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Creating theory: Encouragement for using creativity and deduction in qualitative nursing research

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Abstract

Texts about theory in nursing often refer to theory construction by using inductive methods in a rigid way. In this paper, it is instead argued that theories are created, which is in line with most philosophers of science. Theory creation is regarded as a creative process that does not follow a specific method or logic. As in any creative endeavour, the inspiration for theory creation can come from many sources, including previous research and existing theory. The main idea put forward is that deductive qualitative research approaches should play a key role in theory creation. Furthermore, there is a need to differentiate between theory creation and theory justification. A model that emphasizes the creative aspects of theory creation and theory justification using qualitative approaches is presented. The model suggests that knowledge development is a deductive trial-and-error process where theory creation is followed by testing. Scientific theory creation and justification are presented as an iterative process that is deductive in that a testable hypothesis is derived from the theory. If the hypothesis is falsified, then the theory needs modification or might be altogether wrong. Several factors can block the creative process, both in theory development and in finding ways to test a theory in the justification phase. Some of these blockers are the idea of 'building blocks' and the inductive view of science often brought forward in nursing. Other blockers include striving for consensus and adherence to existing nursing philosophies and existing theories. Research and knowledge development are creative processes, and following predefined methods is not enough to ensure scientific rigour in qualitative nursing research.

KEYWORDS

methodology, nursing research, philosophy of science, qualitative research

1 | INTRODUCTION

The primary purpose of this paper is to argue that creativity is vital in all aspects of scientific endeavours and that the scientific process in several crucial steps is deductive. In particular, we aim to describe and demonstrate that qualitative nursing research can use creativity and deduction, where creativity is primarily used to formulate theory and deduction in the testing and justification of theory. We think that creativity is the key to knowledge development:

> Science would not exist if it were not for the creative ideas of its participants. The psychology of science has empirically addressed and answered the questions of who becomes a creative scientist. The answers provide particular profiles of neural complexity, development, personality, and cognition. (Feist, 2011, p. 296)

Emphasising creativity is not a new thought in nursing science (e.g., Reed, 2018) and certainly not in science overall (e.g., Popper, 2002b). We will present one view of the scientific process different from how many textbooks, for example, Meleis (2007), Polit and Beck (2017), as well as Richards and Morse (2007), describe qualitative research. The hope is that this approach can offer a way forward for researchers who find the typical methods as insufficient for their work. We will criticize some lines of thought found in descriptions of methods within literature describing qualitative research as this is our field of expertise. Nonetheless, we believe that most of the arguments apply to any application of scientific methods, qualitative, mixed-method, and quantitative.

To clarify, it is the formulation of theoretical ideas that requires creativity. The deduction from the theory, idea, or bold conjecture, as Popper (2002b) calls it, to a testable hypothesis is not necessarily creative. However, creativity might be needed even when working in a strict deductive system (Hamad, 2007). Ingman (2022) points out that many seminal works of science, for example, by Einstein, Newton and Heisenberg, where formulated in theories, and even equations, for which the researchers used their creativity and artistic sensibility. The argument is that parts of the scientific process, specifically the creation of novel theory, do not follow any logic and that it is instead creative.

There are also concerns that much qualitative research produces little knowledge and seldom does more than cataloguing data (Eakin & Gladstone, 2020). The area of qualitative research is vast and diversified; however, a large part of so-called qualitative research is focused on creating categories and themes, as pointed out by Eakin and Gladstone (2020), Sandelowski and Barroso (2007), and Thorne (2020a). In these forms of qualitative research, the focus is on methods rather than creative thinking. It is these forms of qualitative research that, arguable, need reformation and where our suggestion might be most applicable.

