

# Evaluating subtle cognitive changes in women following chemotherapy treatment for breast cancer: A functional perspective



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## Background

Cognitive strategies are **the internally generated mental techniques** that we use to function effectively in order to:

- identify important information
- understand, retain and retrieve information
- plan and modify responses, and
- cope with distractions

The the Perceive, Recall, Plan and Perform (PRPP) model provides a cognitive task analysis that describes the cognitive processes that underlie performance of tasks and the cognitive strategies used to respond adeptly to complex situations.<sup>1</sup> Cognitive changes (or disorders in cognitive strategy use) are commonly experienced by women following treatment for breast cancer<sup>2</sup> and need to be measured to distinguish between effects of co-morbidities such as depression or anxiety. Assessment of cognitive strategy use during functional activities is needed to identify where disorders are occurring when strategy use does not match environmental demands<sup>3</sup>.

## Research questions

Following treatment for breast cancer, what cognitive strategies are affected for women? Can subtle cognitive changes be detected and identified?

## Study aims

To identify cognitive processing difficulties defined by the Perceive, Recall, Plan and Perform (PRPP) system of task analysis identified by women who have experienced cognitive changes.

## The Perceive, Recall, Plan, Perform (PRPP) Model

### PERCEIVE

Strategies used to attend and gather sensory information and to form highly discriminative sensory pictures of oneself and the task environment

### RECALL

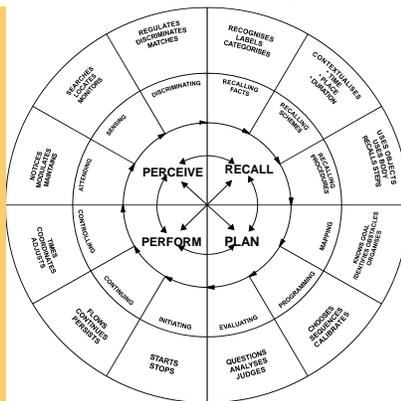
Strategies reflecting processes associated with information storage, recognition and retrieval

### PLAN

Strategies associated with making plans, decisions and judgments about the nature and quality of performance

### PERFORM

Strategies used to carrying out and adjusting performance



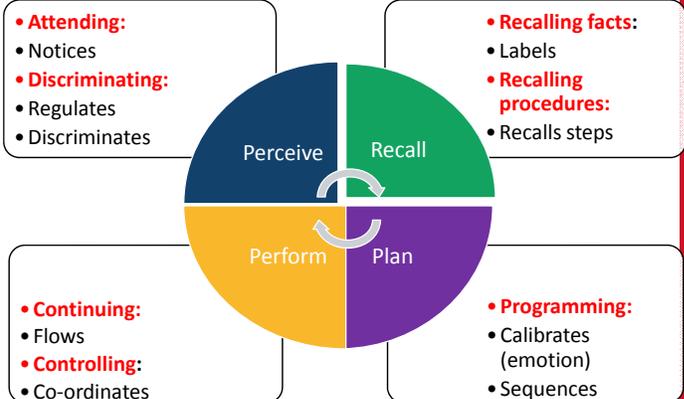
## Rationale for using the PRPP system of task analysis

- The tool is not deficit-driven but examines what a person needs to do and identifies any issues encountered when attempting selected tasks such as omissions, errors in accuracy and timing or repetition.
- The tool is not based on cognition per se, but analyses the cognitive strategies needed to undertake tasks.
- The tool is very ecologically valid and does not manipulate tasks for assessment.
- The tool allows for an interpretation of why cognitive difficulties are being experienced and identification of interventions to address them.

## Method

A secondary data analysis was undertaken of transcripts from interviews with nine women about their experience of cognitive difficulties following their treatment for breast cancer<sup>2</sup>. Data were categorised according to PRPP constructs.

## Results



Transcripts consistently identified cognitive strategy difficulties in the above areas, and these resulted in challenges undertaking functional activities.

### PERCEIVE:

*"I only read half the email message, then reply"*  
*"Anything too detailed is really challenging"*

### RECALL

*"You can almost see things in front of your head, but you can't name them"*  
*"I put my swimmers in the freezer in a plastic bag"*

### PLAN

*"I could read the easy stuff but not the hard stuff. It makes you feel dumb"*  
*"Less tolerant of things...very cranky...lost some of my coping mechanisms"*

### PERFORM

*"A job might take so much longer, but I just suck it up. A report takes 5 hours to write now, but I can only charge 3 hours"*  
*"It's as though you've got glue in the system"*

There were also examples of positive cognitive strategies used by women to adapt to these cognitive challenges.

## Discussion

The PRPP tool was able to identify difficulties in cognitive processing around everyday tasks commonly experienced by these women. It is now appropriate to test this tool with a larger sample to identify consistent issues and potential interventions. As the PRPP tool is behaviour-based and strategy-based any interventions can be individually targeted. It is possible that some observed cognitive processing difficulties in this population could be incorrectly interpreted as **only** fatigue or depression. Further in-depth assessment, using a tool like the PRPP that focuses on functional activity, is needed to evaluate the key issues contributing to observed cognitive difficulties.

## REFERENCES

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