

Abstract

Dickinson and Szeligo (2008) explored the relationship between participant ratings of visual mental action verbs (e.g. see, distinguish) and the response times and accuracy which resulted when asked to perform them in a size discrimination task. Although it was found that the way that people differentiate the words did relate to observable behavior, a confound of word length was found to exist in the English language. The present study is an extension using the French language. First, multi-dimensional scaling of 14 French mental action verbs was performed. Words rated similarly in meaning but different in length were being sought. French words were differentiated in a similar fashion to previous English results. A 2 dimensional solution was found and were thought to reflect 'level of familiarity' and 'level of processing'. Four French mental action verbs were selected to be used in the size-discrimination task.

Introduction

Dickinson and Szeligo (2008) explored the relationship between ratings of these mental action verbs and the behavior which results when asked to perform them in a size discrimination task. Signal detection analysis was used to determine if participants were shifting their criterion depending on the level of processing suggested in the instruction. Results showed a main effect of instruction on response time, but not on criterion, sensitivity, or accuracy. Response time effects were found to be consistent with differences in word characteristics, including meaning. Although it was found that the way that people differentiate the words did relate to observable behavior, a confound of word length was found to exist in the English language. The present study is an extension of Dickinson and Szeligo (2008) using the French language.

ENGLISH	FRENCH
Discern	Discerner
Detect	Détecter
Sense	Ressentir
View	Regarder
Perceive	Percevoir
See	Voir
Distinguish	Distinguer
Be conscious of	Être conscient de
Attend to	Prêter attention à
Notice	Remarquer
Recognize	Reconnaître
Be cognizant of	Être au courant de
Identify	Identifier
Be aware of	Se rendre compte de