2 | BACKGROUND

Many descriptions of nursing science downplay the importance of creativity; for example, Polit and Beck (2017) mentioned it as a skill that researchers need in what they call 'The conceptual phase' (p. 96) of quantitative research, along with deductive reasoning. When Polit and Beck (2017) discuss qualitative research neither creativity nor deductive reasoning is mentioned, rather they refer to an 'emergent design' (p. 102). Walker and Avant (2005) talk about a 'theory construction' and try to define a way to construct theory without creative leaps. Dahlberg et al. (2008), as well as Priest (2004), are among those who state that results 'emerge' by being open one can find a truth that is 'out there' and find the 'essence' of a phenomenon. The problem with such conceptualisation of science, particularly qualitative methods, is that it suggests that theories are found or constructed, not created. The view that the essence or truth is out there to be found is also remarkably like a view of science that has been called a 'received view' and that was typical of the Vienna group's positivist and earlier positivistic views of science (Putnam, 1974). Another often repeated notion, or myth, is that theories are built on concepts (Polit & Beck, 2017; Walker & Avant, 2005). The focus on concepts is usually aligned to theory construction ideas that use concepts as building blocks (e.g., Walker & Avant, 2005). Bergdahl and Berterö (2016) have discussed this myth in depth and suggest that the building block conception is based on misunderstandings of a now outdated philosophy of science. The whole idea of concept analysis has also been discussed in depth by Paley (2021). The common thread in many descriptions of qualitative methods is that small 'building blocks' are somehow discovered, and then one can 'construct' a theory by putting these blocks together. The building block notion contrasts with how philosophers of science such as Kuhn (2012) describe critical scientific leaps or revolutions where new ideas and theories replace the old paradigm. However, other authors emphasize creativity; an example in nursing is Reed (2018), and in qualitative methods outside nursing Pernecky (2016) emphasizes creativity and that all philosophical concepts are invented. In nursing, Reed (2018) has emphasized the importance of theory in nursing knowledge development and the importance of the practice aspect and creativity.

It is important not to confuse theory creation with the justification and testing of theory (Popper, 2002a). The creation of theory is a genuinely creative endeavour that follows no method, or as Reed puts it, '…science is a messy process' (Reed, 2018, p. 30). The justification phase is where deductive logic can be used to formulate a testable hypothesis; however, creativity is often needed in devising a method the test a novel theory. The notion that creativity is vital in science is not new (Popper, 2002a); this was more recently discussed in the social sciences by Jaccard and Jacoby (2010). We, therefore, question the place of traditional methods in qualitative research and instead encourage a focus on creativity in the scientific process. Polit and Beck (2017) state that qualitative research can generate theory and that quantitative research can then test it, implying that qualitative research cannot test a theory. We question this notion,

and we think that qualitative research can, and should, be used to test a hypothesis. As Cartwright and Hardie (2012) point out, many causal principles that ground policy predictions can be purely qualitative expressed as models rather than equations. Cartwright (2019) describes the scientific process as 'artful modelling'; expressing ideas as models make the ideas easier to understand and communicate. The building block, induction, notion of scientific progress is not an accurate description of the process (cf. Kuhn, 2012) nor a desirable ideal for conducting science (Feyerabend, 2010; Popper, 2002b; Quine, 1998). Yet this notion is often repeated in textbooks used in nursing (e.g., Burns, 2001; Harvey, 2017; Polit & Beck, 2017; Walker & Avant, 2005). In line with Meleis (2007), we argue that many conceptual barriers prevent nurses from developing scientific theory. The problem we see with these conceptualisations of the scientific process is that discovery of imagined essences or theory constructed of conceptual blocks is downplaying the importance of creativity in the scientific endeavour, the creation of theory, and the possibility of testing hypotheses that constitutes the justification of theory, with qualitative methods.

Creativity is the ability to create something novel and useful (Weisberg, 2020), not necessarily something completely new. As Weisberg (2020) demonstrates, even creative work such as Picassos Guernica was done by re-using elements that are well known to the artist and used earlier by the artist. However, they are used in a novel way in the new work. Even in purely deductive areas, such as mathematics, creativity is needed to find novel solutions to mathematical problems (Feist, 2011; Hamad, 2007).

In logic, the term deduction is used with the meaning that one produces a rigorous proof, or derivation, from one or more statements (the premise) to one statement called the conclusion (Britannica, 2022). Of course, the pure application of deductive logic, or indeed any logic, cannot produce a novel result. However, in this paper, we use 'deductive' in the context of the philosophy of science, where the general meaning is 'top to bottom', starting with theory and using the scientific methods to test the theory. In this context, the logical deduction might be used to derive a testable hypothesis from the more general theory. As Popper (2002a) states, 'The rules of logic of science differ from the rules of pure logic, there are other conventions in science that in pure logic' (p 53). That words have different meaning in different context, or language games, is also pointed out by Wittgenstein (1963) and in nursing the importance of that insight is elaborated by Paley (2021).

3 | A VIEW OF THE CREATIVE SCIENTIFIC PROCESS

Overall, one can conceptualize scientific progress in several cycles or loops. One can see two sides of the scientific process: one creative side of having ideas and formulating them and one more methodical or logical side of testing and evaluating ideas.

