciplines there are few studies that have used this methodology to guide research in paramedicine. This may be due to GT methods appearing complex and disorientating for both novice and experienced researchers. This methodological article provides a practical example of how Kathy Charmaz's "constructivist" approach to grounded theory (GTc) was applied during research that explored how patients experience paramedic-led healthcare during non-conveyance situations. It explains the fundamental tenets required of GTc research and describes how they were employed during the example research. The article aims to demystify the GTc process and improve the rigour of qualitative GTc research in paramedicine and health disciplines. How to apply Constructivist Grounded Theory methodology is described by providing a practical example of research into patient experience. This article informs researchers how to maintain trustworthiness and credibility when applying GTc methodology. This article describes research that explored how patients experience paramedic-led healthcare. The data was generated through individual interviews between the researcher and patients who had recent experiences of ambulance service healthcare that resulted in not being transported to a hospital ED. Patients or the public were not involved in the conceptualisation or research design of this article or the practical example provided.

1 | Introduction

The application of qualitative research is necessary to improve the understanding of patient experience of healthcare delivered by paramedics (Australian Commission on Safety and Quality in Health Care. 2024; Bowles et al. 2024; Pap et al. 2024). Current paramedicine research faces criticism for its limited range of methodologies and a narrow focus on operational activities and clinical interventions (Cavanagh et al. 2023). Despite being widely used in other health disciplines, there are relatively few studies using GT in paramedicine.

In this paper, we demonstrate how Kathy Charmaz. (2014) "constructivist" approach to grounded theory (GTc) was applied

during research that explored how patients experience paramedic-led healthcare during non-conveyance situations (King et al. 2023). We describe and explain the fundamental tenets of GTc and how they were employed during the research.

The aim of this paper is to demystify the GTc process by providing a practical example that informs novice and experienced researchers in the use of constructivist GT methods. The intent is to improve the rigour of qualitative research and encourage uptake of GTc as a useful qualitative research methodology in paramedicine. and associated health disciplines (Simpson 2024).

1.1 | Grounded Theory

Grounded theory (GT) is a qualitative research methodology that *generates* theory from the exploration of real-world empirical data to explore and understand social processes (Charmaz 2017; Glaser and Strauss 1967). GT provides a rigorous, systematic yet also flexible approach that allows open exploration of unanticipated concepts, advantageous for topics where there is little existing knowledge or theory (Birks and Mills 2015; Charmaz 2013, 2014). The methodology was introduced by Barney Glaser and Anselm Strauss in 1967 as an alternative to the dominance of positivist quantitative research methods at the time (Charmaz and Thornberg 2021). Rather than starting with a preconceived hypothesis and testing data for fit, GT generates a theory that has been grounded in the data. This allows for deep exploration that goes beyond observational description resulting in an abstract understanding of how and what is occurring in social contexts (Charmaz 2014; Glaser and Strauss 1967; Morse 2016; Starks and Brown Trinidad 2007).

GT is, therefore, useful for exploring under-investigated topics in paramedicine and other healthcare contexts. By using GT to explore the lived experience of patients, explanatory theory can be generated to inform paramedic practice and education and to model ambulance service healthcare (Birks and Mills 2015; Brydges and Batt 2023; Chun Tie et al. 2019; Hathcoat et al. 2019).

However, the iterative and intertwined nature of GT methods can appear complex and be disorientating for both novice and experienced researchers (Giske and Artinian 2007; Timonen et al. 2018). To be identified as grounded theory, research must adhere to several fundamental tenets that may challenge existing assumptions about research methods (Charmaz 2008). For example, GT requires *concurrent* data collection and analysis that enables thematic sampling, the investigation of new lines of enquiry *during* the data generation stage (Chun Tie et al. 2019). There are also few published practical examples of how to apply GTc methods. We believe this is the first exemplar using published research in paramedicine. In this paper, the utility of GTc is highlighted as a research methodology by explaining how GTc methods were applied during a doctoral study that explored patients' perspectives of paramedic-led healthcare (King et al. 2023).

1.2 | Context of the Practical Example

Paramedic roles and ambulance service models of service delivery are rapidly evolving in Australia and internationally (Shannon et al. 2022; Eastwood et al. 2023). Increasingly, paramedics are required to make complex decisions regarding whether to convey patients to the hospital or to consider alternative healthcare pathways.

Meta-analysis and systematic reviews measuring mortality and re-presentation rates are not clear whether non-conveyance decisions have led to suboptimal care (Ebben et al. 2017; Yeung et al. 2019). It is known that understanding of patient experience is associated with improvement in the delivery of quality, safe, and clinically effective healthcare (De Rosis et al. 2021; Doyle et al. 2013; Holt 2018; Larson et al. 2019; Shale 2013). However, there is a distinct paucity of research that aims to understand how patients themselves experience paramedic-led healthcare that results in non-conveyance (King et al. 2021; Perry et al. 2019).

1.3 | Practical Example

The example study (King et al. 2023) aim was to explore Australian patients' experiences of non-conveyance events during paramedic-led healthcare. A setting where, after assessment, a decision was made for the patient to not be transported to a hospital emergency department (ED). To generate data, the principal investigator (Rieger 2019) conducted semi-structured interviews with 21 participants in New South Wales, Australia, between August 2020 and October 2021. GTc methods guided data generation and analysis that resulted in generation of the substantive grounded theory 'Restoring self-efficacy' (Figure 1). The theory comprises three categorical concepts and their interconnected relationships, that explains how patients' experience non-conveyance. (1) 'Losing independence' conceptualises how a precipitating event forces patients to realise their circumstantial vulnerabilities, motivating action to seek trusted support. (2) 'Restoring self-confidence' was generated as a core category. Patients form a trusting partnership with paramedics when they perceive that they have received professionally thorough and compassionate care, leading to a decision to not attend ED. With this reconstructed perspective, patients demonstrate increased ability for 3) 'Self-management', by continuing to cope with their circumstances on their own after the episode of care ends.