References

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Methods Phase 1

Participants

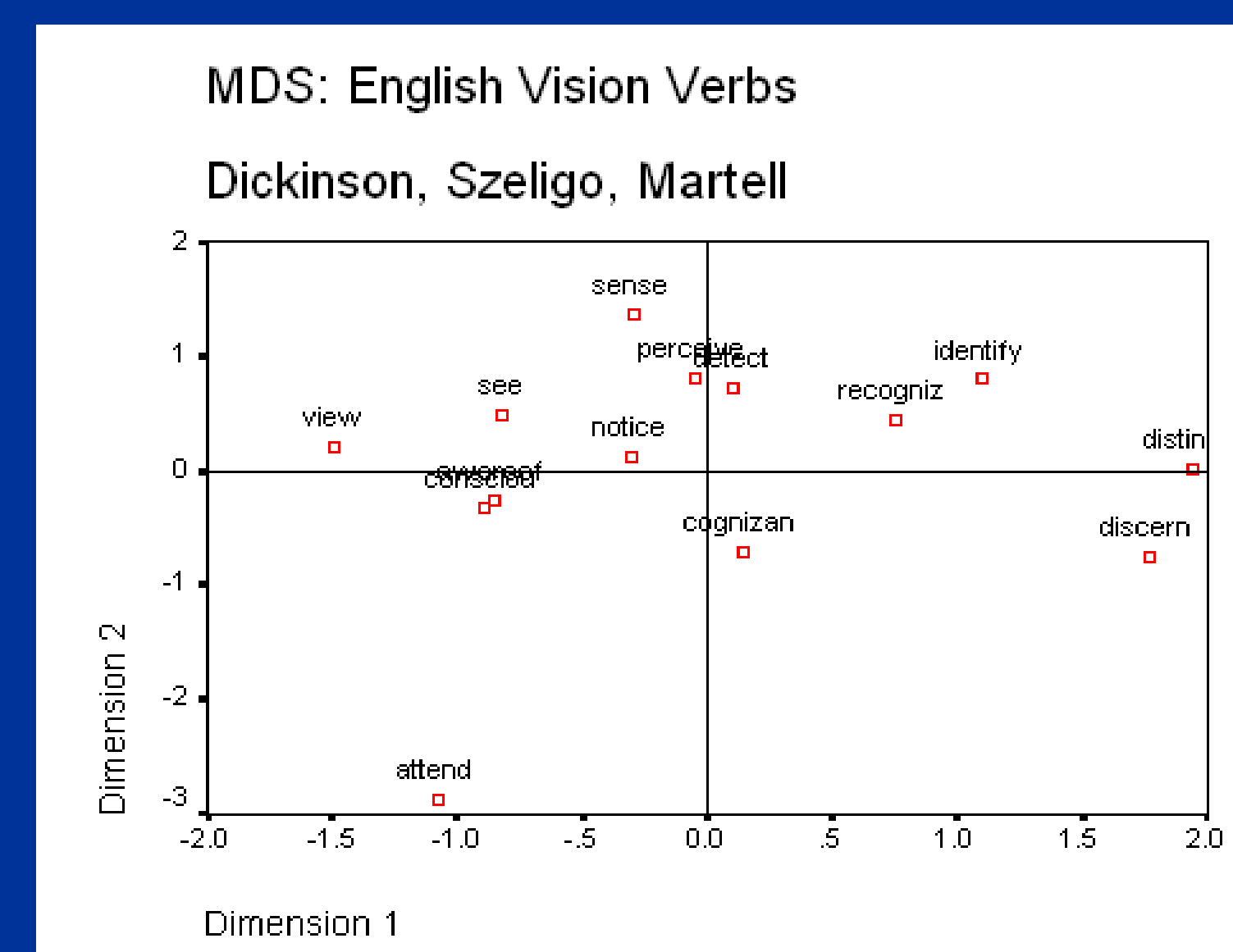
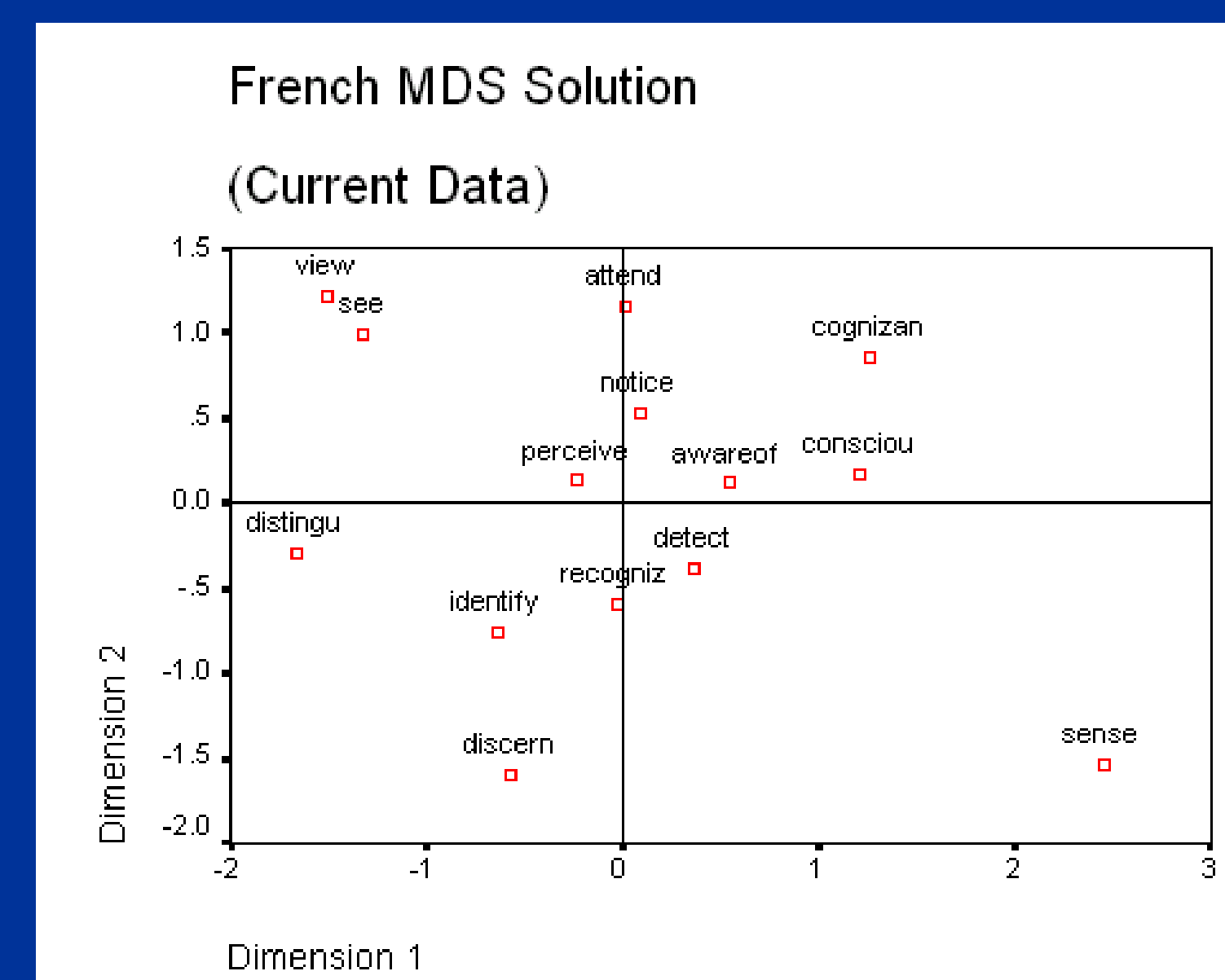
Participants were 45 Francophone undergraduate students recruited from Laurentian University. The average age of participants was M=20.21 (S=1.64).