Figure 1 is a model of the two sides of the scientific process of theory creation and justification of theory by testing it. The first phase is the creative formulation of a novel theory. The second phase is deductively formulating a testable hypothesis and then testing that hypothesis. It shows that any inspiration or source can inspire a creative leap or an attempt to formulate an idea to solve a problem, which leads to a tentative theory or model. The theory is then subjected to different types of tests, and typically, these tests will inspire improvement or alter the first tentative theory or idea. After

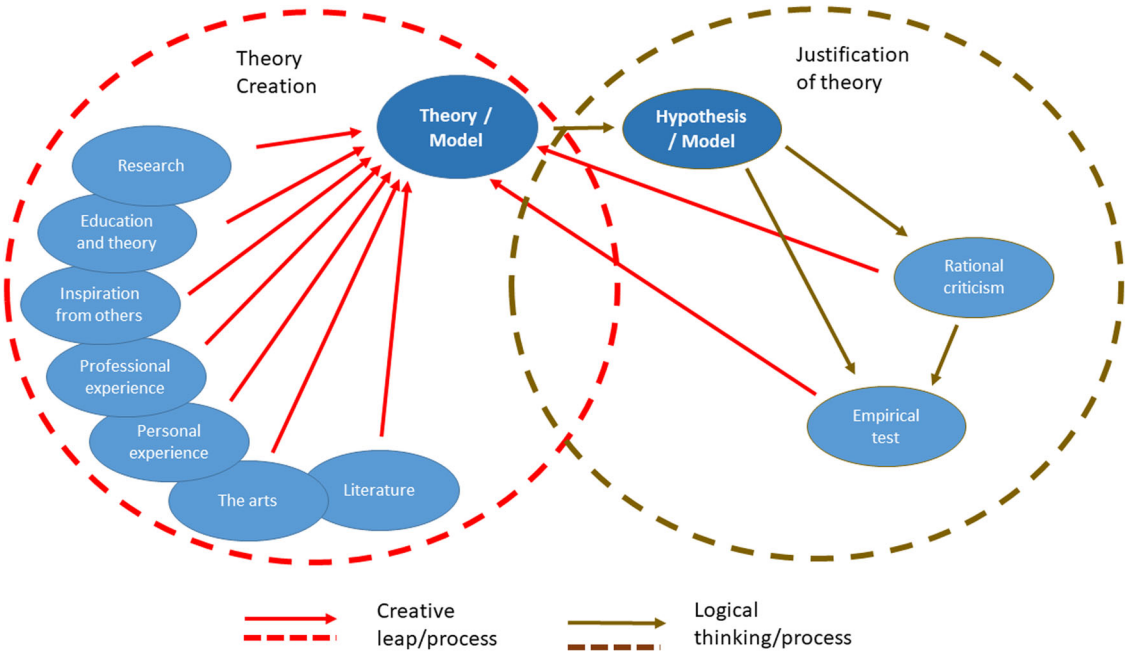

FIGURE 1 A model of the theory creation process.

that, the theory starts to take form and again is subjected to a new test. Deduction, in the logical sense, is only used to derive a hypothesis from a theory. The term Deduction is used in the philosophy of science to describe the process of starting with a conjecture or theory and then subjecting it to tests in a deductive process (Popper, 2002a). It is essential to recognize that one form of test of a theoretical idea is to investigate if it can serve as a basis for some empirical test. One must keep in mind that theory is a complex concept and all things called theory cannot be tested by scientific methods. For example, many so-called grand theories or theoretical frameworks may have so many untestable assumptions that they cannot be tested empirically, as Paley (2006) points out. However, such untestable theories or philosophies can inspire new creative ideas that can be formulated as testable theories. One important step would be to clarify which ideas in nursing are meaningful to test and which are of an ideological, normative character, or ontological assumptions that empirical methods cannot test.

The basic cycle of the scientific process is the creation and testing of theory, which starts with an idea to solve a problem and can lead to a tested scientific theory or model, illustrated above in Figure 2. As Popper (2002b) famously put it, the method of science is the method of trial and error. According to Popper, it is in our effort to create theories we later test that we develop our knowledge. Knowledge is created by several iterations of the creative phase of theory formulation and the deductive and testing phase of theory justification. We see his view of science as highly relevant to nursing with its focus on theory creation and testing, a form of critical rationalism:

> Assume that we have deliberately made it our task to live in this unknown world of ours; to adjust ourselves to it as well as we can; to take advantage of the opportunities we can find in it; and to explain it, if possible (we need not assume that it is), and as far as possible, with the help of laws and explanatory theories. If we have made this our task, then there is no more rational procedure than the method of trial and error—of conjecture and refutation: of boldly proposing theories; of trying our best to show that these are erroneous; and of accepting them tentatively if our critical efforts are unsuccessful. (Popper, 2002b, p. 68).

