

# Using the Perceive, Recall, Plan and Perform Assessment of cognitive strategy use with Aboriginal and Torres Strait Islander peoples: Initial exploration of clinical utility

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## Abstract

**Introduction:** Culturally safe and meaningful cognitive assessment methods for use with Aboriginal and Torres Strait Islander peoples are scarce. Concerns are raised regarding the efficacy of existing methods in cross-cultural contexts. The *Perceive, Recall, Plan and Perform (PRPP) Assessment* offers a person-centred alternative whereby cognitive strategy application is examined during performance of culturally relevant everyday tasks. This paper explores its use with Aboriginal and Torres Strait Islander peoples in Australia.

**Methods:** A critical case study design was applied to examine the effectiveness and relevance of the *PRPP Assessment* with two Aboriginal Australian people in the Northern Territory of Australia. 'Ivan' and 'Jean' were each receiving occupational therapy through a rehabilitation service over a 6-month period following acquired brain injuries. Ivan and Jean were assessed performing everyday tasks of interest and importance to them as part of routine care. A partnership approach was adopted throughout the process, and both consented to their stories being told.

**Results:** The *PRPP Assessment* was able to measure changes in Ivan's and Jean's cognitive strategy use and its impact on performance of meaningful tasks. Ivan demonstrated a 46% increase in performance mastery and a 29% increase in cognitive strategy use with most improvements identified in his ability to sense information, initiate action, and continue performance. Jean demonstrated a 71% increase in performance mastery and a 32% increase in cognitive strategy use. Her greatest improvements were in the ability to recall schemes, self-evaluate, and initiate action.

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**Conclusion:** The two critical case stories shared in this study suggest that the *PRPP Assessment* has emerging evidence of clinical utility when used with Aboriginal people with acquired brain impairment. The information gained revealed strengths in performance; it was effective in measuring change in cognitive strategy use, was able to inform the goal setting process, and guided intervention to support cognitive strategy use during task performance.

#### KEYWORDS

Aboriginal and Torres Strait Islander peoples; assessment; cognition; occupational therapy; Perceive, Recall, Plan and Perform (PRPP)

## 1 | INTRODUCTION

Cognitive changes are a well-documented feature of acquired brain injury (ABI) and have the capacity to impact occupational performance long term. Occupational therapists evaluate the impact of these changes using various assessment tools and methods. Researchers and clinicians alike agree that there is a lack of valid, strengths-based, and engaging cognitive assessment methods for Aboriginal and Torres Strait Islander peoples with cognitive impairment (Bohanna, Catherall, & Dingwall, 2013; Catalano et al., 2020; Dingwall et al., 2014; Rock & Price, 2019). Although the incidence of cognitive impairment amongst Aboriginal and Torres Strait Islander peoples remains largely unknown (Stolwyk et al., 2020), higher rates of ABI are reported in comparison with non-Indigenous peoples. Stroke rates are up to three times higher (Armstrong et al., 2015), and the rate of traumatic head injury is reported to be 21 times higher (Jamieson et al., 2008). Researchers agree that rates of cognitive impairment are likely to be high with elevated exposure to risk factors, such as 'substance abuse, violence, head trauma, malnutrition, chronic illness, foetal alcohol syndrome and others' (Dingwall & Cairney, 2009, S47). Throughout this paper, the terminology of Aboriginal and Torres Strait Islander peoples will be used when referring collectively to the First Nations peoples of Australia, and Aboriginal Australians will be respectfully used when discussing the participants in this paper, who did not identify as Torres Strait Islander.

The dearth of knowledge on the incidence of cognitive impairment in Aboriginal and Torres Strait Islander peoples is further complicated by the reported difficulties in using mainstream cognitive assessments. Assessments based on the dominant culture present multiple biases (Jacklin et al., 2020). For Aboriginal and Torres Strait Islander peoples, the reliance on written and spoken English as the main testing modality is problematic as English may not be the first language spoken (Dingwall et al., 2014). The resemblance of assessment processes to

### Key Points for Occupational Therapy

- Clinical utility of the *PRPP Assessment* is demonstrated through effective measurement of change in cognitive strategy use during task performance of Aboriginal and Torres Strait Islander peoples.
- Goal setting and the design of cognitive strategy intervention with Aboriginal and Torres Strait Islander peoples are informed by *PRPP Assessment* findings.
- The *PRPP Assessment* appears to provide a viable alternative to existing methods of cognitive assessment used with Aboriginal and Torres Strait Islander peoples.

formal education testing may be unfamiliar and intimidating. Many mainstream cognitive assessments require an understanding of Western concepts, such as number, time, and space. Limited formal exposure to these constructs and differing concepts of time, for example, may impact the validity of findings from such assessments (Dingwall et al., 2017; Janca & Bullen, 2003; Rock & Price, 2019).

Assessments developed from a different cultural standpoint can result in inappropriate or inaccurate assessment placing Aboriginal and Torres Strait Islander peoples at risk of misdiagnosis, under-diagnosis, or over-diagnosis of cognitive impairment (Mushquash & Bova, 2007). This may lead to lost opportunities to access rehabilitation, obtain insurance funding, or receive long-term support (Bohanna, Catherall, & Dingwall, 2013; Bohanna, Stephens, et al., 2013). It may also contribute to clinical judgements that are potentially detrimental, such as referrals for further testing, potentially adding to the stress and anxiety already experienced, or the loss of one's ability to make self-determined decisions (Dingwall et al., 2014).