2 | Research Methodology

2.1 | Underpinning Philosophy

Prominent authors on research methodology, Creswell and Poth (2018), and Mason (2002), highlight the importance of adopting an underlying philosophical paradigm to promote congruence throughout the design of social qualitative research. It is necessary for qualitative researchers to adopt a philosophical paradigm to assist them navigate selection of the most suitable qualitative methodology. Grounded theorists Mills and

FIGURE 1 | "Restoring Self-efficacy" A theory of how patients experience non-conveyance (King 2024). [Color figure can be viewed at wileyonlinelibrary.com]

Birks (2014) further support this when considering which version of GT is appropriate for the research question (RQ). Furthermore, transparency regarding the underpinning philosophy offers insight, promotes reflexivity, and contributes towards the rigour, overall credibility, and trustworthiness of the research (Mills and Birks 2014).

Glaser recommended flexibility in the application of GT methods which led to three distinct versions: Classic GT, (Glaser and Strauss 1967), the 'evolved' post-positivist 'Straussian' GT (1990), and more recently, Charmaz's (2006) 'constructivist' GT (GTc) (Birks and Mills 2015; Kenny and Fourie 2015; Rieger 2019). Each version has philosophical differences that influence data generation, the position of the researcher, coding methods, and how literature may be used towards theory development (Rieger 2019). In this paper, we do not attempt to describe or differentiate these versions as this has been thoroughly explored and debated in previous literature (Hunter et al. 2011; Rieger 2019).

We focus on the application of Kathy Charmaz's 'constructivist' (GTc) approach. Charmaz's interpretivist epistemological stance views reality as being socially constructed. Her version of GT acknowledges that meaning is co-constructed between the researcher and participants; differentiating it from the classic version where the researcher is positioned as an objective observer. Charmaz embraces the researcher's existing knowledge of the topic of interest as being useful to identify data that have value to the generation of theory, namely 'theoretical sensitivity'.

Constructivism was adopted as the underpinning philosophy during the example research. This philosophy proposes that reality is a subjective construction by individuals who develop meaning based on their interpretation of experiences gained through social interactions; it acknowledges that multiple versions of reality may exist (Bleiker et al. 2019; Denicolo et al. 2016; Given 2008; Lee 2012). Using constructivist philosophy compliments the interpersonal health setting and aims of the research; to openly explore the perspectives of patients without preconception while still acknowledging the role of the researcher in their analysis, interpretation, and explanation of the data. Charmaz embraces the researcher's experience, recognising this as supporting a heightened (theoretical) sensitivity to recognise data of relevance to the RQ and generation of theory. This concept, connected with the interpretivist epistemological position of the researcher, that knowledge is gained between the researcher and participant; the 'knower' and 'responder' cocreate understanding (Lee 2012).

2.2 | Reflexivity

Within GTc the researcher's influence is valued, yet this influence must be clearly described to ensure transparency of how the data has been interpreted. Reflexivity is an active process within all qualitative research that openly acknowledges the subjectivity of the researcher and what they contribute to the research (Olmos-Vega et al. 2022). Olmos-Vega et al. (2023) describe reflexivity as "... a set of continuous, collaborative, and multifaceted practices through which researchers self-consciously critique, appraise, and evaluate how their subjectivity and context influence the research processes."

Performing, documenting, and describing reflexivity is essential to support the trustworthiness and credibility of qualitative research. For GTc research, the importance is further emphasised due to the relationship of the researcher as a co-constructor of data during generation and analysis. Within the thesis associated with the example research that is referred to throughout this article, there is evidence of the researcher explicitly describing their background, position within the research, and existing assumptions (King 2024; King et al. 2023).

For example, the iterative process of developing a research question (RQ) towards completing a doctorate involved multiple conversations with academic leaders, clinicians and reviewing relevant literature. Therefore, existing assumptions of the researcher and preconceived societal and discipline-specific concepts will have both consciously and subconsciously already influenced the RQ.

During the research, to preserve the participants' perspective, processes of reflexivity often focused on the researchers questioning themselves about how they were interpreting the data; whether they were truly reflecting the participants experience or subconsciously forcing the data. Despite heightened awareness, reflection and memoing revealed that this bias may have still occurred. The researcher often documented in memos that it frequently required very conscious steps to analyse meaning from the perspective of the participant and mitigate against subconsciously inserting interpretation that came from many years of their own exposure as a clinician.

2.3 | Literature Review

Various scholarly discussions exist about where a literature review fits within the process of developing a grounded theory (Dunne 2011). Glaserian GT recommends delaying a literature review until *after* data analysis to "suspend" existing knowledge of the topic of interest and avoid biasing interpretation of the data (Birks 2011). Charmaz (2014) however, believes that performing an early literature review is beneficial to further sensitising the researcher to topics which may be of significance to the generation of theory (Birks and Mills 2015). A scoping literature review (King et al. 2021) was conducted to understand current knowledge, identify research gaps, and reveal research methods previously used to explore this topic.