Popper also states that '…the starting point of science…' (Popper, 2002b, p. 209) is problems, and problems make us think. This is especially valid in science around nursing practice; where there is a problem in practice, there is a need to find solutions that take nursing's core values into account (Thorne, 2020b). Another way to describe the scientific process is as a pendulum between artful modelling (Cartwright, 2019) and criticism. Cartwright (2019) is interesting in how she points to the need to be creative or artful, even when designing test of a model. Cartwright (2019) also points to the need to 'Bringing nuggets of different kinds of knowledge together into a coherent model to produce accurate prediction' (p. 4). Such a passage is attractive to a discipline such as nursing since we need knowledge from medicine, social science, and our practice in our modelling of nursing interventions. Another aspect of Cartwright's (2019) work is the idea of good theory as 'short and stocky' rather than abstract and lofty, an aspect highly relevant for a practice discipline such as nursing. Sadly, many working nurses with long experience do not think that their problems or ideas for solutions are of value to researchers or that they can become researchers themselves. This line of thinking may originate in a hierarchical view of theory, advocated by Fawcett and Gigliotti (2001), which implies that existing theories should frame all research. If one instead solves issues relevant to practice and creates theory, it may invert that thinking and produce valuable knowledge, as Thorne (2019, 2020a) has pointed out. Another vision is that trial and error thinking may encourage novice and senior researchers to use creativity in both theory and method development as well as application (Yous et al., 2020). The view of science we want to bring forward is inspired by Popper (2002a, 2002b). However, it is also influenced by postmodern conceptions of science, primarily by Feyerabend (2010). The ideal of creative modelling that we propose is inspired by current

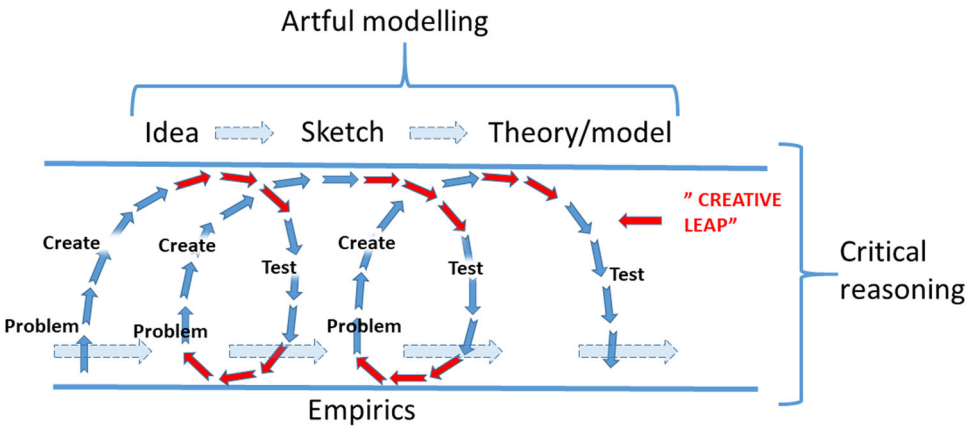

FIGURE 2 A theory development process, from idea to tested theory.

philosophy of science, for example, Cartwright (2019). The suggestions we put forward can be compatible with any form of philosophical or political view that a researcher may have, posthuman, feminist, ecological, queer, as long as the researcher remains open and embraces the risk that held views can be challenged or falsified by the scientific process. The only notion we are firmly against is using research to verify the validity of a beliefs system or finding. We advocate a view where scientific beliefs are on par with other beliefs in a web of beliefs along the lines of Quine's (2013) pragmatism. Belief systems, political, normative or conceptual models, may inspire a researcher, but the research should be tested by questioning those beliefs. The process may lead to a change in the whole web of beliefs, thereby achieving knowledge development.

Some may protest and state that humans and their reactions in complex health care situations are too diverse and individual to make a testable hypothesis. Nevertheless, is there any situation of human reaction where we cannot imagine possible, hypothetical scenarios? For example, how would it be to go through cancer treatment or grieve? Most nurses with experience probably have a working hypothesis of possible scenarios and solutions. As beginners in academia, we are often told to do 'inductive' qualitative research with no hypothesis, with the risk of inductively 'discovering' some abstract categories or themes, with no clear relations between them, which are hard to put into practical use (Sandelowski & Barroso, 2007; Thorne, 2020a). Such inductive and descriptive ways of doing science are inspired by constructivist social science that aims to describe and understand social phenomena experienced by the group studied. While descriptions are a legitimate way of doing science and describing aspects of experience, it does not develop nursing theory and interventions. A suggestion is to start with what we can imagine, often based on experience from practice, then look at existing theory and research to deepen the hypothetical scenario. It is also crucial to read up on current knowledge, both within the discipline and from other fields, to ensure that we do not start to work on something already well known and established.

