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Mental Health Risk Assessments of Patients, by Nurses Working in Mental Health Settings: A Qualitative Study Using Cognitive Continuum Theory

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ABSTRACT

Mental health risk-assessments are an important part of nursing in mental health settings, to protect patients or others from harm. Even so, nurses often have difficulty identifying patients posing a credible risk (either to self or others), so guidance is recommended. However, despite an extensive and growing body of risk-oriented literature, comparatively little expands upon contemporary knowledge of nurses and patient risk assessment. Therefore, it remains unclear how nurses understand risk and undertake their risk assessments. To address this knowledge gap in nurses' decision-making processes, this study used the established Cognitive Continuum Theory as a novel means to explore the risk-assessment of patients by nurses working in mental health settings.

Introduction

Mental health risk-assessments are a core aspect of nursing in mental health settings, and of invaluable assistance in the identification and mitigation (or prevention) of potential harm by a patient to self or others (Hautamäki, 2018; Higgins et al., 2016). This key decision-making process usually takes place in response to perceived indicators of risk, a history of harmful behavior, or sometimes as a matter of routine (Ayer et al., 2022; Kim et al., 2022). Each assessment is specific to an individual and their current circumstances, but stratification of risk (low, medium, or high) is discouraged, or if unavoidable requires a rational (NSW Health, 2022; South Eastern Sydney Local Health District, 2022). Instead, a patient is assessed to pose a credible risk, or not. Examples of harm that may arise from risk include self-harm, suicide, self-neglect, exploitation by others, loss of reputation, loss of property, sexual assault to self or others, or injury or death to others (Higgins et al., 2016).

Researchers affirm human decision-making (including risk assessment decisions of nurses) is principally a cognitive exercise that is either a "dual process" system which has intuition and analysis as distinct (but complementary) cognitive strategies, or a single process system characterized by a dynamic blended interplay of intuitive and analytic cognition (Bjørk & Hamilton, 2011; Dhami & Thomson, 2012). When applied to risk-assessment, dual-process cognition is described as dynamic experientially led intuition (known as unstructured clinical judgment), paired with analysis that focuses on empirical static actuarial risk indicators (Conlon et al., 2023). Actuarial indicators (actuarial approaches) are generally deemed superior for the identification of risk. Even so, they must be applied contemporaneously, or nurses are assessing static "dangerousness" criteria, not inconstant risk (Faay et al., 2013; Wand, 2012). However, risk-related activities of nurses generally include elements of contemporaneous risk assessment followed by risk management, for which actuarial approaches are not suitable. Therefore, a single-process system of cognition (known as structured clinical judgment) is recommended for all risk-related decisions. Structured clinical judgment is described in contemporary literature as a process whereby nurses' intuition-led discretion is blended with actuarial indicators, to produce a dynamic "common-sense" approach to the assessment and management of patient risk (Faay et al., 2013; Griffith et al., 2013; Murphy et al., 2011).

Contemporary literature indicates incorrect assessments of patient risk are regularly made by nurses, with discernible negative consequences for patients and other stakeholders (Conlon et al., 2019). For example, an assessment that finds no credible risk when a patient poses a risk can result in a patient causing harm to self or others. Therefore, education and guidance would be beneficial in improving nurses' practice. Nonetheless, despite the presence of a sizeable and growing body of contemporary risk-oriented literature, comparatively little expands upon the current limited knowledge of nurses' risk assessment of patients (Conlon et al., 2019;

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Higgins et al., 2016). As a result, it remains unclear how nurses understand risk and undertake their risk assessments (Higgins et al., 2016).

It is reasonable to propose the use of novel theoretical approaches may assist in illuminating this area of practice, whilst informing education and guidance to address nurses' knowledge gaps. Additionally, these novel approaches may also serve as a foundation for future research in this complex area of nurses' practice. Evidently, single-system theories that align with structured clinical judgment are the most appropriate strategy to explore risk assessment by nurses, because theories and findings can be seamlessly extended to concurrent or future research involving management of credible risk (Conlon et al., 2023).

Recently, Conlon et al. (2023) concluded Cognitive Continuum Theory (CCT) is suitable for investigating nurses' risk assessments because it is comparable to structured clinical judgment. Notably, CCT has been used by researchers in multiple studies of numerous professions, including nursing (Bjørk & Hamilton, 2011; Chaffey et al., 2010; Dowding et al., 2009; Molinaro & Bolton, 2019). Nonetheless, the theory has not yet been used by researchers in mental health to explore risk assessment of patients by nurses (Conlon et al., 2023).