Materials

A French translation of the 'Mental Operations: Ratings of Sameness Scale' (Dickinson & Szeligo, 2008) was used. The Scale asks participants to rate how similar each of the words listed were to each other in terms of meaning. For example, the word-pair 'discern – be aware of' ('discerner' – 'se rendre compte de') was presented and participants were asked to "indicate how similar these words are in terms of their meaning by circling the appropriate number". Ratings ranged from 'highly dissimilar' ('très différents') to 'highly similar' ('très semblables'). Words that are rated similarly in meaning but different in length, or alternatively, rated dissimilarly in meaning, but were similar in length were being sought.

Results Phase 1

A 2 dimensional solution was selected (R square for a 2 dimensional solution was 0.87). The 2 dimensional solution can be seen in the figure below.



Methods Phase 2

Participants

Forty unpaid undergraduate students who had French as a first language (38 women, 2 men) attending Laurentian University participated in the experiment. Mean age = 21.35 (s=6.07).

Materials

Stimuli: 2 conditions

Same (2.5 cm on all sides vs. 2.5 cm on all sides)

Different (2.5 cm on all sides vs. 2.75 cm on all sides).

Instruction: 4 conditions

The words 'view' ('regarder') and 'see' ('voir') were rated similarly on both dimensions and they differ in word length, therefore they were selected as 2 of the instructional verbs to use in the size-discrimination task. The words 'discern' ('discerner') and 'sense' (ressentir) were rated similarly on the second dimension (level of processing) but not on the first dimension (familiarity), and the words are similar in length. These 2 words were also selected to be used in the size-discrimination task to test which dimension may have an impact on response times.

"Répondez aussitôt que vous _____ que les triangles sont de la même taille ou de tailles différentes."

Contained in the space was one of four instructional verbs: 'regarder', 'voir', 'discerner' and 'ressentire'.

Each instruction was given 12 times for each condition (same, different) for a total of 96 trials. The order of the instructions and conditions were randomized.