2.4 | Recruitment

Purposeful sampling was used to identify participants who were able to provide rich insight into the research topic and who had recent experience of the phenomenon being explored (Bryant and Charmaz 2007; Foley and Timonen 2015). New South Wales Ambulance Service (NSWAS) invited eligible participants by letter within a few weeks of them experiencing a non-conveyance event. Invitation letters were dispatched in stages to allow for the GT process of simultaneous data collection and analysis to occur. Recruitment continued until theoretical sufficiency had been achieved, a level whereby sufficient explanation of core theoretical categories and their interconnected relationships was deemed to have occurred (Charmaz 2014; Foley and Timonen 2015). In this context, purposive sampling does not intend to provide a randomised sample or a representative sample of the entirety of a population; the aim is to focus on rich sources of data that will contribute data useful to answering the RQ and creation of theory (Bryant and Charmaz 2007).

2.5 | Data Generation

Data was generated through individual interviews between the researcher (Rieger 2019) and 21 participants via telephone. The researcher has deep insight and knowledge of the phenomenon from an experienced senior paramedic perspective. They practice clinically in an extended practice role that results in high rates of non-conveyance rates. Interviews were semi-structured, commencing with an open-ended question inviting participants to tell the researcher about their experience. It was emphasised that the researcher wanted to understand the participants' story, what was important to them, rather than be presented with a series of guided interview questions. The interviews maintained a conversational style with the aim of reducing perceived power differentials, to develop a sense of reciprocity, and encourage participants to share their personal experiences (Mills et al. 2006; Charmaz 2014, & Mills et al. 2006).

Patient interviews are acknowledged as a useful tool when aiming to improve health services (Larson et al. 2019). Intensive interviews align with the underpinning philosophy and GT methodology by focusing on the area of interest while allowing for 'open-ended enquiry'(Charmaz 2014; Mason 2002). Interviews provided the flexibility to explore deeper into concepts literally as they are generated, *during* the participants interview; a form of theoretical sampling (Kenny and Fourie 2015).

2.6 | Fundamental Tenets of Grounded Theory

For research to be considered 'Grounded Theory', several fundamental tenets must be adhered to. These include: Stages of coding (Open 'initial', focused, and theoretical); theoretical sensitivity; theoretical sampling; concurrent data generation and analysis; constant comparison; and theory generation. Flexibility is encouraged during the application of GT methods, therefore, how the tenets were applied in the example should be interpreted as guiding rather than prescriptive. A diagrammatic representation of the processes applied in the example study is provided below (Figure 2). The diagram is a close adaptation of the framework provided by Chun Tie et al. (2019) that highlights the process followed and the iterative nature of GT.

2.6.1 | Theoretical Sensitivity

Theoretical sensitivity is the ability of a researcher to recognise data, or concepts within data, that have relevance to the generation of theory. Birks and Mills (2015) suggest this is a combination of the researcher's personal, professional, and

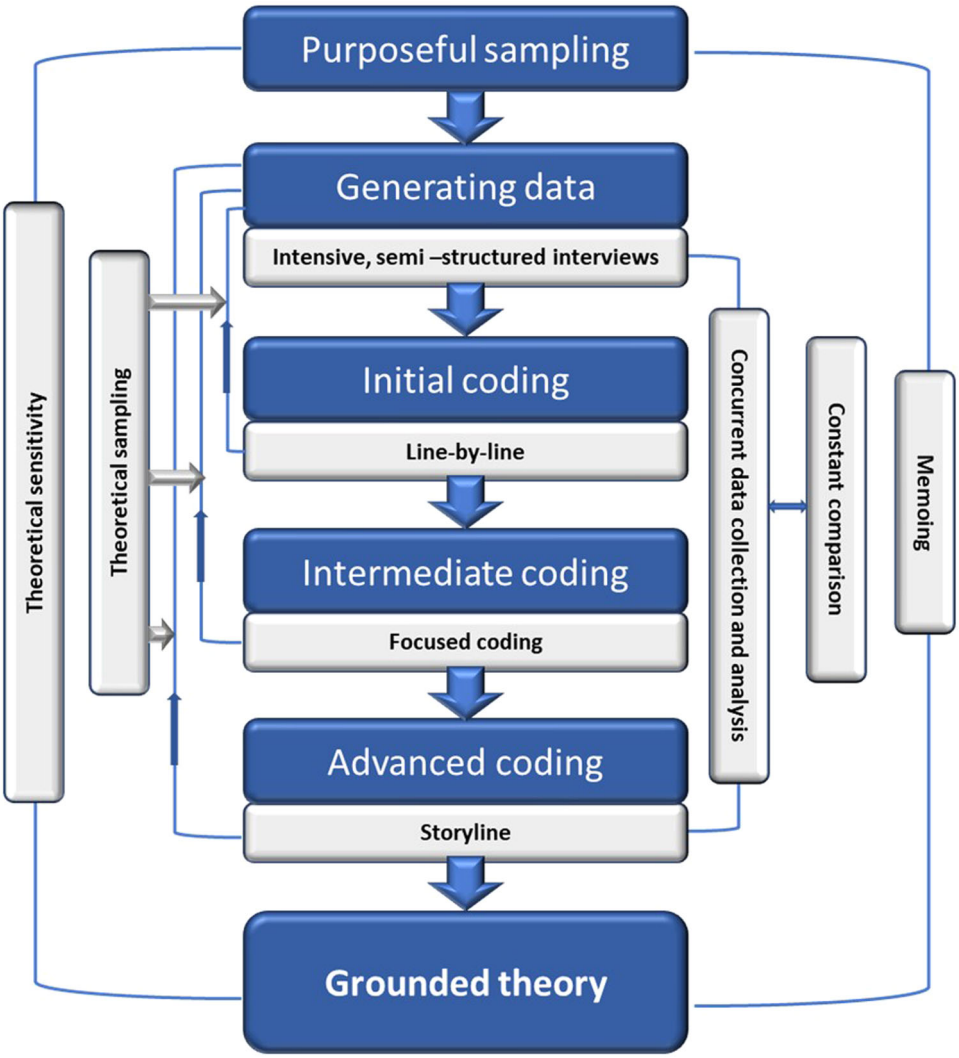

FIGURE 2 | Diagrammatic representation of research methods (King 2024; Adapted from Chun Tie et al. 2019). [Color figure can be viewed at wileyonlinelibrary.com]

experiential background, and insight into themselves as well as the topic of research. An enhanced level of theoretical sensitivity is developed as the research process progresses. Sensitivity develops iteratively through performing initial coding, constant comparison, literature review, and reflexivity tasks such as memoing (Birks and Mills 2015). Hoare et al. (2012) aptly captured this essence of enhancing theoretical sensitivity through the movement of the research back-and-forth between data analysis, data generation, and reflection as "dancing with the data".