Very few cognitive assessments have been developed for Aboriginal and Torres Strait Islander peoples. The key features of cognitive assessments recommended for use with Aboriginal and Torres Strait Islander peoples include assessment tasks that ‘are not dependent on language, formal education or cultural-specific stimuli’ (Lewis et al., 2010, pp. 123–124). Assessments should also be engaging, standardised, and scientifically valid; focus on strengths; and involve collaborative decision-making with the client, family, and health professional (Bohanna, Stephens, et al., 2013). Factors associated with acceptability of assessments to Aboriginal and Torres Strait Islander peoples have been explored in Central Australia (Dingwall et al., 2017). Findings suggest that acceptability can be further enhanced by including familiar and engaging content, reducing reliance on language, providing prompts and feedback, creating opportunities for multiple attempts, adapting assessments to performance-based formats, and being transportable and brief. The Perceive, Recall, Plan and Perform (PRPP) Assessment (*PRPP Assessment*) appears to align with these identified key features.

The *PRPP Assessment* is part of the PRPP System of Task Analysis, a dynamic assessment and intervention approach where the assessment seeks to identify a person’s cognitive strengths and difficulties impacting daily life activities and to use findings to inform intervention. The *PRPP Assessment* is a standardised, criterion-referenced assessment that is based on task analysis methodology and information processing theory. The *PRPP Assessment* is informed by the Occupational Performance Model Australia (OPM[A]). The OPM(A), while arising from a Western viewpoint, is characterised by pragmatism and specifies that therapy is focused on matters of importance to the person and guided by the real-world context. Notions of ‘typical’ and ‘normal’ are rejected in favour of the ‘specific’ and ‘particular’ (Chapparo et al., 2017). The pragmatist viewpoint encapsulates the understanding that knowledge is generated by personal experience through ‘knowing’ and ‘doing’ (Hooper & Wood, 2002). The OPM(A) foregrounds the human experience of doing, knowing, and being in a way that reflects multiple Aboriginal ways of Knowing, Being, and Doing (Martin & Mirraoopa, 2003). Aboriginal Ways of Knowing, as described by Martin and Mirraoopa, encompass contextual and purposeful learning processes, including sensing, observing, and applying. Similarities are respectfully observed between OPM(A) constructs and Aboriginal ways of Knowing, Being, and Doing when using the *PRPP Assessment* to assess occupational performance. Learning processes, the real-world context, and the impact of political, economic, cultural, social, and spiritual contexts on occupational

performance are some examples of shared priorities in each ontological viewpoint.

Applicability of the *PRPP Assessment* across a range of neurological conditions has been demonstrated, including traumatic brain injury (TBI) (Nott et al., 2009; Nott & Chapparo, 2008, 2012), ABI (Nott & Chapparo, 2020; White et al., 2020), and dementia (Steultjens et al., 2012). The *PRPP Assessment* is not reliant on language or influenced by educational achievement as it applies a person-centred, observation-based approach. It has been designed for use with people of all ages, diagnoses, genders, and cultural backgrounds. A norm-referenced lens is not applied. Interpretation of performance is specific to the client and the context in which performance occurs. The *PRPP Assessment* has been used internationally in cross-cultural contexts, including Thailand (Juntorn et al., 2016; Juntorn et al., 2017; Munketvit, 2005), Canada (Aubin et al., 2014), Sweden (Fryxell, 1999), Germany (Steultjens et al., 2012; Voigt-Radloff et al., 2009), Norway (Stigen et al., 2018), The Netherlands (Sturkenboom et al., 2020; Van Keulen-Rouweler et al., 2017) and New Zealand (Burrows et al., 2022; Frank, 2014). The *PRPP Assessment* has been identified as a suitable tool for use with Aboriginal and Torres Strait Islander children to provide a culturally relevant assessment of cognition (Thorley & Lim, 2011). Although occupational therapists are using the *PRPP Assessment* across several settings with Aboriginal and Torres Strait Islander peoples in the Northern Territory and reporting promising findings (Smith et al., 2017), its clinical utility has not been investigated.

Clinical utility is an increasingly used concept in health care and involves exploring the appropriateness of an assessment or intervention, as well as its accessibility, acceptability, and practicality. Appropriateness of an assessment includes determining whether it is effective in measuring a construct in a particular practice context and the relevance of the information gained (Smart, 2006). We sought to investigate the appropriateness of the *PRPP Assessment* for use with Aboriginal and Torres Strait Islander peoples following ABI. Specifically, we examined two key aspects of appropriateness:

1. How the *PRPP Assessment* demonstrates change in cognitive strategy application over time with Aboriginal and Torres Strait Islander peoples with ABI (emerging evidence for *effectiveness*), and
2. How the *PRPP Assessment* supports the process of forming meaningful, client-centred goals to inform occupational therapy practice with Aboriginal and Torres Strait Islander peoples and their families (emerging evidence for *relevance*).