Cognitive continuum theory

The dynamic "single-process system" theory known as CCT was developed by Kenneth R. Hammond (1917–2015). Five premises underpin CCT (Hammond, 1981, 1986, 1996). (i) Cognition comprises a continuum extending from a completely intuitive pole to a completely analytical pole. (ii) The continuum itself is termed quasirationality (or "*common sense*" reasoning) and is composed of varied blends of intuition and analysis, the proportion of each decreasing as a decision-maker moves away from its associated pole. Time pressured decisions promote intuition, whilst precision focussed decisions promote analysis (actuarial approaches). (iii) Parallel to the continuum of CCT runs a task continuum, where tasks can be ordered per the blend of cognition required to complete them (see Table 1). It is thus possible to predict the blend of cognition required for similar tasks in the future. Notably, amorphic tasks with multiple unreliable cues are associated with the intuitive pole, whilst defined tasks with limited apposite cues are associated with the analytical pole. (iv) Cognition of a decision-maker is not fixed but oscillates across and back the continuum of CCT, according to the cognitive blend required of a task or the components of a task. (v) Decision-makers employ pattern recognition and functional relations (outlined hereunder) to assess cues from an environment (Hammond, 1981, 1986, 1996).

Observers are considered data processing instruments in studies informed by CCT (Dhami & Mumpower, 2018). Taking the example of nurses and patient risk assessment: CCT holds risk-related information communicated by a patient is arranged in visible and invisible ways, known as its organizing principle. So, some information is directly observable by nurses, and some must be deduced. This information is made accessible to nurses using vicarious mediation, whereby nurses receive, perceive, and then process and organize, information obtained from patient cues, using pattern recognition and functional relations where necessary (Buckingham et al., 2008; Hammond, 1980, 1981, 1996, 2007).

According to the principles of CCT, pattern recognition is the ability to recognize patterns in information derived from cues. Functional relations is the ability to detect and understand invisible cues by their impact on visible ones (Hammond, 1996). A determination of risk is enhanced when the same organizing principle for risk related information communicated by a patient is used by a nurse to arrange this information during a risk assessment. A process Hammond referred to as vicarious functioning (Dhami & Mumpower, 2018; Hammond, 1986).

For nurses, risk assessment is complex because it takes place in environments characterized by multiple, visible or invisible, complete or partial, comparative or conflicting, risk-related cues that require nurses to instrumentalize various blends of intuitive and analytical cognition (Conlon et al., 2023). Consequently, this study used CCT to explore this aspect of patient care.

Aim

Using CCT, the aim of this study was to explore risk assessment of patients by nurses working in mental health settings.

Table 1. CCT modes of inquiry.

	Cognition	Mode of least control					Mode of most control
1.	Pure analysis						True experimental
2.	Mostly analysis, with some intuition					Control group experimental and statistics	
3.	Somewhat more analysis than intuition				Quasi-experimental with relaxed controls		
4.	Somewhat more intuition than analysis			Computer modelling			
5.	Mostly intuition, with some analysis		Data-based expert judgement				
6.	Pure intuition	Unrestricted judgement					

Adapted from Conlon et al. (2023) and Hammond (1996).

Methods

Setting

This study took place in New South Wales (NSW), Australia, where nurses' risk-related decisions are guided by the legal and health systems pertaining to that jurisdiction.

Ethics

This research constitutes part of a PhD at The University of Sydney. Approval was granted by the Human Research Ethics Committee (protocol number: 2019/564) of the University on the 13 August 2019 in accordance with the National Statement on Ethical Conduct in Human Research published by the National Health and Medical Research Council (NHMRC) of the Australian Government (NHMRC, 2007). The Social Research Association research ethics guidance guidelines (2021) were also consulted and followed by the researchers for this study. Furthermore, the study participants: read and acknowledged they understood a participant information statement; were given the opportunity to ask questions at multiple junctures; and gave written informed consent before being interviewed. All participant data were anonymized before analysis, and it is not possible to identify participants from the final report of this study.

Recruitment

Recruitment of participants was undertaken via professional nursing networks including the NSW Nurses and Midwives Association, the Australian College of Nursing, and peer nursing contacts. Individual participants were not approached by the researchers, to ensure participants did not feel coerced into the study. Instead, invitations were sent requesting dissemination of advertising material for the study to their networks, seeking expressions of interest. The first researcher was the contact person for applicants.

Eligibility

Participants were required to satisfy all inclusion criteria (see Table 2) to participate in the study.

Table 2. Participant inclusion and exclusion criteria for study.

