



AOTA Critically Appraised Topics and Papers Series
Traumatic Brain Injury

**A product of the American Occupational Therapy Association's
Evidence-Based Literature Review Project*

CRITICALLY APPRAISED PAPER (CAP)

Focused Question

What is the evidence for the effect of interventions to address cognitive/perceptual functions (attention, memory, executive functions) on the occupational performance for persons with traumatic brain injury (TBI)?

Watanabe, T. K. , Black, K. L., Zafonte, R. D., Millis, S. R., & Mann, N. R. (1998). Do calendars enhance posttraumatic temporal orientation?: A pilot study. *Brain Injury, 12*, 81–85.

PROBLEM STATEMENT (JUSTIFICATION OF THE NEED FOR THE STUDY)

State the problem the authors are investigating in this study.

Disorders of orientation occur in a large percentage of patients with brain injuries who are admitted to inpatient rehabilitation. Maladaptions, such as confusion, agitation, and social inappropriateness, may result. Reorientation is an important component of recovery from posttraumatic amnesia (PTA). Most reviews that describe strategies for reorientation suggest the use of calendars. However, critical examination of the efficacy of calendars to hasten temporal orientation has not been performed.

RESEARCH OBJECTIVE(S)

List study objectives.

Examine the relationship among age, injury severity, and use of calendar on emergence from PTA.

Describe how the research objectives address the focused question.

Occupational therapists use calendars as an intervention for temporal disorientation, with the expectation that occupational performance will improve when the patient becomes more temporally oriented. This study examines the efficacy of the use of calendars.

DESIGN TYPE:

Randomized controlled trial

Level of Evidence:

I

Limitations (appropriateness of study design):

Was the study design type appropriate for the knowledge level about this topic? *If no, explain.*

Yes

No

SAMPLE SELECTION

How were subjects selected to participate? Please describe.

Consecutive admissions to the brain injury inpatient rehabilitation unit; randomized by room assignment.

Inclusion Criteria

NR

NR = Not reported.

Exclusion Criteria

Aphasia; visual deficits severe enough to make them unable to see the calendar

Sample Selection Biases: *If yes, explain.*

Volunteers/Referrals

Yes

No

Attention

Yes

No

Others (list and explain):

SAMPLE CHARACTERISTICS

N= 32; 14 experimental, 16 control

% Dropouts

(%) Male

(%) Female

Ethnicity

Disease/disability diagnosis

Check appropriate group:

<20/study group <input checked="" type="checkbox"/>	20–50/study group	51–100/study group	101–149/study group	150–200/study group
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Sample Characteristics Bias: If no, explain.

If there is more than one study group, was there a similarity between the groups?

Yes mean age, gender, traumatic/nontraumatic brain injury

No

Were the reasons for the dropouts reported?

Yes missing data

No

INTERVENTION(S)—Included are only those interventions relevant to answering the evidence-based question.

Add groups if necessary

Group 1: Experimental—Calendar

Brief Description	The Temporal Orientation Test was administered daily. Orientation errors were corrected at the time of testing each day and the correct information was demonstrated to the patient on the in-room calendar. Calendars were placed at bedside, printed boldly on 8.5” x 11” paper in 36-point bold font.
Setting	Patient’s bedside
Who Delivered?	Trained raters
Frequency?	Once per day
Duration?	Until discharged or oriented

Group 2: Control—No calendar

Brief Description	NR
Setting	
Who Delivered?	
Frequency?	
Duration?	

Intervention Biases: Explain, if needed.

Contamination

Yes Control group probably received orientation information from other staff or visitors

No

NR

Co-intervention

Yes

No

NR

Timing

Yes

No

NR

Site

Yes

No

NR

Use of different therapists to provide intervention

Yes

No

NR

MEASURES AND OUTCOMES—Included are measures relevant to answering the focused question.

Name of measure:

Temporal Orientation Test

Outcome(s) measured (what was measured?):

Orientation to time; scoring not described.

Is the measure reliable (as reported in article)?

Yes

No

NR

Is the measure valid (as reported in article)?

Yes

No

NR

How frequently was the measure used for each group in the study?

Daily until the patient achieved a normal score on 2 consecutive days or until the patient was discharged from inpatient rehabilitation

Measurement Biases

Were the evaluators blinded to treatment status? *If no, explain.*

Yes

No the test was the treatment

Recall or memory bias *If yes, explain.*

Yes

No memory was the patient's problem

Others (list and explain):

Scoring not described.

Limitations (appropriateness of outcomes and measures) If no, explain.

Did the measures adequately measure the outcome(s)?

Yes

No

RESULTS

List results of outcomes relevant to answering the focused question

Include statistical significance where appropriate ($p < 0.05$)

Include effect size if reported

Presence of a calendar was not significantly associated with emergence from PTA (answers a different question than proposed as research objective). $R = -0.03$; $p = 0.15$

Was this study adequately powered (large enough to show a difference)? *If no, explain.*

Yes

No because too many participants would have to be dropped (because they had not emerged from PTA), statistical analysis was not to find the difference in outcome between use of a calendar and no use of a calendar on Temporal Orientation Test (or other measure of orientation), but changed to be a regression analysis of association among variables related to PTA.

Were appropriate analytic methods used? *If no, explain.*

Yes

No used a regression analysis; said it was “because not all participants emerged from PTA [became oriented] prior to discharge;” should have used a between group comparison to answer the question posed for the study

Were statistics appropriately reported (in written or table format)? *If no, explain.*

Yes

No did not report the meaning of headings on results table

CONCLUSIONS

State the authors’ conclusions that are applicable to answering the evidence-based question.

This study suggests that the presence and use of in-room calendars during orientation testing only modestly enhances the recovery from disorientation in patients with brain injuries receiving inpatient rehabilitation. The authors concluded that the way the patients used (or did not use) the calendar to answer TOT questions indicated that problem solving, not orientation, was being tested. Calendars may not be helpful in promoting re-orientation despite their frequent espousal.

Were the conclusions appropriate for the study design (level of evidence)? *If no, explain.*

Yes

No the association between the use of calendars and emergence from PTA was only $R = 0.03$, accounting for 0.09% of variance.

Were the conclusions appropriate for the statistical results? *If no, explain.*

Yes

No

Were the conclusions appropriate given the study limitation and biases? *If no, explain.*

Yes

No

IMPLICATIONS FOR OCCUPATIONAL THERAPY

This section provides guidance about clinical practice, program development, and other implications of the study findings as they relate to the focused question.

This study lacked rigor to establish a causal relationship between the use of a calendar and recovery of temporal reorientation. Therapists cannot conclude that calendars are useful or not useful from this study.

This work is based on the evidence-based literature review completed by Catherine Trombly, ScD, OTR/L, FAOTA.

CAP Worksheet adapted from: Critical Review Form – Quantitative Studies ©Law, M., Stewart, D., Pollack, N., Letts, L., Bosch, J., & Westmorland, M., 1998, McMaster University. Used with permission.

For more information about the Evidence-Based Literature Review Project, contact the American Occupational Therapy Association, 301-652-6611, x 2052.



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