## 2 | METHODS

### 2.1 | Study design

A critical case story design was selected as the first step to explore the clinical utility of the *PRPP Assessment* when used with Aboriginal and Torres Strait Islander peoples in the Northern Territory of Australia. The use of case studies is recognised as an important research method to evaluate and understand occupational therapy practice and to build the evidence base (McQuaid et al., 2022). In this paper, the term ‘case stories’ is preferred and used, rather than case studies, as a mark of respect to the participants who are sharing their stories. The critical case story design was formulated by drawing on the case study principles of Yin, 2018, to define the ‘study’s questions, propositions, and case(s)’ (Yin, 2018, p. 34). Although a single case is often considered sufficient to explore a critical case, the authors determined that two ‘critical cases’ were preferred to fulfil the criteria required to investigate a new theory, to ensure the case stories were representative of the wider client group for future studies and to strengthen the findings (Bootes & Chapparo, 2010; Nott & Chapparo, 2008; Yin, 2018). Participants were sought using the following inclusion criteria: (i) Aboriginal and/or Torres Strait Islander, (ii) over 18 years of age, (iii) with ABI, (iv) resulting in cognitive impairment, and (v) residing in the Northern Territory. The presence of premorbid cognitive impairment and/or a history of alcohol and substance use did not exclude participants from this study, as these are common presentations in the clinical setting.

### 2.2 | Instrumentation

The *PRPP Assessment* is observation-based and carried out in naturalistic contexts, where feasible. Assessment focuses on the performance of everyday tasks that are personally and culturally meaningful. Administration commences with the therapist, client, and/or family collaboratively identifying everyday tasks of importance to a client and their family, including how they usually undertake the task. The *PRPP Assessment* is administered across two stages. *Stage One: Performance Mastery (PM)* measures how well a task or routine is performed according to person-specific criteria, and a Total Mastery Score is generated. This is expressed as a percentage of the task the person has mastered. Detailed explanations of scoring processes for Stage One are well documented (Chapparo & Ranka, 2014; White et al., 2020).

*Stage Two: Cognitive Strategy Application (CSA)* measures the use of cognitive strategies during performance.

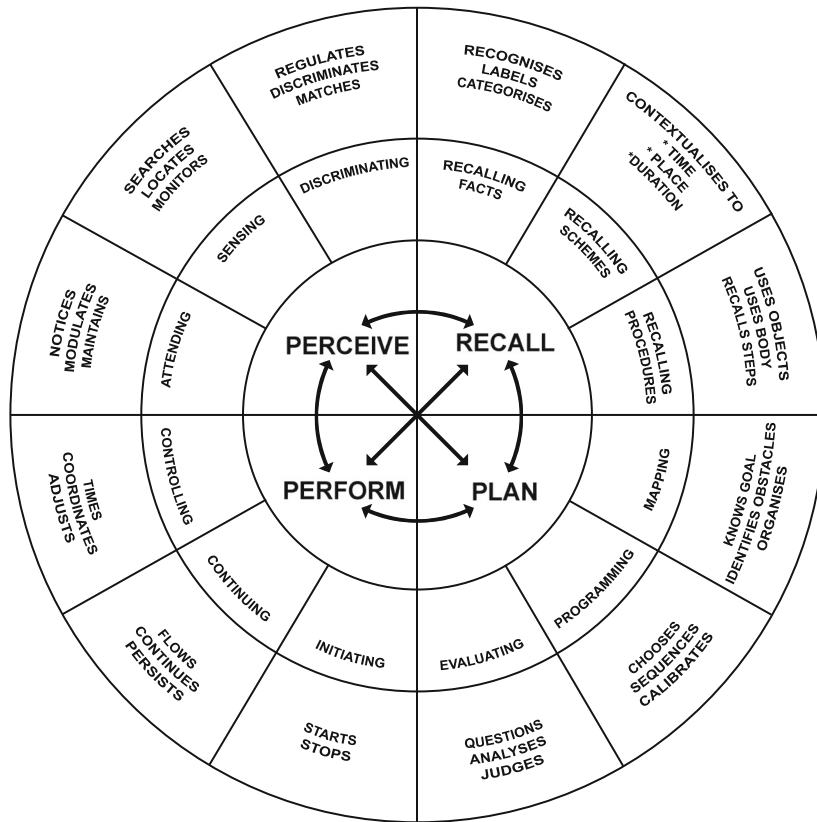
Stage Two determines the cognitive strategy use reasons for reduced mastery, while also identifying strengths in cognitive strategy use. An information processing model of cognition underpins this part of the *PRPP Assessment*. From this perspective, the human brain is viewed as an organ that receives and processes information arising from within the person and the context and uses this information to shape action in everyday life. This processing has been operationalised in the *PRPP Assessment* as encompassing four central dimensions of information processing, represented as Quadrants (Figure 1). The Perceive Quadrant focuses on the processing of sensory information. The Recall Quadrant is concerned with storing, recognising, and retrieving information. The Plan Quadrant represents processes involved in planning and evaluating decisions and actions, and the Perform Quadrant focuses on the initiation of action and performance monitoring (Nott & Chapparo, 2020). Cognitive strategies are behaviours that represent processing operations within each of these Quadrants and are applied by a person during daily life activity. Thirty-five strategy application behaviours, called ‘Descriptors’, are considered within these Quadrants (Figure 1). Stage Two yields a Total Strategy Application Score. Scores are used to identify the specific strategy application behaviours required to improve performance and become the focus of intervention.

### 2.3 | Process

*PRPP Assessments* were administered at the commencement of inpatient rehabilitation (Observation 1), at the beginning of outpatient rehabilitation (Observation 2), and at the time of discharge from outpatient rehabilitation (Observation 3). Both participants received occupational therapy using the *PRPP Intervention* approach, guided by *PRPP Assessment* findings obtained at each observation point. Table 1 outlines the tasks assessed.