	Inclusion	Exclusion
Jurisdiction	• NSW, Australia.	• Not NSW, Australia.
Population	• Registered nurses.	• Not a registered nurse.
Context	• Mental health care.	• Not mental health care.
Exposure	• Experience in risk assessment of patients in mental health settings.	• No experience of risk assessment of patients in mental health settings.
Knowledge	• Read and understood participant information statement.	• Did not read or understand participant information statement.
Agreement	• Gave informed consent in writing to be interviewed.	• Did not give informed consent in writing to be interviewed.

Data collection

The study comprised semi-structured interviews with questions focussed on risk assessment in mental health. Questions were designed to systematically explore and facilitate the description of participants' conceptualization of risk and their risk assessment processes. Some examples of questions used were: "Can you describe for me your understanding of the concepts of 'risk' and 'harm'?"; "Can you describe for me the criteria that might indicate to you a patient is a risk?"; and "Please describe if the context in which you are working affects your perception of risk, or not?" The first researcher collected interview data either face-to-face or by video link commencing in April 2020 and concluding in March 2021. Two participants who independently volunteered for the study were previously known to the first researcher. The objectivity of the first researcher was emphasized for these participants, as was the anonymity of their data and their right to withdraw from the study at any stage. They were also encouraged to speak up if at any time they felt coerced in their responses or obliged to continue with the study if they did not want to proceed. Interviews lasted between 38 and 80 min (mean = 56 min) and were electronically recorded, transcribed by the first researcher, and anonymized, for review and analysis. Data collection was terminated at 14 interviews when data coding and theme development indicated sufficient rich data were collected (Braun & Clarke, 2021). Interviewees comprised 10 female and four male nurses with 3–25 years-experience (mean = 15 years) in a range of public and private mental health related inpatient, outpatient, and community settings. No participant elected to vacate the study. Data collection and transcription were negatively affected by the Covid-19 pandemic, leading to significant procedural delays. Therefore, an extended timeframe from the commencement of interviews until data analysis was required.

Data analysis

This study is part of a larger sequential multimethod PhD project and was designed to provide a descriptive overview of nurses' risk assessment. A theoretical thematic analysis of interview data was performed by the researchers, which commenced with the theoretical framework of CCT and took a deductive approach to data coding. The first researcher in collaboration with all researchers, led the analysis of data which adhered to the Braun and Clarke (2006) method. To commence, participants' responses were read and re-read until familiarity with interview data was achieved. A systematic approach was then taken to data coding, focusing on risk assessment. Patterns in codes were identified. These codes were grouped into themes, and then refined, defined, and named. For example, when participants described incorporating analytical (actuarial indicators) or intuitive cognition in their risk assessments, this was initially coded as "actuarial," "intuition," or "both," and then arranged with associated codes as the theme "quasirational approach to risk assessment," because participants reported generally using both forms of cognition for their risk-related decision-making.

Lastly, the final analysis was reported by the researchers (Braun & Clarke, 2006). A COREQ checklist was completed when preparing this report, to ensure the study was clearly and thoroughly reported (Tong et al., 2007).

Reflexivity, rigor, and credibility

Qualitative research positions researchers as a component of research processes. Consequently, researchers' experiences, assumptions, and stances, can shape proceedings. For example, a researcher who works in mental health may have preconceived ideas about the optimum weight of certain risk-related cues in a particular clinical setting. Therefore, researchers must critically acknowledge their place relative to their research, and describe for research consumers how they have accounted for this relationship (Olmos-Vega et al., 2023; Peddle, 2022).

The interviewer (and first researcher) for the present study is a male registered nurse, legal practitioner, academic, and PhD candidate, who has worked in mental health with patients assessed as credibly posing a potential risk of harm. The other researchers are experienced nurse practitioners and university academics acquainted with mental health, patient risk, and PhD research and supervision. Therefore, to forestall any potential influences on the study, the following strategies were implemented. Firstly, the first researcher designed a semi-structured questionnaire to guide interviews, which was approved by all researchers, piloted ($n = 3$), reviewed and edited by the first researcher, and approved again by all researchers. Each interview was recorded for transcription, with the recordings and transcriptions scrutinized for consistency by all researchers. Analysis of data, led by the first researcher and independently verified by all researchers, was then guided by Braun and Clarke (2006) six steps outlined above. The researchers then reviewed and concurred with the findings and discussion and agreed with this report. Additionally, the researchers engaged in continued reflection on their place relative to the research at each stage of the research process.

