Chiari 1000 Registry Project: assessment of surgical outcome on self-focused attention, pain, and delayed recall

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Purpose

Many CM patients report memory related issues. Prior research has typically found a negative relationship between chronic pain and memory, and we examined whether cognitive control processes (e.g. reflection and rumination) moderated this relationship in individuals with Chiari malformation Type I.

Methods

As part of the Chiari 1000 project, CM patients who had (n = 341) and had not (n = 297) undergone decompression surgery completed the McGill Pain Questionnaire-Short Form-Revised (SF-MPQ-2), the Rey Auditory Verbal Learning Test (RAVLT), and the Rumination Reflection Questionnaire (RRQ). Immediate recall scores were compared to those of 102 healthy controls, and delayed recall performance was compared across other variables within the CM group.

Results

CM patients performed more poorly on immediate recall than did controls. Within CM patients, we observed main effects for reflection and age, and a pain x reflection x surgical status (surgery v. no surgery) interaction in which non-decompressed individuals with low levels of pain and high levels of reflection showed superior delayed recall relative to non-decompressed individuals with higher pain and all decompressed individuals.

Conclusions

CM patients show an immediate recall deficit relative to controls, regardless of surgical status. High levels of reflection were associated with better delayed recall performance in non-decompressed CM patients with lower pain levels. High levels of chronic pain may overwhelm increased focused attention abilities, but higher levels of reflection partially overcome the distracting effects of pain and this may represent a type of resilience. Therefore individuals with stronger attention focusing abilities are likely better able to mitigate the negative effects of pain on memory. This suggests that certain therapies, such as ACT, may be able to help people minimize the negative effects of pain on memory.

Number of words recalled for delayed recall as a function of reflection type (high v. low), pain level (high v. low), and surgical status (decompressed v. non-decompressed)
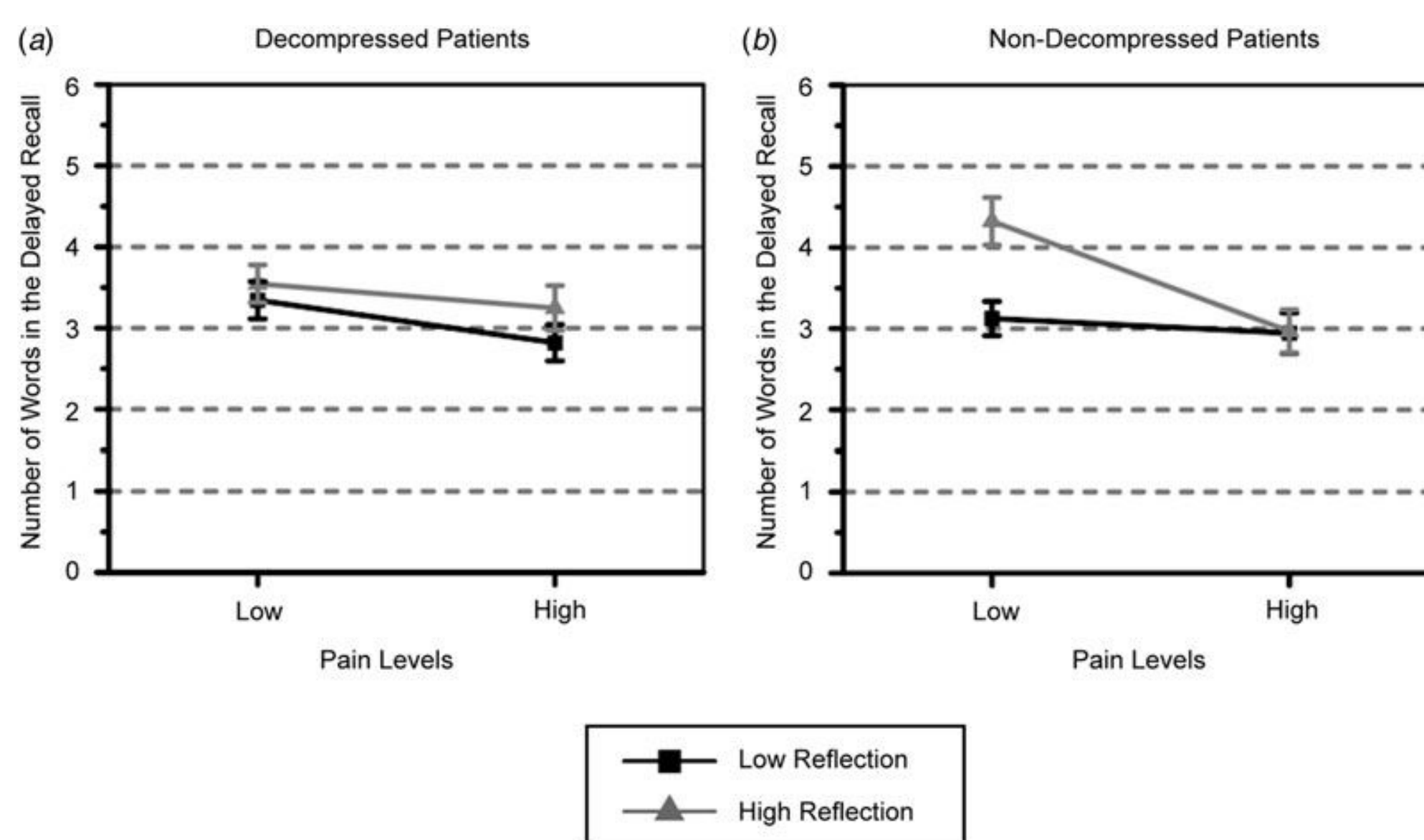
Conditional means for pain, reflection, and rumination groupings for immediate recall by decompression status

All decompressed patients

Pain	Reflection	Rumination	N	Mean (S.D.)
Low	Low	Low	56	6.07 (1.81)
		High	49	6.00 (2.56)
	High	Low	34	6.26 (2.34)
		High	43	6.19 (2.13)
High	Low	Low	37	5.43 (1.50)
		High	57	5.81 (2.23)
	High	Low	22	6.41 (2.26)
		High	43	6.05 (2.62)

All non-decompressed patients

Pain	Reflection	Rumination	N	Mean (S.D.)
Low	Low	Low	49	5.94 (1.92)
		High	47	5.79 (1.68)
	High	Low	24	7.17 (2.51)
		High	41	6.49 (1.89)
High	Low	Low	24	5.38 (1.86)
		High	49	5.59 (2.13)
	High	Low	18	6.39 (2.09)
		High	45	5.31 (2.18)