The next phase is testing our hypothesis to see what is falsified and corroborated. In the process, we will often find some new aspects of the phenomenon studied; if the theory is falsified, we know that this idea did not hold up as a solution to the problem, but a modified theory or model can be based on the new findings. Of course, theory can also be created via a synthesis of existing research. Herber et al. (2019), first performed a meta-summary and created a theory by using the meta-summary as inspiration. By doing that, they were also able to conduct a first test of the theory against the existing research. As Putnam (1979) points out, there is no strict logic to testing theory, no simple algorithmic method to follow. What is required is a combination of critical thinking and creativity when formulating theory and finding ways of testing it. This vision for qualitative research is based on realism and the insight that the causality is real, and all theory is constructed (Cartwright, 1999; Maxwell, 2012), or as we would prefer to state it, all theory is created.

3.1 | Some views that can block the creative process

In literature around creativity, some blockers are mentioned (Davis, 2011), which interestingly coincides with how research is sometimes portrayed. Some of these blockers are to assume that one and only one answer is correct. Another blocker is to say to someone, 'That's not logical' as Davis (2011) mentions in connection to creativity, logic is best suited to the evaluative phase of science. Furthermore, 'Follow the rules' and 'Avoid ambiguity' are often mentioned regarding the scientific process. Such advice seriously impairs students' and researchers' possibilities to be creative in modelling, theorising, and analysing data. Being afraid to fail is also a critical blocker since innovation requires making mistakes and even failing (Davis, 2011). Another blocker we would like to mention is the notion that 'Play is frivolous' while countless discoveries and innovations are born due to playing with ideas (Davis, 2011).

One could also view the dogma always working within a 'conceptual framework' or existing nursing theory as a creativity blocker. Taking the view that grand theories or conceptual frameworks should govern nursing science and research as done by, for example, Fawcett and Gigliotti (2001), Masters (2014), and Meleis (2007) is, in our view, a fundamental mistake. Forcing researchers to follow ideas that, in many cases, are not even scientific can become a serious 'blocker' for creativity (Adams, 2001; Davis, 2011). Of course, our beliefs affect how we do science, but that should encourage us to test and question our beliefs, not letting them govern our scientific thinking. Dahlberg et al. (2008), Fawcett and Gigliotti (2001), and Hoeck and Delmar (2018) are among those authors that have the notion that suggests that all research needs to be aligned with some philosophical system. This uncritical stance can become a serious problem if the philosophical theory becomes a dogmatic system that is not open to criticism. Accepting that researcher should not question some theoretical assumption is against the crucial scientific principle of being critical and realising that all statements, beliefs, and assumptions are open to revision (Feyerabend, 2010; Popper, 2002b; Quine, 1953; Yous et al., 2020).

There is also reason to question the effort for consensus sometimes mentioned as a scientific ideal by, among others, Bishop (1998) and Morse (2017b); which could be a discussion blocker. As Feyerabend (1999) says, we should sometimes be anarchistic and suggest different ways of thinking to provoke a creative debate; striving for consensus is, in many regards, a creativity blocker. Instead, we should encourage creative scholarly debate, questioning, discussing, and critically testing existing ideas, not letting existing theory limit further research by striving for consensus. Philosophers and scientists should aim for evidence that encourages further inquiry and discussion rather than consensus and evidence that stops it (Hintikka, 1970). Finding empirical evidence that falsifies a theory is a huge leap forward. We then know what does not work and develop and evolve theories further.

3.1.1 | Induction, abduction, and creative use of deduction

Some ideas in this paper are in sharp contrast with the so-called inductive view, which is described as fetching data, categorising, creating concepts, and then generating theory (e.g., Morse 2017a; Richards & Morse 2007; Walker & Avant 2005). In our view, that is not a description of a proper scientific process, and it is not a way to produce evidence for practice. We neither advocate adhering to some theoretical framework, which is also commonly advocated in nursing science. Our view puts more emphasis on nursing researchers and nurses taking their first steps as Ph.D. students. They should trust in their creative ability to solve problems using experience from practice, through which they can come up with exciting ideas to be researched. We also believe that these solutions should be regarded as theories and evidence when scientifically tested. In other words, scientific knowledge development is deductive thrust, not inductive, as described in Figure 2 above. Pure logic, inductive or deductive, can never produce a novel result. All scientific processes contain steps that are not dependent at all on logic.