Results Phase 2

RESPONSE TIME

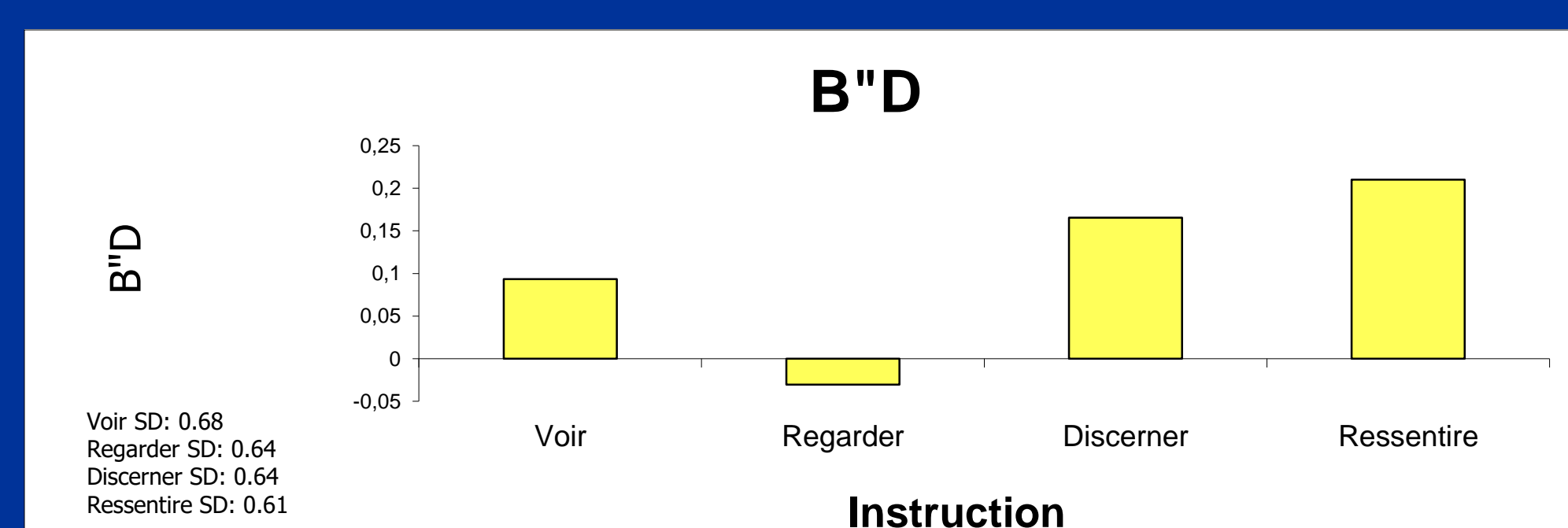
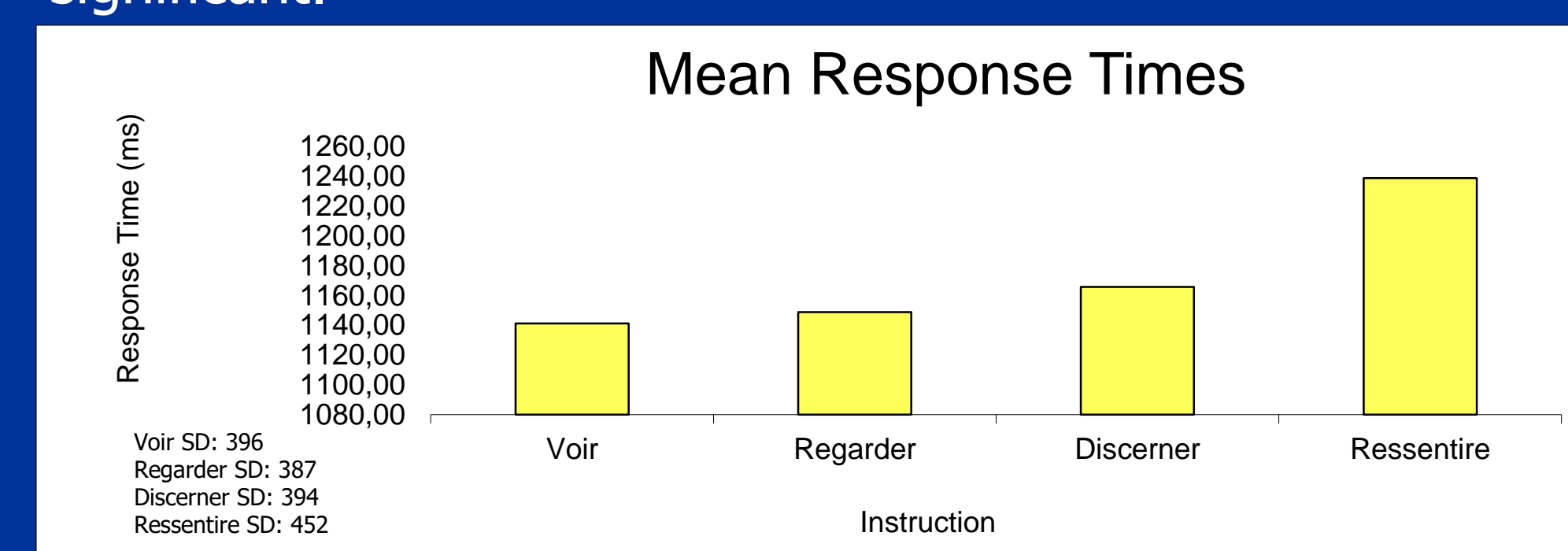
An Instructional main effect was found $F(3,117) = 4.85$, $p < 0.05$, $\eta^2 = .11$. Post-hocs indicate 'Voir' – 'Ressentire': $F(1,39) = 10.28$, $p = .003$, $\eta^2 = .21$, 'Regarder' – 'Ressentire': $F(1,39) = 6.89$, $p = .012$, $\eta^2 = .15$, and 'Discerner' – 'Ressentire': $F(1,39) = 5.24$, $p = .028$, $\eta^2 = .19$ to be significantly different.