2.6.2 | Practical Example

During interviews, the researcher drew on their years of clinical encounters with patients seeking comments that were pertinent to answering the RQ and generation of theory. The researcher also listened for clues to what seemed important to the participants, such as use of powerful adverbs or heightened tone. The process of active writing during memoing encouraged deeper analysis of data to make sense of it, consider codes, and further enhance theoretical sensitivity. Maintaining theoretical sensitivity while not 'forcing' the data is acknowledged as a challenging problem during GT research (Hoare et al. 2012). Charmaz (2013, 2014) named this a "grapple", as the researcher identifies and interprets data of interest while they concurrently challenge their subconscious bias.

Memo writing proved a profitable exercise in reflexivity to demonstrate transparency and avoid forcing data. Occasionally, however, this stifled the cognitive process when overly ruminating the interrelation of emerging concepts. To overcome this the researcher constructed diagrammatic representations in the form of mind-maps of emerging codes, concepts, and categories, eventually linking the theoretical relationships connecting them.

Memo - "Realisation of vulnerabilities" 27 Nov 2021.

> "As I analyse more am I projecting the paramedic's interpretation or viewing this from the patient's perspective? i.e., is the patient experiencing anxiety? do they feel reassured?" or "Are they losing confidence in the ability to self-care - handing/trusting this 'care' to

others? Reassurance of the paramedic's interaction certainly occurs, but again looking at the patient perspective - does the reassurance allow them to 'regain confidence' and to 'take back control'?"

2.6.3 | Theoretical Sampling

Theoretical sampling is an active process of following new lines of enquiry about concepts of interest to the RQ and the development of theory that appear *during* data generation and analysis (Birks and Mills 2015; Charmaz 2014; Mills and Birks 2020). Theoretical sampling is closely related to theoretical sensitivity. If the researcher observes that data suggests that other sources may provide pertinent information, they can use alternate approaches or avenues to generate further data. Doing so may require the actions of returning to existing data sources with a different question or generating data from completely new sources.

Theoretical sampling (Charmaz 2014) is a distinguishing characteristic of GT that further demonstrates the iterative and inductive nature of GT. It is important to differentiate this from traditionally understood concepts of sampling used during recruitment. Theoretical sampling continues through all stages of analysis as a process of gathering further pertinent data that allows the researcher to elaborate and refine emerging categories and their relationships.

2.6.4 | Practical Example

Where theoretical sensitivity identified topics of relevance, the semi-structured design permitted flexibility to use exploratory questioning to probe participants further about the meaning. Open-ended questions were used to dig deeper into the participants perspective, extract implicit meanings and explain what created their experiences that could assist with answering the RQ and theoretical development.

An example of this occurred during an interview with participant NSW5 about their use of the word 'reassurance':

> "...you mentioned the two paramedics, the female paramedics gave you reassurance. I wouldn't mind asking you a little bit more about, could you tell me what they did or what they said that maybe gave you that reassurance?"

***Coding**: Initial, focused, and advanced*

Saldaña (2009, 3) describes coding *procedurally* as the process of assigning a "word or short phrase that symbolically assigns a summative, salient, essence-capturing, and/or evocative attribute for a portion of language-based or visual data". Charmaz (2014) describes coding *conceptually* as the "pivotal" link between collecting data and converting this into emerging theory in that codes define what the data is about. The influence of the researcher is clearly present during coding; they are interpreting data and 'constructing' the code rather than it being empirically observed data.

Charmaz provides some degree of flexibility to the number of phases used during coding and the mechanisms used to explore the codes; however, this requires at least the first two steps:

1. Initial (open) coding consists of fracturing data into smaller segments, this may be line-by-line, sentences, or segments of data. Doing so encourages familiarisation of data allowing exploration of its multiple theoretical meanings while also separating data from the preconceptions and biases of the researcher (Charmaz 2014; Saldaña. 2009).
2. Focused (intermediate) coding is where the researcher identifies codes of significance and begins to synthesise, analyse, and conceptualise these into *tentative* categories (Metelski et al. 2021). Focused coding raises the analysis to a more abstract level where the initial codes are compared for what they reveal and how they may be grouped or separated (Metelski et al. 2021). This stage provides freedom to explore emerging concepts with larger batches of data without taking a path of no return by committing to core categories (Charmaz 2014).
3. Advanced (theoretical) coding advances in prior phases to define abstract categories and identify the interconnected relationship between them to generate theory.

2.6.5 | Practical Example

To stimulate theoretical sensitivity and quarantine data from external influences a single researcher conducted data generation and analysis. Having a single researcher allowed for deeper immersion in data, maintained closeness to the data, and consistency of interpretation. Prompts, describing GT initial coding techniques suggested by Charmaz (2013), Glaser and Strauss (1967), Birks and Mills (2015), and Saldaña. (2009) were used to assist with the open coding process. Coding was performed with an open mind, initially inductive, then as coding progressed, a combination of abductive and deductive reasoning techniques that ensured codes were grounded in the data and allowed innovative concepts to be generated. To assist with ongoing comparison of data, memos were written throughout the analysis process to record the properties, dimensions, and meaning of codes.