Findings

Theme 1: Risk as a dynamic omnipresent phenomenon

The first theme developed from interview data was participants conceived patient risk as a dynamic omnipresent phenomenon. Overall, it was clear that risk was conceived by participants as occurring on a continuum comparable to the task continuum of CCT, ranging from an imperceptible risk of insignificant harm to a credible risk of significant harm.

> *I think risk firstly is probably the likelihood they are going to act on a behavior. The likelihood [something harmful] is going to happen, but also the risk is around the severity of the incident. [For example,] if it's superficial cutting, it's not likely to result in significant harm.* (P.03)

Participants were careful to note risk is not limited to patients in mental health settings. Instead, they emphasized it is something inherent in all people. Therefore, the key question to be answered by a patient risk assessment is whether there is a credible likelihood of significant harm, or not.

> *[Risk is] always there with everyone. It's just to what extent, and it's something that's transient and something that's not fixed.* (P.14)

Participants were also keen to point out that credible foreseeable harm arising from patient risk takes many forms, both physical and non-physical in nature.

> *I think the outcome is basically a negative impact on the person or someone close to them, so whether or not that is a physical outcome, or mental outcome, or reputational outcome.* (P.13)

Unsurprisingly, systematic processes pertaining to risk assessment featured prominently in participants' responses, whereby they indicated taking a multi-focal approach to determining a patient's likelihood of harm to self or others.

> *I guess in terms of risk, it would be assessing the level of risk there for the person. So, for example, if they're having suicidal ideation, how progressive is that? Is there a plan? How far have they gone with enacting that plan? … If it's risk of harm to someone else, is that person in their immediate vicinity? Are they seeking out that person? How much risk is that person at?* (P.01)

However, a risk assessment was not a one stop endeavor for participants. Instead, the dynamic nature of risk led them to emphasize the importance of nurses continually assessing and reassessing a patient's risk profile throughout the patient review process, with adjustments made to the handling of each patient in accordance with their findings.

> *Risk can change, it's dynamic. So, I would be looking at the documentation, if the … risks now are extremely high … I would be … following up the patient and implementing whatever needs to happen.* (P.11)

The dynamism of risk raised issues for participants about the utility of risk assessments for patients deemed suitable for release from care. They noted risk assessments were contemporaneous determinations that were subject to change, causing future predictions of risk to be indeterminate at best.

> *We do these risk assessments [but] how valuable are they? Because the person gives us their word that they're not going to hurt themselves and that we can send them home and … they could change their mind when they walk out the doors, course they can.* (P.02)

Participants also emphasized that despite the best efforts of nurses, contemporaneous risk can sometimes be difficult to identify with any great certainty because humans by their nature can act in unpredictable ways.

> *When we do a risk assessment it is purely that, an assessment. … I think … people are looking for an absolute. Will this happen, or will this not happen? And that's just not possible because we are dealing with human beings, we can't.* (P.10).

Lastly, participants observed that even if credible risk and consequential potential significant harm are identified, they

can often be mitigated to some extent but are difficult to eliminate in full.

> *Risk is something that we can mitigate, … we can't eliminate but we can mitigate through our actions.* (P.14)

Theme 2: A quasirational approach to risk assessment

The second theme constructed from interview data was participants took a quasirational approach to risk assessment, whilst indicating they felt actuarial data carried more weight than intuition in risk assessment.

> *[Risk assessment is] certainly both [analysis and intuition], and I think it is important to trust instincts and if something doesn't feel right to follow up on things, but obviously your data is so important and the documenting of it, because that's what we have, that's our evidence.* (P.02)

However, participants emphasized a belief their intuition was based on experience as they progressed from novice to expert. Therefore, they perceived intuition to be a valid instrument for the evaluation of actuarial determinations of credible risk.

> *I think … intuition comes from experience. and it's not something airy fairy. … The feeling I had about [a patient who then did go and] assault another patient … I think it was based on my previous knowledge of him. So, it wasn't just "I have a bad feeling". I might have worded it like that, but it was actually based on data and observation and assessment.* (P.05)

Congruency between data and their intuition was important for participants. Overall, they believed any discrepancy between the two would eventually be dispelled if they continued to collect more data.

> *For me … [actuarial] data needs to be [in agreement] with my intuition. So, if there was at that point a doubt in my mind, that I was questioning myself. I think it would be more anxiety than clinical confidence. … I would look for more data and a bit of context to that too is.* (P.11)

Participants also believed their hunches and feelings supplemented their intuition and were integral to their risk assessment related decision-making. Regardless, systemic structures caused them to preference actuarial data because they believed these hunches and feelings (and intuition) did not provide the same weight of evidence before the law.

