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03

ARTICLE #1

— Learning the figure 8 knot and social materiality in 7 to 9 years-old children

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Introduction

The execution of knots requires specific mental processes (Cross et al., 2017). Their learning can occur in isolation (S) or in the context of social materiality (SM), with functional and cultural association (Scanlon, 2016). The aim of the study is to verify if cultural contextualization favors knot learning.

[a] [b]

Image 1. [a] Learning in isolation (S); [b] Learning in a context of Social Materiality [SM].

Methods

The sample consists of 16 children (8.37±0.72 years old, ♀= 7), without knowledge of the figure eight-knot (Cross et al., 2012), and each group (S and SM) comes from distinct schools. Informed consent was obtained. Acquisition (A) test was made through video from the own perspective (Garland & Sanchez, 2013), with the possibility, by request, of intercalated visualizations (Jackson, 2016), until 3 consecutive successes were achieved. The following week, the Retention test (R) was performed, in which the knot was requested without viewing the video, and the Transfer test (T), to tie a new knot. All collections were performed individually without the presence of other children in the room.

Results

In A, the SM group significantly needed more visualizations (V) and more total time (TT) (Figures 1 and 2).

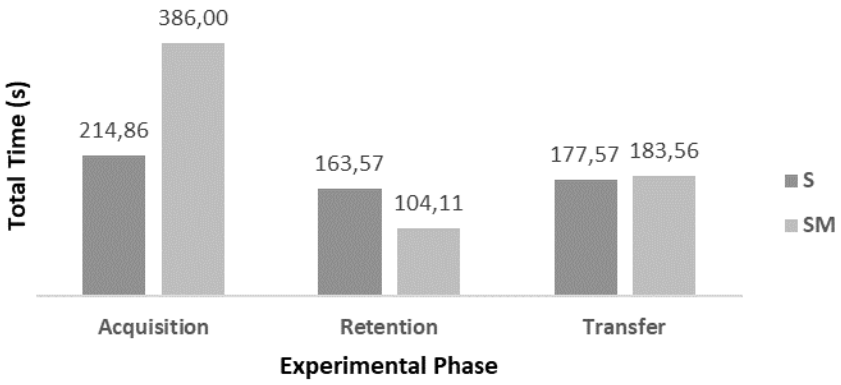

Figure 1. Descriptive statistics (mean) of variable Total Time between groups in each experimental phase.

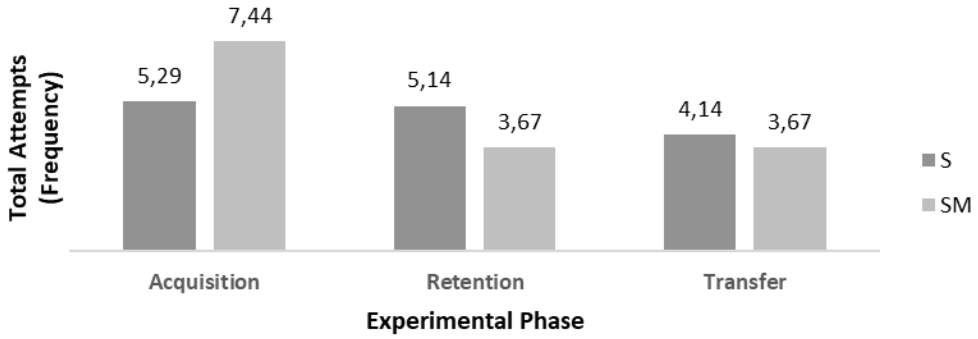

Figure 2. Descriptive statistics (mean) of variable Total Attempts between groups in each experimental phase.

Between A and R, the SM group significantly reduced the number of attempts and the TT; and, between A and T the V (Table 1).

Variables (experimental phases)	Z	*p**
Total Time (Acquisition ***x*** Retention)	2,666	0,01
Total Attempts (Acquisition ***x*** Retention)	2,530	0,01
Total Views (Acquisition ***x*** Transfer)	2,446	0,02

*** With Monte Carlo Correlation**

Table 1. Comparison (Wilcoxon-Z) between experimental phases (Acquisition, Retention, Transfer) for variables total time, total attempts and total views, in the SM experimental group.

In T, group S revealed a significant inverse association of age with TT and with the number of attempts, while in the SM group significant direct associations occurred among attempts in A and V in T, and among trials in R and T (Table 2). No gender differences were found.

Variables (phases)	rho	p	CI
Age x Total Time (Transfer)	-0,84	0,02	-0,98; -0,24
Age x Total Attempts (Transfer)	-0,89	0,01	-0,99; -0,39

Table 2. Significant associations (Spearman's rho. CI- Confidence Interval) were found between dependent variables and the respective experimental phase (in parentheses) for group S.

Discussion

In A, more views (V) and more total time (TT) in the SM group may result from higher involvement constraints (social materiality); however, between A and R, these constraints provided this group with a significant reduction in the number of attempts and TT; and, between A and T, the number of V. For S group, in T, the inverse associations of age with the TT and with the number of attempts (contrasting significant direct associations of the attempts in A and V in the T, and the trials in R and T, in the SM group), reveal a greater dependence on intrinsic constraints (age). Altogether, the results partially support the hypothesis of social materiality positive constraints in learning eight-knot, for this sample between 7 and 9 years of age.

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