### 2.4 | Ivan’s story

Ivan (self-selected pseudonym) is an Aboriginal man who lives on Larrakia Country in the Northern Territory. He was 50 years of age when he sustained a severe TBI following an assault. He managed all activities of daily living independently, had previously worked as a taxi driver, and enjoyed watching Australian Rules football, fishing, and cooking. Ivan was a single man with a large and supportive family, including his sister as a primary support person. Ivan’s medical history included alcohol and tobacco dependency, fatty liver, and depression.



**FIGURE 1** The Perceive, Recall, Plan and Perform (PRPP) Assessment Stage Two Conceptual Model.

**TABLE 1** Tasks assessed at each observation point.

Ivan	Task	Context
Observation 1	Prepared toast	Rehabilitation unit kitchen
Observation 2	Prepared meat for a dinner meal	Sister's home
Observation 3	Prepared breakfast of eggs, sausage, and toast	Ivan's home
Jean	Task	Context
Observation 1	Prepared a cup of tea	Rehabilitation unit kitchen
Observation 2	Prepared a cold drink	Jean's home
Observation 3	Prepared two hot drinks	Jean's home

Initial brain CT scan revealed multiple bilateral frontal lobe contusions, small anterior subdural haemorrhage, left frontal oedema, and base of skull fracture. Ivan was transferred to inpatient rehabilitation 3 months post-injury and participated in 4 months of inpatient multidisciplinary rehabilitation followed by a further 3 months of outpatient rehabilitation, to which he sporadically attended. Ivan was deemed to be in chronic

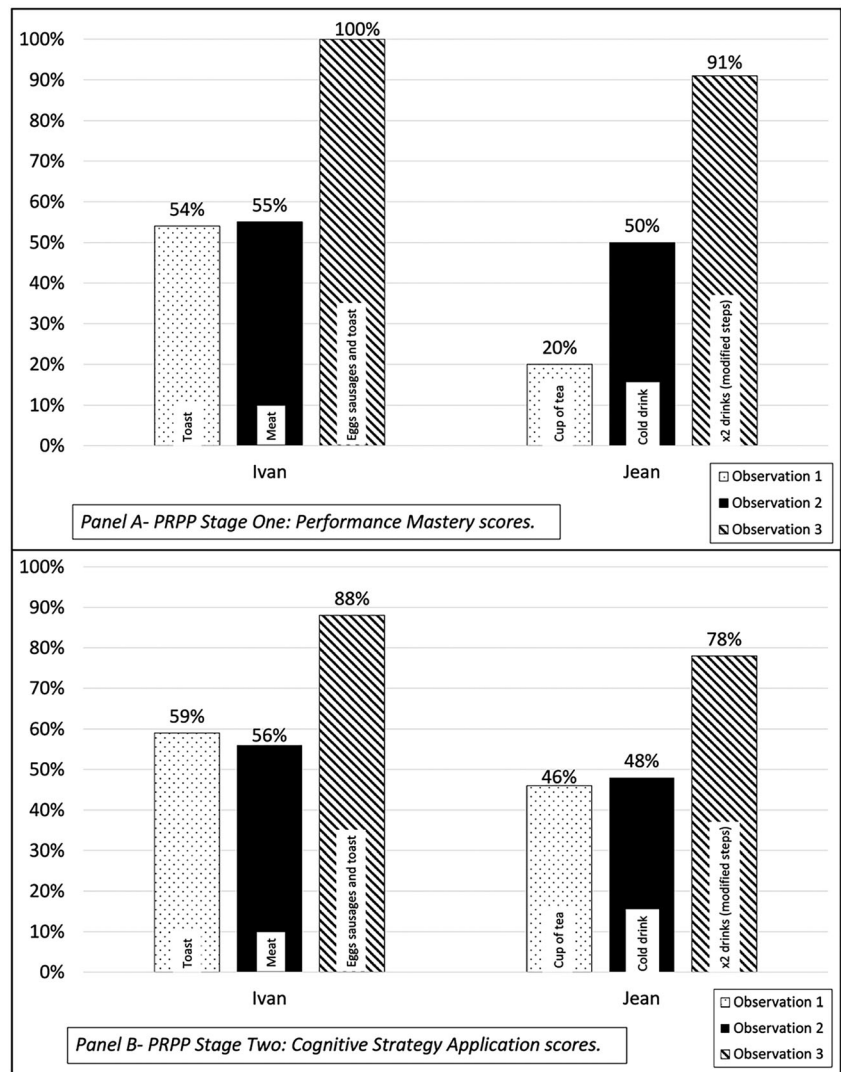
post-traumatic amnesia 4 months post-injury, and his sister was appointed as both his decision-maker and carer under the Northern Territory Adult Guardianship order.

## 2.5 | Jean's story

Jean (self-selected pseudonym) is an Aboriginal woman who lives on Larrakia Country in the Northern Territory. She was 59 years of age when she sustained an extensive stroke followed by a delayed presentation to hospital. Jean lived with her partner and had a large, supportive family. Jean spoke three languages. Her family reported that she was not a strong student and left school around the age of 14, achieving basic English reading and writing skills. Her family reported that Jean was an excellent homemaker, a good cook, and a sewer. Jean's medical history included hypertension, dyslipidaemia, osteoarthritis, type 2 diabetes mellitus, and alcohol dependency. It was noted that Jean was born prematurely with a very low birth weight (1.1 kg).