2.6.6 | Initial (Open) Coding

The first 11 interviews were subject to initial coding using a 'line-by-line' method (Charmaz 2014; Saldaña. 2009). Line-by-line coding involves labelling each line of data from the transcripts rather than attempting to code whole sentences or incidents. The researcher followed Charmaz (2014) recommended to remain close to the data and look for feelings, meanings, actions and processes. Additionally, Charmaz's direction of embedding actions in codes by use of gerunds (verbs ending in 'ing' denoting action) was used. When

TABLE 1 | Examples of initial line-by-line coding across a range of participants.

Transcript data	Initial code
"I just have so much respect for them, they really are wonderful" (NSW2)	*Respecting paramedic profession*
"Well, they're just there for emergency" (NSW1) *"Oh, well, they - well, that's their job. Is to take me to hospital basically" (NSW6)*	*Existing beliefs*
"You are in shock because - I think it just sort of frightens you, you know; you do get shook up" (NSW1)	*Feeling scared or frightened*
"No, you don't know what's going to happen" (NSW1) *"I don't know what's going on, I'm going to call the ambulance" (NSW4)*	*Not knowing/uncertainty*
"Yeah, but we were trying to find an after-hours doctor that could come to your home but..." (NSW6)	*Attempting self-resolution*
"Even after hours doctors, it's not that easy to get in touch with somebody on a Sunday night" (NSW3)	*Perceiving barriers (accessing primary medical care)*
"I just wanted that extra reassurance that it was - everything was all right" (NSW2) *"I suppose one of the biggest things, I think, for most people, I can't speak for other people, of course, but for me, particularly, would be that reassurance" (NSW7)*	*Needing reassurance*
"It's like with your consultation really at the doctors; it is thorough, yeah" (NSW1)	*Thorough assessment*
"They respected my decision so that was good" (NSW6)	*Respected as an individual*
"I just thought I should've been taken a little bit more seriously [laughs]" (NSW8)	*Not feeling validated*
"So they sort of stood around for a while and packed up quite slowly and I thought, they're keeping an eye on me" (NSW3) *"and they were really caring as well" (NSW5)*	*Feeling cared for*
"So it was just a matter of being careful for a couple of days" (NSW10) *"I think it just made me know that I had a very bad cold and I looked after myself very well for a week" (NSW3)* *"I rested in bed for a couple or more hours and coped with the situation" (NSW2)*	*Coping*

relevant, rather than an interpretive coding, 'in vivo' codes were used to label codes with the exact words or phrase of the participant. Examples of how lines of data were coded is provided in Table 1.

2.6.7 | Focused Coding

Codes of significance identified during initial coding were synthesised, analysed, and conceptualised into tentative categories based on their theoretical or conceptual similarity (Charmaz 2014). Categories began to form during the coding of the first to the 11th interview. Initial coding then ceased, and focused coding methods were used from interview 12 onwards. Focused coding provided the ability to compare tentative categories with larger sections of transcripts to test if they explained what was occurring without prematurely designating them as core categories (Charmaz 2014). Examples of how the tentative category coded as "Gaining reassurance" was generated from the initial codes can be seen in Figure 3.

During focused coding, the process of theoretical sampling, category formation, constant comparison, memo writing, and diagrammatic conceptualisation occurred at a higher conceptual level than during previous coding. Theoretical sampling became focused on expanding the properties and dimensions of these categories using constant comparison of new data with existing categories while also exploring the relationships that connected them. This allowed the researcher to move efficiently through large data sets and compare new data with previous data.

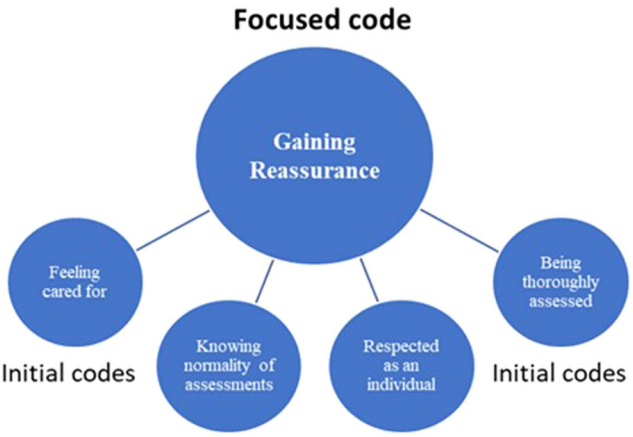

FIGURE 3 | Diagrammatic representation of focused coding. [Color figure can be viewed at wileyonlinelibrary.com]

2.6.8 | Concurrent Data Generation and Analysis

A fundamental characteristic of GT is that the generation (collection) of data and the analysis of that data occur *concurrently*. Concurrent generation and analysis allows for concepts of interest that appear *during* analysis to be explored in greater

depth while data generation (collection) is still occurring. This encourages the researcher to follow what the data is telling them, rather than confirm preconceptions.

Initial data collection occurs from a source that the researcher considers to be rich in data about the topic being investigated. Data is analysed and coded before the researcher collects further data. Subsequent data generation may occur by re-entering the field, identifying new sources of data, and/or re-examining existing data from a different perspective.

The concurrent process collates the application of theoretical sensitivity, theoretical sampling, and constant comparison *as* data is being generated. This continues until the researcher is confident that (a) core category(s) have been identified, and the data is fully explained by the dimension and properties, a form of theoretical saturation.