> *If there's a high level of [actuarial] data, I would probably more push toward data. … I've learned through the courts that I've been through, in the cases I've reviewed, how legal people can just rip your apart on data. Legally, they don't go for hunches and feelings.* (P.03)

Consequently, participants felt their reliance on intuition (and at times hunches and feelings) in their quasirational decision-making was limited when their intuition contradicted actuarial data regarding a patient. Essentially, intuition was reported to influence a nurse to upgrade but not downgrade an actuarial guided assessment of risk.

> *Certainly, upscale based on your gut feeling, but don't downscale based on your gut feeling. You've got to downscale based on evidence. And if you're not sure … you don't downscale.* (P.04)

Interestingly, despite their views on the importance of actuarial data in explaining their decisions to others, participants reported they did not like using empirically derived actuarial instruments for their risk assessments.

> *I wouldn't use a grading system. I'm not really into the tick boxes either. I think risk and harm are very hard to quantify, and I think anyone that thinks they can quantify it is probably kidding themselves completely.* (P.09)

Even when instruments were used by participants for risk assessments, they were often completed after an assessment because they were viewed as interfering with therapeutic communication during patient assessment processes.

> *I have to admit that sometimes you do it all in your head first and then go back and use the assessment tool, because you have to trust what you're doing. I also find that when patients see you ticking too many boxes, they get upset.* (P.07)

Theme 3: Environmental and relational forces influence risk assessments

A final theme engineered from interview data was environmental and relational factors were reported to influence participants' perception of risk. For example, the same risk-laden cues were perceived to be credible or non-credible actuarial indicators based on the environment in which the cue was encountered (which for CCT includes the nature of the patient).

> *In the city if we found out that our client had a gun, that would set off alarm bells, … whereas in the country it would almost be like, well, everyone's got a gun, that's like the norm.* (P.04)

Participants explained it was sustained exposure to overt risk-related patient cues that led them to interpret cues differently, as they became more assured (and intuitive) in their knowledge and skills. Essentially, they focused less on visible dramatic potential actuarial indicators (that may or may not be correct), and more on covert risk-related cues.

> *I've worked in settings … where there's been high levels of aggression and violence, where we just see that as a regular day to day experience. I've been moved into places like rehab units and community settings where that isn't a day-to-day experience and the culture around how acceptable certain behaviours are is different.* (P.13)

A variation between participants was the reasons underpinning their perception of risk in acute and non-acute settings. For example, some participants perceived patient risk to be higher in acute settings (such as emergency departments), because they were time-pressured, and patients were generally admitted on foot of a determination of risk by a first-responder or responsible clinician.

> *If someone's in the emergency department they're at a higher risk anyway than just being seen in the Community, because of their clinical presentation requiring them attending ED. The other thing in ED, it's an incredibly busy emergency department, things may get missed whereas at home you might have the time to really assess the situation very clearly.* (P.02)

However, other participants disagreed and emphasised patient risk was less common but had a greater potential for harm (including personal risk to a treating nurse) in non-acute settings.

> *[If] I was in the [emergency department] or hospital. I would probably [tolerate] more risk because I press the duress [alarm] or call out and security would come running. In the emergency department there's 20 staff around me, whereas in an [offsite] office with one door to get out of [and minimal staff], I'd have a very low threshold to risk.* (P.03)

Notably, several participants concluded that all contexts carried risk, recommending nurses did not discriminate between the possibility of potentially harmful behaviors in any context.

> *I think … all [settings] have varying degrees of risk … I don't like to say that one area is riskier than the others. I find that's too descriptive, and it doesn't give credit for chaos. Chaos can occur anywhere.* (P.07)

Pre-existing relationships between nurses and patients were also considered relevant by participants when analyzing data collected during a risk assessment because they were familiar with a patient's presentation and had greater insight into the relationship between the patient's overt and covert risk-related cues.

> *If you know a patient well, if you've worked with someone for years, you know them [and can recognize if] there's a disparity between the clinical data, and what you know about them.* (P.02)

As a result, participants believed they exercised less undue caution when dealing with patients whom they had prior personal knowledge of.

> *I found over the years, a psychotic person will sometimes verbalize insults or threats and they come to nothing, … so familiarisation with a patient can lessen your heightened expectation.* (P.08)

However, the risk of becoming temporally desensitized to risk was a factor of concern for some experienced participants, and something they cautioned against.