Brain imaging revealed that Jean sustained a non-traumatic left subarachnoid and subdural haemorrhage. Jean was transferred to inpatient rehabilitation 1 month after her presentation to hospital. She had a 10-week

**FIGURE 2** Ivan's and Jean's Perceive, Recall, Plan and Perform (PRPP) Stage One scores at Observations 1, 2, and 3.



rehabilitation admission where she received multidisciplinary input followed by a further 4 months of regularly attended outpatient rehabilitation. Jean presented with significantly impaired vision and fluent but severe expressive and receptive aphasia.

## 2.6 | Analysis and presentation of findings

Total Mastery Scores obtained on Stage One (Performance Mastery) of the *PRPP Assessment* for Ivan and Jean were calculated and graphed. Differences between performances at the three observation points were calculated. *PRPP Assessment* Stage Two Cognitive Strategy Application raw scores were summed and converted to percentages to derive Total Strategy Application Scores for Ivan and Jean at each observation point, and comparisons were made. Stage Two Subquadrant scores

were plotted on radar graphs that align visually with the *PRPP* Stage Two Conceptual Model (Figure 1). Each observation point was assigned a different line pattern for ease in viewing performance strengths and needs. Performance above 85% indicates adequate cognitive strategy use in the task, as per the criterion-referenced nature of this tool (Chapparo & Ranka, 2014; White et al., 2020).

## 3 | FINDINGS

### 3.1 | Clinical utility: Effectiveness in measuring change

Occupational therapists were able to objectively observe and use standardised scoring methods to demonstrate changes in performance of personally meaningful tasks in relevant contexts/settings at three points.

### 3.1.1 | Stage One: Performance Mastery findings

PRPP Assessment Stage One results demonstrate change in mastery from Observation 1 to Observation 3 for both Ivan and Jean (Figure 2a). Ivan demonstrated an overall increase of 46% from Observation 1 to Observation 3 to achieve the mastery criterion set at 100%. Jean demonstrated an overall increase of 71% from Observation 1 to Observation 3.

### 3.1.2 | Stage Two: Cognitive Strategy Application findings

PRPP Assessment Stage Two total scores indicate that both Ivan and Jean made improvements in overall cognitive strategy use from Observation 1 to Observation 3 (Figure 2b). Ivan demonstrated an overall increase of 29% from Observation 1 to Observation 3. Jean demonstrated an overall increase of 32% from Observation 1 to Observation 3.

### 3.1.3 | Ivan

Each line on the radar graph (Figure 3a) represents Ivan's performance at each consecutive time point (Observations 1, 2, and 3). Strengths in cognitive strategy use are indicated by higher percentages. At Observation 1, Ivan demonstrated global difficulties in all four PRPP Quadrants. Despite his difficulties, Ivan demonstrated strengths in the Subquadrants of Recalling Facts and Discriminating. This was a consistent presentation noted in Observations 1 and 3. Over the time spent with Ivan, Sensing strategies within the Perceive Quadrant improved from 33% to 100% (67% increase) and Attending strategies improved from 56% to 100% (44% increase). Similarly, Perform Quadrant strategies of Initiating demonstrated an increase from 33% to 83% (50% increase) and Continuing strategies increased from 33% to 89% (56% increase). Ivan's overall application of cognitive strategies on Stage Two of the PRPP Assessment showed improvement (29%) from Observation 1 to Observation 3, as indicated by the dashed line on the radar graph in Figure 3a.