2.6.9 | Practical Example

Recruitment of participants was staggered to allow for concurrent interviews and analysis to occur while also ensuring the subsequent participants' experiences were still recent. This tenet of GT is closely related to constant comparison. As the process of coding progressed, constant comparison was performed by comparing newly coded data with the existing codes generated from previous interviews to consider similarities and differences between the data.

2.6.10 | Constant Comparison

'Constant comparison' is an analytic technique of comparing new data as it is generated with existing data, with incidents, with existing codes and categories (Birks and Mills 2015). To support a theory that is close to the data and credible, this constant comparison of emerging codes and categories must occur (Kenny and Fourie 2015). Charmaz (2014) encourages looking at data from different perspectives, seeking gaps in the data, and use of inductive and abductive reasoning. This process should be continually present and occur throughout all levels of coding and theory generation, constantly questioning the meaning of the data.

2.6.11 | Practical Example

During line-by-line coding, focused coding, and category formation, constant comparison was performed by comparing new data with existing codes, tentative categories, and incidents from previous interviews to identify patterns, similarities and/or differences. This was a laborious task aided by manually using NVIVO qualitative data analysis software to visualise multiple existing codes and categories. During this process, gaps in the explanation of processes were explored, new codes were developed, existing codes refined, and the dimensions and properties of tentative categories were established.

An example of how constant comparison aided refinement and higher abstraction during focused coding is provided in Table 2 below.

2.7 | Memoing

Memoing is a form of recording comparable to maintaining a diary; it encourages self-reflection on the researcher's internal thoughts throughout the research from conception to completion. Memos may contain comments on decisions, challenging concepts, description of code, and category construction. Memoing is often amplified during the analytical process where it is an essential element of GT (Birks and Mills 2015). The very process of memo writing stimulates the analytical processes and enhances theoretical sensitivity. By questioning the data and one's own decisions, both inductive and abductive analyses occur. This assists the generation of categories and theory that remain close to the data. Mills and Birks describe memo writing as "*the oil that lubricates the cogs of the grounded theory process*" (Birks and Mills 2015).

Memoing provides a reflexive activity that is necessary to assist the researcher in avoiding biasing the research with pre-conceived concepts. Furthermore, memoing maps the researchers' journey they have taken during conception of the research, its design, data generation, and analysis. A record of memos also supplements a "chain of evidence" (Urquhart 2022) that demonstrates transparency to decision-making and, therefore, the trustworthiness and credibility of the research.

2.7.1 | Practical Example

The creation of memos commenced during the conception of the research. This was in the form of notes about meetings with researchers, colleagues, and health-service leaders held as I narrowed the focus of the RQ. This documentation was useful to assist with decision making and justification of actions later during the research process.

Immediately following each interview, an "in-field" memo was written to capture the researcher's immediate impression of what was occurring; this represented the immediate thoughts and salient points that came from the participants perspectives. These memos also served as a mechanism for the researcher to self-analyse their interview technique, encouraging improvement in approach to future data generation.

Memo writing increased in frequency during the coding, conceptualising of categories, and theorising stages. Memos were maintained for codes and concepts that appeared to have significance, the emerging categories, and even included a chronological evaluation of the researcher's evolution of their theoretical sensitivity as the research progressed. As the emerging categories developed richness, abstract conceptualisation, and saturation, the writing of memos assisted this process.

Memo - 8 Feb 2022

> "The usefulness of writing memos throughout this process was continually evident. The act of writing enhanced my cognitive functioning which helped visualise relationships. Further, an 'in-action' process of questioning these relationships and the data...".

TABLE 2 | Constant comparison during focused coding.

Data	Initial code	Focussed codes	Conceptual category
You are in shock because - I think it just sort of frightens you, you know; you do get shook up (NSW1)	Feeling scared or frightened	Suffering anxiety? Realising vulnerabilities?	**"Losing independence"**
I was quite distressed about what was happening, or what had happened (NSW7)			
No, you don't know what's going to happen (NSW1)	Not knowing uncertainty (severity or urgency)		
after you have these turns that you're not really sure about anything that's happening (NSW2)			
I've never had that before. So, yes, aches and pains and that was really unusual for me (NSW3)			
Things like that, you know, I don't know. I'm not medically trained *I don't know what's going on, I'm going to call the ambulance. That was my thought process (NSW4)*			
I cut my thumb open quite deep in the kitchen, and I couldn't tell, I knew it was deep, but I didn't know how deep (NSW5)			
Any medical stuff from experience is it's the fear of not knowing			
I have been living alone now for four or five years. and I'm coping really well and I'm not whinging, but sometimes these things are a little bit over-awing and you think the worst. (NSWA3)	Being alone		
elderly people and COVID don't seem to be a great combination. (NSW3)	Acknowledging individual vulnerabilities		
I don't know, you - it's an awful thing to fall at our age. It's not nice (NSW1)			

Complementing the written memos, ever-evolving conceptual diagrams were constructed. These images took the form of handwritten sketches, whiteboard notes and the use of mind-mapping software 'X-Mind'.

General coding memo - 25 November 2021 –

> "Drawing diagrammatic representation of categories and relationships made me think about everything from the patient perspective – 'Reassurance' seems to be the commonality, however what does this meant to the patient? I consider through the process a loss of confidence from the incident - feeling isolated - requesting help. This also aligns with trusting others - The reassurance allows the confidence to return which aligns with taking back control?...I have an interview today where I will attempt to find more about this question around the loss of confidence, trusting others, regaining control..."

Through the combined iterative processes of simultaneous data collection and analysis, theoretical sampling, constant comparison, focused coding, and memoing, three conceptual categories were generated. A diagrammatic representation of how the focused code of "Gaining reassurance" was further refined into the conceptual category of "Restoring Self-confidence" using GT methods (Figure 4.).