> *As mental health clinicians in general, we are comfortable with and tolerate a level of risk … I think you tend to become more comfortable as you become more experienced. But then there's also … where you just get so comfortable with it, it's almost like you don't see it anymore, desensitized. You might not think about it until a [novice nurse] or someone comes with you and they say "that guy's got a big samurai sword collection in his room", and you go, "oh, yeah, he does".* (P.04)

Discussion

This qualitative study made several important findings that add to current knowledge and confirms the continued capacity of ongoing novel risk related research to illuminate this area of nursing practice. In the present study, participants commenced by describing risk as a dynamic concept that they understood operated on a continuum of imperceptible risk of insignificant harm to credible risk of significant harm. This is a notable finding because Higgins et al. (2016) found nurses' conceptualization of risk to be unclear in extant literature.

Participants description of risk supported their belief patient risk profiles should be viewed as a fluid evolving phenomenon requiring regular assessment and review. This belief is supported by Conlon et al. (2021), Higgins et al. (2016), and Norko and Baranoski (2008) who all concluded risk was a dynamic ever-changing phenomenon. Therefore, indicating participants thought it reasonable for two or more nurses (or other clinicians) to independently reach different determinations of risk for the same patient if the assessments took place at different points in time. Participants also emphasized a contemporaneous assessment will have greater validity than one previously made. A position that extends the work of Conlon et al. (2021) who found relying on an antecedent risk assessment can result in incongruent determinations of static dangerousness, and a concomitant failure to consider inconstant risk.

The continuum of risk outlined by participants is noteworthy in this CCT-informed study because it corresponds to Hammond's description of the task continuum that runs parallel to the cognitive continuum of CCT (Hammond, 1981, 1986, 1996). Therefore, suggesting it may be possible to arrange risk-actuated cognitive tasks on a risk continuum according to the blend of cognition required for each risk-related task, enabling nurses to predict the blend of cognition required to undertake similar tasks in the future. It was not possible to ascertain from this exploratory study if CCT may help nurses predict the blends of cognition required for each task comprising a risk assessment, but this observation does offer novel and valuable direction for future risk-related research.

However, the study was able to ascertain participants' cognition when undertaking risk assessments was quasi-rational, irrespective of their area of practice or level of experience, whilst adhering to the established principle that decision-making and other cognitive processes of seasoned nurses are more intuitive than those of novices (Miller & Hill, 2018). In a position adopted by the researchers, participants considered themselves to be experienced if they had a longer relative duration of practice and were knowledgeable and proficient in risk assessment, and novices if they had a shorter relative duration of practice or required support or guidance in their deliberations. Participants emphasised a belief that novice nurses tended to focus on written data and analysis (actuarial indicators), whilst experienced nurses preferred their intuition. A finding consistent with Hammond's position that experience leads decision-makers to oscillate toward the intuitive pole of CCT (Hammond, 1980, 1981, 1996). Participants explained they understood their intuition to have developed from the subsuming of actuarial approaches into their intuitive processes, where it was then enhanced by personal experience and observing how other clinicians dealt with risk.

Therefore, it was unsurprising that experience was cited by participants as a significant factor in cognitive-led risk assessment, with intuitive-dominant participants becoming more comfortable dealing with risk as they transitioned from novice to expert. Nonetheless, contemporary literature

reports actuarial approaches to be more accurate than intuition for identifying risk, because nurses tend to focus on dramatic cues that may not necessarily reflect a patient's potential for harm (Higgins et al., 2016; Miller & Hill, 2018; Molinaro & Bolton, 2019). However, Payne (2015) also reports decisions made by experienced nurses are more accurate than those of novice nurses, so it is reasonable to conclude these nurses have appropriately subsumed actuarial processes into their intuitive-led frameworks of knowledge. Therefore, corroborating the findings of Miller and Hill (2018) and Downes et al. (2016) who concluded risk-assessment can be elevated with educational strategies and validated risk-assessment instruments, that assist nurses to develop or enhance their intuition.

Having made this observation, it is notable participants admitted disliking empirically derived actuarial instruments designed for contemporary use during an assessment. There is limited and contradictory research literature investigating nurses' views on these instruments, but Clancy et al. (2015) found nurses in their survey preferred their clinical intuition whilst Downes et al. (2016) concluded instruments were preferable to intuition-led unstructured decision-making. However, in the present study participants perceived instruments as being too objective and formulaic, because they understood risk is unique to each patient and as noted by Conlon et al. (2019) can be difficult to identify. Participants also felt, as did some participants in Downes et al. (2016), that instruments impeded communications between nurses and patients, with patients becoming upset if a nurse appeared more interested in completing paperwork than talking with them. Consequently, it is reasonable to suggest any potential instruments developed to assist nurses with their risk assessments must be accompanied by strategies that address nurses' concerns, thereby encouraging contemporary use of the instrument.