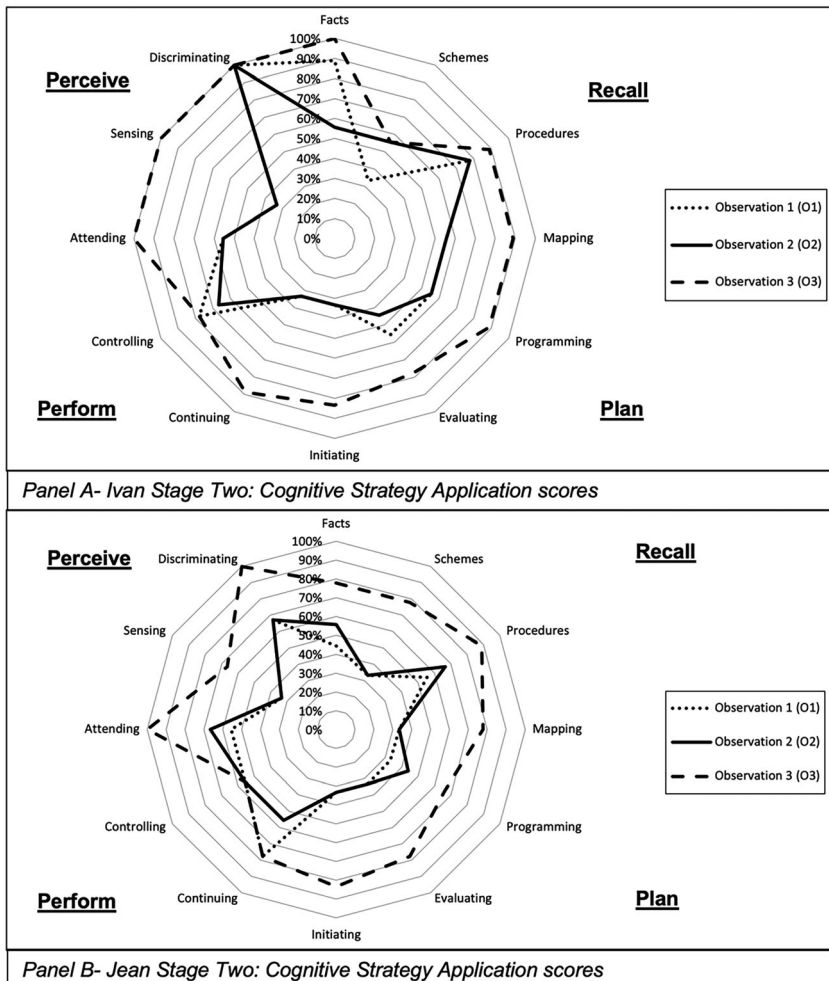


FIGURE 3 Ivan and Jean's PRPP Assessment Stage Two: Cognitive Strategy Application results at Observations 1, 2, and 3.

### 3.1.4 | Jean

Jean's performance at each consecutive point (Observation 1, 2, and 3) is presented in the radar graph in Figure 3b. Patterns of cognitive strategy application were very similar in Observations 1 and 2. At Observation 3, an increase in the use of cognitive strategies was seen in all Quadrants. Behaviours supporting Recalling Schemes improved from 33% to 78% (45% increase) from Observation 1 to Observation 3. Similarly, Evaluating behaviours in the Plan Quadrant demonstrated an increase from 33% to 78% (45% increase) from Observation 1 to Observation 3. Initiating actions in the Perform Quadrant improved from 33% to 83% (50% increase) from Observation 1 to Observation 3. Overall application of cognitive strategies in Stage Two of the *PRPP Assessment* showed improvement from Observation 1 to Observation 3 (32%) as illustrated by the differences between the dotted and dashed lines on the radar graph in Figure 3b.

## 3.2 | Clinical utility: Relevance of information

*PRPP Assessment* processes identified a range of cognitive strengths in both clients and areas to be targeted in intervention. The collaborative assessment processes provided flexibility and adaptability to meet the changing needs of clients and families during the rehabilitation journey. *PRPP Assessment* findings created the platform for collaborative discussions with family members, leading to effective goal setting for both clients.

### 3.2.1 | Ivan's goals

Ivan's *PRPP Assessment* at Observation 1 informed decision-making about the intervention approach adopted with Ivan. Task embedded practice of applying cognitive strategies to the overall goal of independent simple meal and drink preparation using the *PRPP Intervention* approach was implemented. Specific Subquadrant Descriptors with low scores, including Attending (*Maintains*), Sensing (*Searches*), Recalling Procedures (*Recalls Steps*), Mapping (*Knows Goal*), and Initiating (*Starts*) that were expected to impact other behaviours, for example, Recalling Schemes (*Contextualising to Time, Place*), were targeted. Errorless learning principles, task embedded cues, gestures, verbal directives, and questions were used to prompt Ivan's attending, remembering, thinking, and self-initiation during performance.

At the time of Observation 2, Ivan was living in his sister's home. He displayed apathy, had difficulty

carrying out daily activities, had poor personal hygiene, and was not eating regularly. Ivan was not able to set meaningful or realistic goals and continued to display limited self-awareness. A collaborative discussion with Ivan and his family about short- and long-term goals was facilitated following the *PRPP Assessment*. The long-term goal of living alone with support systems in place was decided upon. At the final assessment (Observation 3), conducted 6 months after Observation 1, Ivan had achieved his long-term goal. He was living alone in a public housing unit with the support of his sister to manage some daily activities. Subsequent to this, Ivan participated in two occupational therapy sessions held in his new home using the *PRPP Intervention* approach. He reported being satisfied with living alone and his mood appeared to have improved.

### 3.2.2 | Jean's goals

Jean's vision was significantly impaired post-stroke; however, this could not be accurately assessed because of her severe cognitive and communication impairments. In contrast, the *PRPP Assessment* did allow for the impact of Jean's visual impairment on function to be assessed. Jean was unable to implement effective or systematic searching strategies (*Searches, Locates*) as demanded by the task. This would quickly lead to her becoming highly emotional and overly distressed during the task to the point that it interfered with performance (*Calibrates*). The Plan Quadrant (*Mapping*) was also highly impacted. Jean had difficulty keeping the goal of the task in mind (*Knows Goal*) and required assistance from the therapist throughout the task to remind her she was making a cup of tea. Jean's *PRPP Assessment* findings were used to support the goal setting process and informed the *PRPP Intervention* approach of task embedded retraining using highly personalised, familiar, and meaningful occupations.

Observation 2 was completed in the home, where Jean was living with her partner, undertaking the task of preparing a cold drink (cordial). Occupational therapy goals were set with Jean, her partner, and her sister directly following the administration of the *PRPP Assessment*. The goal setting process was guided by a discussion of Jean's cognitive strengths and weaknesses, as observed by her partner and sister during the *PRPP Assessment*. The goals included simple meal preparation and engaging in regular family and leisure occupations with family support. The *PRPP Intervention* approach was undertaken in the home on a weekly basis for 3 months.

The collaborative assessment processes provided flexibility and adaptability to meet Jean's changing needs. Consistent with Jean's rehabilitation goal of independently

preparing breakfast, snacks, and drinks, Observation 3 was of Jean preparing two hot drinks. During the assessment, Jean's partner chose to modify this original goal from independent preparation to receiving assistance with pack up and put away, which he would provide. Therefore, the number of steps Jean was required to complete for Observation 3 was reduced from 12 to 9, and she achieved 91% mastery. Despite reducing the number of steps, task complexity remained highest at Observation 3 when compared with Observations 1 and 2. The flexible and dynamic nature of the PRPP Assessment allowed for agreed changes to the criteria set for each task.