According to Quine (1998), 'A theory is tested by deducing an observation categorical from it and testing the categorical. If it fails, so does the theory' (p. 44). However, he reminds us, 'A favourable test does not, of course, prove a theory; it does not even prove the observation categorical to be true' (p. 44). Quine also points out that what is tested is not just our theory but the whole belief system to which the theory belongs. In that regard, science is holistic. Quine also points to the fact that no method or mechanism can be found for hypothesising. 'Creating a good hypothesis is an imaginative art, not a science. It is the art of science' (Quine, 1998, p. 49). According to Quine (1998), normative epistemology is a practice that corrects and refines '…our innate propensities to expectation by induction' (p. 50). In other words, the scientific method is there to correct our tendency to trust induction. There is clearly a wide gap between the philosophy of science of Quine (1998) and some views of science that are widely accepted in nursing. As Cartwright (2016) points out, 'It is as if we have forgotten the lessons about simple induction that have been rehearsed generation after generation for aeons' (p. 10).

Abduction is often referred to as the third type of logic that allows for creative input (Karlsen et al., 2021; Råholm, 2010). According to Douven (2017), Pierce's notion of abduction is a way of weeding out ideas and testing if a hypothesis is a possible solution with regard to current knowledge. The general outline of abduction is:

1. The surprising phenomenon P is observed
2. P would be explicable as a matter of course if H was true
3. Hence there is reason to think that H is true (Hanson, 1972, p. 86).

H in the above logic could be the new idea or hypothesis, and Hanson (1972) also points out that the new hypothesis needs to take known facts into consideration. In this way, using abductive thinking can be a way of determining the new idea. The overarching idea, that origins in Pierce's definition of abduction is that even creative thinking can be seen as same sort of logic (Peirce, 1931, CP 5.172). We want to question that notion, as do many philosophers of science, most notably Popper (2002a, 2002b). Our stand is that theory creation is a creative process that cannot be described in logical terms. Some would call the 'creative leap' an 'abductive' process, but since there is confusion around the concept of abduction (Douven, 2017), we prefer to call it a 'creative leap'. Creative ideas follow no logic and no pure application of inductive or deductive logic can produce a novel result. One should also bear in mind that deduction in the philosophy of science is the process of starting with theory and testing it. It is not an application of deduction in the strict logical sense (Popper, 2002a, 2002b). Along those lines, Reed (2018) likens abduction to Popper's concepts of 'conjecture' or Glasers 'conceptual leap'. Theory testing is a process that requires deductive logic in deriving a hypothesis, and just as Popper (2002a, 2002b) points out, pure induction plays no role in the scientific process. Karlsen et al. (2021) define abduction as a synthesis between induction and deduction. However, we prefer to see the scientific process as a pendulum swinging between creative ideas and empirical tests and a pendulum between artful modelling and criticism, test and refinement of the models (Cartwright 2019).

3.2 | Some thoughts on theory testing in practice

Critically tested theories constitute evidence of a higher degree and are therefore of more value and can be used in practice, as Cartwright and Hardie (2012) have pointed out. Still, a theory that was corroborated in one test could be falsified later. No theory is true forever; all knowledge is provisional (Popper, 2002b). The methods of science are all connected to the justification phase, according to Popper (2002b), who also stated that there is no generic method for facilitating the creative process of producing theoretical ideas. To clarify our discussion, the point of view brought forward here is that application of scientific methods belongs to the area of testing theory, not the initial creation of theory (see Figure 1). However, inventing novel methods to test theory is a creative endeavour. In this way, creativity is vital in all phases of the scientific process. According to Feyerabend (2010) and Putnam (1974), there is a need to be creative in finding ways to test a theory or hypothesis; one cannot depend on standardized methods. In nursing, Yous et al. (2020) have argued that 'feyrabendian philosophy' can offer nurse scientists the freedom to develop creative theory and apply novel methods, a view we fully agree with.