Albeit not considered or discussed in CCT per Conlon et al. (2023), hunches and feelings were nominated as important facets of risk assessment by participants, who perceived them to be a manifestation of previously encountered data, existing knowledge, and experience. Contemporary nurse literature also places these components commensurate with intuition at the center of holistic nursing practice (Cork, 2014; Melin-Johansson et al., 2017; Miller & Hill, 2018). Notably, Glöckner and Witteman (2010) conclude hunches and feelings are learned behaviours, emotional responses to previously encountered cognitive stimuli that form a component of intuitive cognition. Therefore, it is reasonable to suggest additional studies considering the role of hunches and feelings as components of nurse-intuition have the potential to add a critical new dimension to CCT-informed research.

Despite their reservations with risk assessment instruments, participants still understood objective actuarially derived data to be more readily explicable than their subjective intuition (or hunches, and feelings) if they were required to justify their risk assessments to others (for example, before a Court of law). As a result, participants reported they would upgrade a patient's risk profile based on their intuition (or a hunch, or if things did not "feel right") but would only downgrade if based on actuarial data, irrespective of the pole of CCT toward which their cognition initially oscillated. This was an important determination because errors made using analysis, first outlined in the seminal writings of Brunswik (1956), iterated by Hammond (1996), and affirmed in a seminal study using CCT by Dunwoody et al. (2000), are greater in order of magnitude than those made using intuition. This finding has yet to be reasonably disputed in CCT studies and is an invaluable consideration for subsequent risk management (Bjørk & Hamilton, 2011; Chaffey et al., 2010; Dowding et al., 2009; Lauri & Salanterä, 2002; Molinaro & Bolton, 2019).

Overall, study findings indicated pattern recognition and functional relations were integral to participants' risk assessments. Pre-existing relationships were identified as influencing participants' perception of risk because they could leverage their existing knowledge of a patient, indicating the key role pattern-recognition plays in nurses' cue-driven risk assessment (Hurteau et al., 2020). Nonetheless, several participants referred to the potential for experienced nurses dealing with a familiar patient to become desensitized to that patient's risk-related cues, which could result in harm if they failed to identify the patient posed a credible risk (Caterino et al., 2013; Conlon et al., 2019; Murphy et al., 2011). As a result, participants were generally mindful that complacency toward risk should be avoided.

Information-laden visible patient cues were reported to uncover invisible risk-related concerns, highlighting the key role of functional relations in participants' risk-related decision-making (Hammond, 1996). The importance of nurses' (and researchers) ongoing engagement in determining functional relations between visible and invisible cues was emphasized by participants because they believed invisible risk-related cues could remain undiscovered due to the complex nature of risk. Consequently, future research exploring the relationships between visible cues and invisible risk-related cues pertaining to patients in mental health settings is recommended.

Participants reported they interpreted vicariously mediated cues differently in dissimilar environments (acute *vs.* non-acute), which according to Hammond (1981) influences their vicarious functioning when establishing the empirical validity of these cues. For example, some participants perceived patient risk to be more credible in acute care settings characterized by multiple risk related cues, when deciding if involuntary detention of these patients was required. This phenomenon was also noted by Blando et al. (2013) in a study of emergency department nurses without mental health training when they were observed dealing with patients with a mental health condition. Conversely, risk was perceived lower by these participants in non-acute care settings, because patients had arrived voluntarily to the setting and were according to Masood et al. (2017) less likely to be experiencing a mental health crisis. However, several experienced participants emphasized non-acute facilities often had smaller numbers of staff and no security, whereas acute settings tended to have numerous clinical staff or security officers to assist during a potentially harmful event. Consequently, in a finding consistent with previous research by Blando

et al. (2013), these participants perceived risk to be lower in acute settings that were tightly controlled (or perceived to be tightly controlled) than in non-acute settings. Additionally, several participants reported risk-induced chaos can occur anywhere at any time.

According to Marsh and Kelly (2018) findings that fear of harm and specific environments lead nurses' to be overly cautious in their risk-related decision-making, these observations suggest subjective risk aversion may play a role in tempering nurses' objective actuarial findings. Albeit it was not clear from interview data if participants were acting on their experiential intuition (or hunches or feelings), or as suggested by Blando et al. (2013) a paucity of relevant clinical skills or training. Notably, Marsh and Kelly (2018) also found clinician's (including nurses) perception of risk is not always correct, whilst Blando et al. (2013) concluded education and experience dealing with mental health presentations led nurses to make risk assessments more in line with actual risk, than incongruent perceived risk.