## 4 | DISCUSSION

This study explored clinical utility of the *PRPP Assessment* with Aboriginal and Torres Strait Islander peoples in Australia. This paper shares the stories of two Aboriginal people, Ivan and Jean, highlighting the effectiveness of the *PRPP Assessment* in measuring change in cognitive strategy application over a 6-month period. The relevance of information gained from the *PRPP Assessment* was in its use to support the establishment of client-centred goals in partnership with Ivan, Jean, and their families and the direction it provided to intervention.

### 4.1 | Effectiveness: Demonstrating change in cognitive strategy application

The sensitivity to change was evidenced in both participants, who demonstrated observable improvements in performance mastery and cognitive strategy use as measured by the *PRPP Assessment*. The *PRPP Assessment* Stage One: Performance Mastery findings demonstrated an increase in mastery of the selected tasks, and this was seen to informally correlate with each participant's engagement and participation in their daily activities outside of the therapy context. Findings obtained on Stage Two: Cognitive Strategy Application of the *PRPP Assessment* demonstrated a similar and consistent pattern of improved cognitive strategy use that could be sequentially assessed (over time) and depicted visually for ease of interpretation (Figure 3). Overall, the critical case stories described in this paper show preliminary utility of the *PRPP Assessment* in measuring change in cognitive strategy application required for the successful performance of meaningful everyday tasks by two Aboriginal Australian participants who had sustained an ABI. These initial findings are promising and consistent with other published case studies (Fry & O'Brien, 2002; Nott & Chapparo, 2008). Further exploration is required to

determine if these findings may be relevant to more Aboriginal and Torres Strait Islander peoples.

### 4.2 | Relevance: Forming goals to inform occupational therapy practice

The process of forming client-centred goals following ABI is recognised as an essential, yet challenging, area of occupational therapy practice and is accepted to be particularly complex when impairments of self-awareness, cognition, and communication are present, as was the case with the participants in this study (Doig et al., 2009; Prescott et al., 2018). This is further complicated by a lack of research exploring goal setting processes with Aboriginal and Torres Strait Islander peoples. Areas of need identified include exploring perceptions of Aboriginal and Torres Strait Islander peoples on goal setting processes (Copley et al., 2021) and staff training in goal setting following stroke rehabilitation (Kelly et al., 2022). In this study, *PRPP Assessment* findings were used to form meaningful goals in conjunction with each participant and their family. This involved discussing assessment findings and attaching meaning to these findings as they related to the daily lives of the participants in this study. Participants expressed the goals formed to be relevant to their daily lives, and they partook in subsequent occupational therapy sessions.

A recent study exploring goal setting following ABI emphasised the importance of building rapport and trust, engaging families in the goal setting process, and incorporating metacognitive training strategies to develop the client's understanding of how cognitive impairments impact the performance of client-specific occupations (Prescott et al., 2018). Metacognitive strategies were used with participants in this study to build awareness of cognitive strengths and difficulties within the real-world context. To the best of our knowledge, the use of an occupation embedded assessment approach and how this impacts, or influences, the process of forming goals with clients following ABI is yet to be explored. This study, however, found that the occupation embedded approach of the *PRPP Assessment* was successfully used as a segue to discussing and identifying meaningful goals for therapy with both participants and their families.

### 4.3 | Key features of cognitive assessment: Engaging

The stories presented in this paper demonstrate how the *PRPP Assessment* approach aligns with the key features of assessments used to examine cognitive function with

Aboriginal and Torres Strait Islander peoples. This includes assessment tasks that are not reliant on language, influenced by educational achievement, nor aligned with the practices of specific cultures (Bohanna, Stephens, et al., 2013; Dingwall et al., 2014; Lewis et al., 2010). The *PRPP Assessment* provides a method of cognitive assessment that was demonstrated in these stories to be engaging to the participant. This was achieved through use of everyday tasks that were meaningful and could be performed in naturalistic contexts. For example, when working with Ivan, the flexibility in choosing personally meaningful tasks enabled the therapist to use knowledge of Ivan's interests, including that he enjoyed cooking prior to his injury, and capitalise on his motivations of feeling hungry at the time the session was scheduled. Engagement is a key feature of cognitive assessment processes with Aboriginal and Torres Strait Islander peoples and a recognised challenge for individuals with executive functioning deficits post-ABI (Dingwall et al., 2014; Whyte et al., 2011). In these critical case stories, the occupation embedded nature of the *PRPP Assessment* approach was found to facilitate engagement in the assessment process for both Aboriginal Australian participants and their families.