2.8 | Advanced Coding and Theory Generation

A defining characteristic of GT is the construction of a new theory that provides an abstract explanation of social processes occurring in a particular context (Birks and Mills 2015; Chun Tie et al. 2019; Metelski et al. 2021). Specific definitions of theory may be dependent upon philosophical position and are widely contested. Commonly, theory is accepted as providing an abstract explanation of how categories or concepts are interrelated (Brydges and Batt 2023). Charmaz (2014) argues that GTc emphasises the resulting theory as an interpretation,

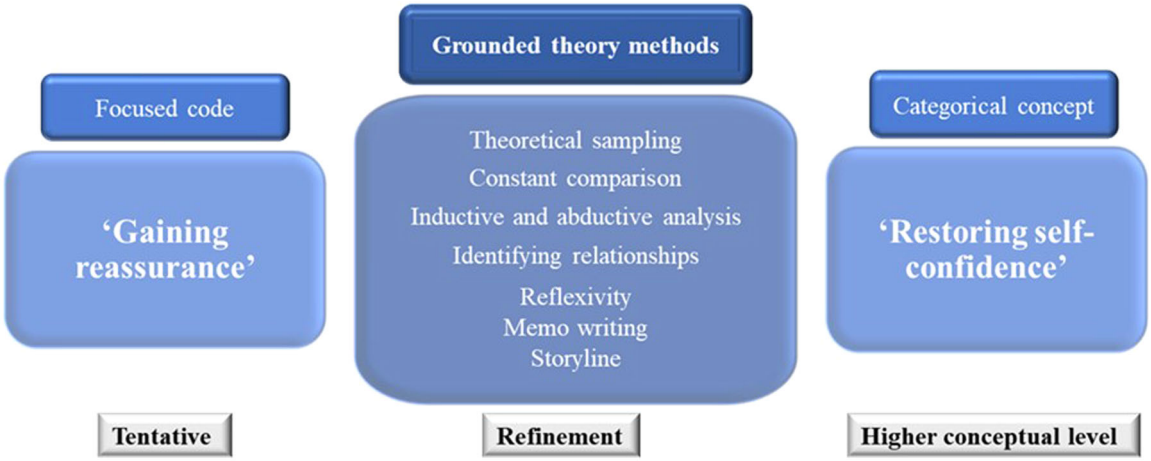

FIGURE 4 | Diagrammatic representation of category refinement. [Color figure can be viewed at wileyonlinelibrary.com]

dependent on the researcher's view, that theories are contextual not only on the circumstances being investigated but also on the researcher's experiential background.

Charmaz (2014) discusses how theory is constructed organically through the researcher's interactions with data rather than offering a procedural step-by-step method. She suggests that through the art of analysing actions, theorising naturally follows rather than being constrained by a pre-determined framework such as 'axial coding' (Corbin, 1990). The freedom of Charmaz's process is clear in her statement: "*constructing theory is not a mechanical process. Theoretical playfulness enters in. Whimsy and wonder can lead you to see the novel in the mundane*" (Charmaz 2014).

2.8.1 | Practical Example

Analytic memos, conceptual categories, and social processes were all analysed at a higher conceptual level for evidence of their interconnected relationships. To further refine this theoretical integration and present the generated theory in an understandable format, a strategy known as storyline was then applied (Birks and Mills 2019; Charmaz 2014; Saldaña. 2009). Storyline, a form of narrative explanation, builds a narrative that tells the story of how categories and their relationships are brought into a coherent, complete theoretical explanation (Birks et al. 2009). The storyline provided a mechanism to present the final grounded theory with a sufficiently 'contextually-rich explanation of phenomena' (Cornelissen 2017).

The final storyline version of the theory "Restoring self-efficacy" can be seen in Table 3.

2.9 | Trustworthiness

Qualitative research depends upon the researcher's ability to interpret, analyse, and accurately present the participants' perspectives. Trustworthiness is how well the quality and rigour of qualitative research is demonstrated, which establishes validity and credibility of the research (Stahl and King 2020).

2.9.1 | Practical Example

Self-evaluation of this study occurred by applying Charmaz. (2014) criteria for credibility, originality, resonance and usefulness (Charmaz and Thornberg 2021).

2.9.1.1 | Credibility. Explicit descriptions of how methodological congruence, the researcher's coding interpretations, and processes of reflexivity led to the generation of the substantive theory were provided. The researcher's interpretation of Charmaz's constructivist methods and the procedural precision was clearly articulated throughout the thesis (Birks 2014; King 2024). An audit trail of memos and supportive material, explicitly described in the published article and thesis formed a chain of evidence (Urquhart. 2013, 149). This included examples in the form of the coding process, quotes from participants, and memos describing how interpretation and analysis occurred. Approaches to reflexivity, the influence of the researcher, their position, and background were clearly described. During analysis, the researcher frequently discussed their coding strategy and decisions with a supervisor (BL) experienced in GT. A third supervisor (TD) independently coded two of the initial transcripts to provide the researcher an alternative interpretation of the data for comparison with their own. Member checking of transcripts did not occur. Participants who expressed interest in the findings were provided the final theory for review however, none offered further comment.

2.9.1.2 | Originality. The findings are believed to be the first rigorous research providing insight of the patients' perspectives of non-conveyance in an Australian setting and generating a theoretical explanation of the social process involved. Observing non-conveyance through the lived experience of patients allowed a fresh perspective of this poorly understood yet significant outcome of healthcare and challenges existing organisational outcome-focused measures (Greenhalgh et al. 2019).