Our proposal is not that empirical methods should test all ideas and theories. First, our theories in nursing science should solve some problem, and here we mean 'problem' in a broad sense. For example, lack of knowledge is a problem. The first 'tests' are intellectual; is it possible to formulate the theory in words or a picture of some kind, an initial model. A reason to strive for a model rather than a theory is that a model, in general is simpler and easier

to express. An excellent way to express a model is to draw a picture or diagram. If it is impossible to express the ideas as a diagram, then it is probably hard to communicate them in any form. Searle (2015) states that 'Real events in the real world have to be representable diagrammatically' (p. 19). At this stage, presenting the initial model to a colleague or in a seminar can serve as a first critical friendly test. If your critical friend(s) understand what you are trying to convey, the test can be seen as successful. Quite often, you will find that you might need to rethink parts of the model to communicate it. The discussion will often result in new ideas and alterations to the model. You can even realize that the idea might not be worth working on further or that it is very similar to an already existing theory. If it is too immature, you might want to think again, formulate a new or altered idea, and go into the creative phase. Often there is an oscillation between the idea and formulation/critical thinking phase where it is hard to draw an exact line between the different modes of working.

When one is satisfied that the idea is possible to communicate, one draws more detailed hypothetical deductions from the theory. At this stage, one also conducts a literature search and review to investigate if someone else has already developed a theory of the same problem and whether the ideas are novel and of value in relation to previous research and theory. This phase aims to determine how one can test the idea/theory with some sort of empirical method, whether qualitative, quantitative, or mixed. If the idea is novel, we would suggest that qualitative methods are more relevant and might also suffice for testing the theory (Bergdahl et al., 2019). We believe that there is no need to separate qualitative and quantitative methods as different paradigms and certainly not as different types of knowledge. 'Qualitative' and 'quantitative' are best understood as names for different methodological tools suited for separate applications, but all means to build knowledge; however, one can also see qualitative research as an orientation (Pernecky 2016).

Furthermore, empirical testing is a way to achieve good evidence for practice through qualitative methods. We are advocating an iterative process of idea creation and formulation that can be a way to move from a quite loosely formulated idea to a testable theoretical hypothesis. The same process occurs in the hermeneutic process of interpretation, according to Føllesdal (1979). This work is a creative endeavour and involves intellectual trial and error. One strives for sharply defined artful models, interpretations, that are expressed as clearly as possible to be open to criticism and empirical testing. In other words, models that support the cycle of conjecture and refutation or artful modelling and criticism. By seeing science as an artful, creative process, we also escape the perceived divide between scientific knowledge and aesthetic, or artful, knowledge (Benner, 1984). In nursing, there are not many examples currently of deductive testing. One example of a qualitative deductive test of a model in nursing is by Bergdahl et al. (2019). In that study, a model developed on the result from a previous study was tested, found to be lacking and therefore refined.

4 | DISCUSSION

We hope that the ideas presented here will inspire nurses and nurse researchers to move forward in the practice of qualitative research, and we agree with Nancy Cartwright. She states: 'I maintain that our scientific successes come not from derivation of principles but by artful modelling' she continues, 'Our scientific understanding of the world is not, then, in knowledge-that but in knowledge-how' (Cartwright, 2019, p. 7). These statements by Cartwright (2019) challenge how, for example, Richards and Morse (2007) describe qualitative research. Namely, as a way to abstract knowledge that should be guided by some principles, mainly their notion of induction, and using theoretical frameworks as lenses, thereby not challenging or testing the frameworks.

The idea put forward in this article is that qualitative researchers should start working in more creative ways, where the research process begins with theoretical ideas or conjectures. These ideas can then be tested in a deductive manner. The contrast is that many qualitative methodologists believe that theory is discovered or grounded in phenomena found inductively and then verified. The post-positivist view is that theory is created and then tested. In logic and the philosophy of science, induction is used with the meaning of drawing a general conclusion from some concrete cases and is strongly aligned with a quantitative method and thinking. In qualitative nursing research, 'induction' is often used with a very different meaning, referring to not being guided by an existing theory but rather being guided only by the data one is analysing. Deduction is similarly used in this context, meaning terms and ideas from an existing theory are used when analysing data. With a more conventional definition of the deductive method, it is also clear that the approach that Richards and Morse (2007) insist on calling inductive is, in fact, deductive since they recognise that all research is grounded in belief systems that may include existing theory. The problem is that the principles suggested by Richards and Morse (2007) and Hoeck and Delmar (2018) just use theory as a lens and do not aim to test critically, challenge, and develop existing ideas further. Several authors have mentioned the idea that a qualitative method can be or should be deductive in nursing (Bergdahl & Berterö, 2015; Elo & Kyngäs, 2008; Kyngäs & Kaakinen, 2020; Meinefeld, 2004). Still, deductive methods of working or theory testing and development are seldom used in qualitative research.