#### 4.4 | Key features of cognitive assessment: Strengths-based

There is a growing body of evidence demonstrating the negative impact deficit discourse has on the health and wellbeing of Aboriginal and Torres Strait Islander peoples. The use of a strengths-based approach, an umbrella term encompassing the use of solutions-focussed and empowering approaches to health issues, is recommended (Fogarty et al., 2018). Therapists working with Aboriginal and Torres Strait Islander peoples are encouraged to use a standardised, strengths-based approach to assessment (Bohanna, Stephens, et al., 2013; Dingwall et al., 2014; Lewis et al., 2010). In each participant's story, the *PRPP Assessment* findings and resulting selected interventions are observed to align with this description of a strengths-based approach. *PRPP Assessment* findings generate information on both cognitive strengths and difficulties for each participant. While working with Ivan and Jean, cognitive strengths were utilised to set meaningful goals and inform intervention approaches. For example, Jean displayed strengths in being able to persist and continue with steps of the task through to task completion (*Continues*). This strength was harnessed to build her capacity in other cognitive strategies related to continuing with the task and subsequently maintaining momentum of the task providing her with the

opportunity to acquire additional cognitive strategies targeted during intervention. The stories in this study demonstrated the ability to draw out cognitive strengths from *PRPP Assessment* findings, reveal these strengths to Ivan and Jean and their families, and emphasise them in client care. This observation appears congruous with the strengths-based approach identified by Fogarty et al. (2018).

#### 4.5 | Key features of cognitive assessment: Observation-based, performance-focused

The *PRPP Assessment* is administered through observations of performance. It has little reliance on the use of language to administer the tool making it particularly appropriate in situations where the therapist does not speak the primary language of the client, or when working with people who have communication difficulties. Both the client and the health professional must understand the goal of the task being assessed; however, this may be achieved through cues, gestures, and physical guidance. Little other verbal communication and no written communication are required to complete the *PRPP Assessment*.

In Jean's story, despite significant receptive and expressive communication deficits arising from her ABI, the *PRPP Assessment* was used effectively. The extent of Jean's communication deficits, the fact she spoke multiple languages in addition to English, had a low level of formal schooling and reported pre-morbid reading/writing challenges, prevented the use of any other standardised cognitive assessment throughout her rehabilitation. Language barriers and communication impairments are a challenge faced by clinicians when administering assessments with Aboriginal and Torres Strait Islander peoples (Armstrong et al., 2017). In this situation, the above-mentioned communication challenges did not prevent the use of the *PRPP Assessment* with Jean. Additionally, the language used in the *PRPP Assessment* to describe cognitive strategy application behaviours (Descriptors) was found to be accessible to the participants and family members in this study. Further research is required into optimum ways of communicating *PRPP* System of Task Analysis: Assessment and Intervention constructs when working with Aboriginal and Torres Strait Islander peoples.

#### 4.6 | Limitations

The primary limitation in this study is the small number of stories explored; however, the two presented are

identified as critical cases. A small sample size is typical of a case study design (Schoch, 2019). The use of multiple stories, as opposed to a single story, was a design choice implemented to strengthen the findings in this initial exploration of clinical utility (Yin, 2018). Second, Ivan and Jean were both Aboriginal Australians; no Torres Strait Islander peoples were included. Third, both participants were regionally dwelling with English as one of their primary languages. This study did not explore the use of the *PRPP Assessment* with remote-dwelling Aboriginal or Torres Strait Islander peoples for whom English is not one of their primary languages. Further research into the use of the *PRPP Assessment* with Aboriginal and Torres Strait Islander peoples from varying geographical locations throughout the Northern Territory is needed.

## 5 | CONCLUSION

This is the first study to investigate the clinical utility of the *PRPP Assessment* with Aboriginal Australians. The critical case stories presented demonstrate the effectiveness of the *PRPP Assessment* in measuring change in task performance mastery and cognitive strategy use with two Aboriginal Australians following ABI. The relevance of the findings was demonstrated by their use in establishing meaningful goals and informing intervention. The strengths-based and real-world approach of the *PRPP Assessment* was well accepted by Ivan and Jean and their families who engaged with the process. These preliminary findings are supportive of further research on a larger scale investigating validity of the *PRPP Assessment* and the additional dimensions of clinical utility, including accessibility, practicality, and acceptability when used with Aboriginal and Torres Strait Islander peoples.

## AUTHORS' DECLARATION OF AUTHORSHIP CONTRIBUTION

All authors contributed significantly and are in agreement on the content of the manuscript. The study was conceived and designed by all authors. Mrs. Rebecca Leanne Smith completed the data collection. Dr Judy Ranka and Associate Professor Melissa Nott contributed to the analysis.

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## CONFLICT OF INTEREST STATEMENT

The authors have no conflict of interest to declare.

## DATA AVAILABILITY STATEMENT

No, the data not available for sharing other than what is in the manuscript due to ethical restrictions.

## ETHICS STATEMENT

The two participants recruited for this study both identified as Aboriginal Australians, sharing their stories as 'Ivan' and 'Jean'. Both participants were engaged in a therapeutic relationship with the lead author (RS) during a tertiary hospital admission in the Northern Territory. Trust and rapport are integral to the process of gaining consent from Aboriginal and Torres Strait Islander peoples (Fitts et al., 2019), and this occurred in the context of the therapeutic relationship. Informed consent processes were guided by the hospital in which care was provided and performed in accordance with the Declaration of Helsinki, the Code of Ethics (Australian Institute of Aboriginal and Torres Strait Islander Studies, 2020a), and accompanying guidelines (Australian Institute of Aboriginal and Torres Strait Islander Studies, 2020b; National Health and Medical Research Council, 2018). The participants and their families were made aware of the option to decline to participate without this impacting the care received or the relationship between the therapist and the client and family. Access to client medical records was approved under Menzies School of Health Research Human Research Ethics Committee (2016–2718) and Charles Sturt University Human Research Ethics Committee (H17074).

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