2.9.1.3 | Resonance. The research flipped the lens of existing knowledge to add the perspective of the consumer with the intent to inform paramedic practice, education, and models of ambulance service healthcare delivery. This study explored deeper into the meaning and construction of the concept

TABLE 3 | Explanation of the grounded theory "Restoring Self-Efficacy" using storyline.

Losing independence People suffering sudden or unscheduled adverse health events in the community assess their current vulnerabilities when considering a resolution. They recollect memories of recent or previous health experiences while assessing their own unique personal set of circumstances to help them make sense of what is happening. Where there remains uncertainty about the urgency or severity, or where they are unable to resolve themselves or gain support from friends or family, assistance is sought from a trusted external health provider such as community-based healthcare. If actual or perceived barriers exist or the situation is considered an emergency, ambulance services are requested. Restoring self-confidence Holding existing constructs that ambulance services are there just for emergencies, some deliberate about needing them. However, where this vulnerability is significant, or they feel no other option exists the ambulance is always 'there'. This service provides some element of reassurance. External factors, such as those created by living in a pandemic environment, may escalate the sense of anxiety or limit access to other health services. The decision being made to call the ambulance itself generates some relief, knowing that someone is coming. Comfort is gained in the speed of arrival; others justify to themselves that the system will have triaged them accordingly and they accept other people may need care first. When not knowing how long they take may cause discomfort for some. Further relief is gained simply on arrival of the ambulance crew as patients are no longer alone from a metaphorical perspective; highly respected, skilled, professionals with the equipment and knowledge to determine whether they actually have a significant illness have arrived. Although highly respected, there is some element of 'weighing-up' the paramedics on arrival. Literally on first appearance, judgements are being made of the clinical competence or ability to assist with the individual with their problem. Two closely interconnected attributes need to be demonstrated for the individual to develop trust in the paramedics providing care—both professional and compassionate care. Professional care is experienced when a person feels thoroughly assessed, technical equipment is used, and is provided with factual information. Compassionate care is experienced when the paramedic is felt to be considering the individual's circumstances, demonstrating they understand the persons vulnerabilities through behaviour and/or communication, communicating with empathy and treating the person as a unique individual. The paramedic–paramedic interaction is also measured, and value is placed on similar attributes of professionalism and friendliness, appreciating efficiency, dual roles, and the camaraderie displayed. The internal decision-making regarding to attend hospital with paramedics or not, may be influenced by previous experiences with hospital attendance or current perceptions about hospital workload. The concern with attending a hospital reflects individual vulnerabilities that led to ambulance services being called in the first place. Concerns about being alone, losing one's individuality, and not being listened to, were often quoted. Other aspects were associated with workload, such as not being caught up in delays or burdening an already struggling system; the pandemic environment further exacerbated those concepts. Based on the personal interpretation of their paramedic–patient experience, the person reflects on their current situation; during the encounter there is a transition from a state of uncertainty or need to attend hospital to a state where the person has restored confidence in themselves to cope in the community. Self-management Individuals still experiencing symptoms once paramedics have left, and have been reassured are in a period of coping. The reassurance has restored their confidence that they can cope, with some suffering of symptoms, in the knowledge these are not signs of an emergency. Patients may cease seeking of healthcare assistance altogether or are confident to wait and follow up with community-based medical care. Other factors than the paramedic–patient interaction may assist in this determination of the person's restored confidence to remain in the community. Some aspects were that by providing the individual a sense of support in their home environment knowing that paramedics are ever-present in the community, and can return at any time. The concerning symptoms and sense of vulnerability decreases. The uncertainty of the immediate problem has been resolved giving confidence that these health concerns are suitable to follow-up in a nonemergency setting such as GP.

(Continues)

'reassurance', often quoted in previous studies into patients' experience of lower acuity presentations to emergency healthcare (Coster et al. 2017; Gustafsson et al. 2018; Togher et al. 2015). This study is significant to paramedicine professional identity and shifting focus of healthcare to be more patient-centric by understanding patient experience.

2.9.1.4 | Usefulness. The theory provides a conceptual framework that informs paramedic education, practice, and models of healthcare that support patients when they do not require conveyance to ED (Weber et al. 2021). The theoretical explanation can be applied by paramedics when assisting patients navigate a process that results in them regaining their self-efficacy. The generation of theory further provides evidence to support professional identity establishing paramedicine as its own entity among allied healthcare professionals (Reed et al. 2019; Tavares et al. 2016; Townsend 2017). The resulting publication was used by the peak professional body representing Australian paramedics, the Australasian College of Paramedicine (ACP), during advocacy with the federal government to push for greater integration of paramedics within health systems.

3 | Conclusion

This paper provides a practical example of how Charmaz's 'constructivist' grounded theory was applied during paramedic-

led research to guide meaningful, rigorous insight into patient experience. The fundamental tenets of constructivist grounded theory methods are described using a practical example that provides clarity on how these can be applied. This paper informs novice and experienced researchers how to maintain trustworthiness and credibility when applying this constructivist grounded theory methodology.

Author Contributions

This methodological article uses a practical example of previously published research and thesis that contributed to the award of PhD for Dr Robbie King. All other authors were involved in the direct supervision and editing throughput that work. This article was the concept of all authors, the lead author Dr Robbie King generated the manuscript with significant input and editing from all authors.

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Ethics Statement

For the original research, ethics approval was granted by the South-Eastern Sydney Local Health District (SESLHD) Human Research Ethics Committee (2019/ETH00116). Further approval was acquired from the site of the project, NSW Ambulance (2019/STE00203) and the University of the Sunshine Coast Office of Research (project: S201456).

All participants in the original research provided written informed consent to Dr Robbie King to participate in the research and allow dissemination of the findings of the research.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

Ethical constraints of this study means that data collected for the original research is not available.

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