SENSITIVITY

No Instructional main effect was found for sensitivity.

CRITERION

An Instructional main effect was found for criterion (as measured by B double Prime D) $f(3,117) = 3.60$, $p = .029$, $\eta^2 = .074$. Post-hoc tests indicate 'Regarder' – 'Ressentire' $F(1,39) = 9.86$, $p = .003$, $\eta^2 = .20$, is significantly different and 'Discerner' – 'Regarder' $F(1,39) = 4.74$, $p = .036$, $\eta^2 = .11$ was significant.



Discussion Phase 1

Dimension 2 significantly correlated with the single dimension solution found by Dickinson and Szeligo (2008) ($r = -0.75$, $p < 0.05$), as well the second dimension found by Dickinson, Szeligo, & Martell (submitted manuscript) ($r = -0.67$, $p < 0.05$). This dimension has previously been identified as representing 'level of processing'.

The first dimension of the current analysis did not correlate significantly with the Dickinson & Szeligo's second dimension (Dickinson, Szeligo, & Martell, submitted manuscript), however it did approach significance ($r = 0.47$, $p = .089$). This second dimension has previously been tentatively labeled as representing 'familiarity' with the word.

Results of previous Italian research (Cacciari & Levorato, 2001) did not correspond well to North American findings. This could be due to various factors (e.g. limited overlap in word lists used), so the present work is the first to demonstrate that there is correspondence across languages.

General Discussion

French vision verbs were differentiated in a similar way to English vision verbs.

French vision verbs resulted in a significant Instructional main effect on RT and criterion values.

'Regarder' rated similarly on both dimensions – did not result in significant RT difference, did result in a significant criterion difference. This may be because 'Regarder' was interpreted as 'look' and not 'view'.

'Voir' and 'Regarder' differ in word length and did not result in a significant response time difference – supporting the notion that word length does not play a significant role in RT differences.

Discerner and Ressentire similar in length, rated same on 'familiarity' different on 'level of processing' significantly differed on RT. Therefore, Dimension 2 (level of processing) seems to be more important in influencing RT than Dimension 1 (familiarity) in the French language.

This is the first demonstration that mental operation words inserted into instructions can change criterion (as well as response time). This needs to be further examined since such criterion effects were hypothesized in the context of English language experiments, but diverges from the English language findings.