In the process of self-assurance of having an independent methodology, the decision against ex-ante hypotheses has indeed led to a consolidation of the qualitative position as distinct from quantitative methodology, but it has also led to a claim that is epistemologically untenable, and has restricted the applicability of qualitative research. Experience in research practice, however, has shown, on the one hand, that the majority of quantitative research studies also fail to follow the norm of testing hypotheses. (Meinefeld, 2004, p. 157).

Failing to test a hypothesis is problematic since research is always conducted from a set of background beliefs or methodological choices that are in many ways hypothetical, assumptions, colouring

the research results. Those issues that Morse's (2017b) inductive ideal is said to protect us from. In some ways, some qualitative researchers mainly justify their method as nonquantitative; since they believe that quantitative research is deductive, they call qualitative methods inductive to emphasize the difference. Instead, qualitative researchers should, in our view, realise that there is no sharp divide between qualitative and quantitative research and that there is very little research that can be done by just handling equations and numbers. We thus propose that using a deductive approach to qualitative research will enhance the applicability of the research and make our knowledge claims epistemologically attainable. Being deductive also tests our background beliefs, the frameworks or ideas that influence our theories (Quine & Ullian, 1978).

The way of conducting science described in this article is compatible with what Pernecky (2016) calls 'strong constructivism' as well as a 'weak constructivism'. It is a pragmatic view along the lines of Quine (1998) that allows us to see metaphysics as testable by empiric observation. As Cartwright (2019), we understand science as an artful process open to criticism. Different philosophical standpoints and even political agendas can be used as long as one is open to criticise these systems.

Another problem is that some nursing research efforts lack theoretical depth (Eakin & Gladstone, 2020), and instead of a result, show the categories and themes used in the analysis (Thorne, 2020a). Sandelowski and Barroso (2007) state that many qualitative research studies are 'no result' reports or 'topical surveys'. We believe that this could be due to an inductive and atheoretical approach to qualitative research adopted by some nursing researchers in these types of studies. These topical surveys never engage in modelling a proper result from the analysis; they just present the analysis to create a result without making a creative leap or theorising, which is an integral part of the research process. In some regards, such topical surveys need an artful modelling step. In many cases, the studies could also test a hypothetical model based on existing knowledge, both personal and scientific.

We hope to inspire more nurse researchers to become 'artful modellers' (Cartwright, 2019) and embrace the possibility to develop and test a theory with an openness toward the richness of creative qualitative research. Creative ideas propel science. The flip side is that creative persons are often seen as impulsive, egotistical, argumentative, and immature (Feist, 2011). An openness to different personalities among researchers and PhD students could be the start of a more robust and more creative nursing science.

5 | CONCLUDING REMARKS

We see creativity as the most crucial aspect of scientific progress. We want to encourage qualitative researchers to develop theory and artful models and test theory by showing that deduction and theory testing are possible with qualitative methods. In this way, qualitative research can resist the drive towards adopting limiting demands from evidence-based quantitative movement and retain its power to drive change. Adopting a more pluralistic and critical view can help in a reality where data is dead as Denzin (2019) puts it. The way forward is to embrace a view of science where we solve problems by creating artful models and theories. It is time to leave the view where qualitative research is seen as inductive and data-driven and less scientific than quantitative research.

The post-positivist conception of science emphasizes creative thinking, not mechanistic verification (Cartwright, 2019). Qualitative research is always, like any research, based on beliefs that the researchers hold, and the research questions and results are, to a large extent, deduced from existing theory. The problem with seeing qualitative research as inductive is that it forces the research into reasoning based on data, not creative ideas, creating a massive number of abstract categories or themes that are seldom used in research or practice (Thorne, 2020a). It is also important to remember that creativity needs to go hand in hand with deductive testing and critical thinking to weed out creative theoretical ideas that are falsified by a test or abstract to be formulated as a testable hypothesis. One can understand that the inductive view of science was found attractive when nursing was a new science without much empirical research. At that time, the alternatives were to base new research on philosophical nursing theories or start with a clean slate. Today, existing knowledge should be considered when doing research but with a critical outlook based on fundamental nursing values. With support from all significant philosophies of science, we argue that one should reject the idea that theories can be verified and suggest that qualitative research should embrace falsification and deduction as a way forward. Knowledge development is driven by critical thinking in conjunction with creative ideas; indeed, one could also see a need for creative criticism and testing.

CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

Data sharing not applicable—no new data generated.

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