Implications and future research

Contemporary risk-related research literature has been enhanced by the researchers using CCT to explore nurses' risk assessment of patients in mental health. Furthermore, participants also identified areas of their practice that would benefit from further education or guidance. For example, experienced nurses may become desensitized to risk, despite harm potentially occurring at any time in any setting. Therefore, the findings provide a base for nurse education and provide a useful guide for nurse practice. The findings also indicate the potential for CCT to open new avenues of research, that may assist nurses (and other clinicians) to better understand this aspect of clinical care.

Additionally, CCT holds it is possible to predict the blend of cognition required for similar tasks in the future, once the most effective blend of cognition to complete a task has been determined. Therefore, reducing decision-makers cognitive load and the time required for effective decision-making. This study found nurses' mental health risk-related decisions are quasirational, comprising a blend of intuition and analysis that became more intuitive with experience. Nonetheless, nurses accepted their intuition was predicated in part on actuarial approaches, suggesting their cognition was probably somewhat more analytical than intuitive. However, it was beyond the scope of the study to determine the precise blend of cognition used by nurses. Therefore, future research investigating this aspect of nurses' mental health risk assessment decision-making would add to the findings of this study.

Notably, participants were not in a position to discuss their interview responses with their peers, because interviews were undertaken on an individual basis. However, nursing as a profession is team-oriented, with nurses expected to consult others to inform their decision-making (Nibbelink & Brewer, 2018; Nursing & Midwifery Board of Australia, 2020). Additionally, participants reported they would often seek counsel from their peers when making decisions in the clinical environment. Therefore, research that explores the risk assessment processes of nurses by gathering data in a group context may augment the findings of this study. Further qualitative, quantitative, or mixed-methods research would also be beneficial in illuminating this complex area of nursing practice.

Limitations

Internationally, mental health care has many similarities, such as the authority to involuntarily detain patients assessed as posing a credible risk (Georgieva et al., 2019). However, there are also differences between jurisdictions. For example, various states of Australia have their own mental health acts that inform mental health practice, whilst at a national and international level the attributes of reasonableness that characterize a duty of care may vary (Conlon et al., 2019; Tosson et al., 2022). This study was undertaken in NSW, Australia, which may have regulated the form and interpretation of data collected. However, the location and context of the study are clearly outlined, so research consumers can assess the relevance of study findings to their individual jurisdiction and clinical circumstances.

Conclusion

Contemporary research literature regarding risk assessment by nurses who work in mental health has been enhanced by this study using CCT. Findings indicate nurses conceptualize risk as a dynamic omnipresent phenomenon intrinsically associated with their perception of harm, ranging on a continuum of imperceptible risk of insignificant harm to a credible risk of significant harm. The potential similarities between this risk continuum and the concept of a task continuum associated with CCT have the potential to open avenues of research that may enhance the identification of patient risk. Therefore, protecting patients and others from harm.

Overall, nurses were found to take a dynamic quasirational approach to risk assessment, with decision-making becoming more intuitive and less analytical with experience. Experienced nurses preferred their intuition over actuarial approaches, albeit acknowledging their intuition was predicated in part on their subsuming of actuarial approaches into their intuitive processes. Notably, they also believed actuarial data carried more weight than intuition if required to explain their decision-making to others. The study also revealed environmental and relational forces influence nurses' perception of risk, as does their level of experience or a pre-existing relationship with a patient. Interestingly, these elements were reported to sometimes assist and at other times inhibit risk assessment. The researchers concluded research that explores nurses' risk assessment in a group context may augment study findings. They also found CCT has the potential to inform nurse education and practice, and future risk-related research related to mental health care.

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Author contributions

All authors contributed to the conception of this study, refining and further development of the original concept. Darren Conlon led the literature search and analysis, data collection, thematic analysis of data, extraction of findings, and manuscript editing. All authors agree the manuscript is the authors' original work, has not received prior publication, and is not under consideration for publication elsewhere. All authors have seen and approved the final draft of the manuscript being submitted, agree with its submission to *Psychiatry, Psychology, and Law*, and abide by the copyright terms and conditions of Taylor & Francis. All authors agree Darren Conlon is the contact person for the manuscript.

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Addendum

Since this research was completed Toby Raeburn has accepted the position of Associate Professor at the Australian Catholic University, whilst Timothy Wand has accepted a professorship at the University of Wollongong, Australia.

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