Visual emotional input properties affect the acquisition of verb meanings in 24-months-old monolingual German learning children

F. N. Leischner, J. Weissenborn & K. Spalek

Department of German Studies and Linguistics, Humboldt-Universität zu Berlin, Germany

INTRODUCTION

There is evidence that emotional properties of the input like +/-happy intonation or facial expression of a speaker, who is referring to an object or action (e.g. Moses et al., 2001), influence children's attention towards these referents. These properties we call extrinsic emotional properties.

The present study focused on the disregarded question, whether we will find similar influences on word acquisition when these emotional properties are features of the referents of the words to be acquired, like the +/-happy facial expression of an actor who is acting on an object, which we call intrinsic emotional properties.

In two experiments we investigated the influence of a negative (angry) facial expression of an action's agent on the learning and memory of verbs in 24-months-old children (mean age: 24,07 months) by using a variant of the intermodal preferential looking paradigm (Waxman et al., 2009).

In Experiment 1 we explored if the emotional input property reveals an enhancing effect on children's learning and memory. In Experiment 2 we investigated if the emotional input property affects the mental representation children construct while learning a verb in such a way that this specific mental representation will constrain their interpretation of that verb in later use.

METHOD

EXPERIMENT 1

The learning and memory test were carried out with three subject groups children were randomly assigned to. Each group (n = 24) was watching the same action, while the acoustic (i.e., verb form) and emotional information (i.e., facial expression) varied by condition: One group was learning verbs while watching actions with actors showing a neutral facial expression (verb neutral group). A second group was learning verbs while the action's actors displayed negative facial expressions (verb negative group). A control group was learning no word while watching actions with actors showing neutral facial expressions (no word group); see Table 1.

Table 1: Learning Test

	Familiarization	Contrast		Test	
				baseline	response
visual stimuli					
acoustic stimuli	**verb condition:** Look! The man is telping a balloon! *Guck mal, der Mann telpt einen Ballon!*	Oh! The man is not telping here! *Oh! Hier telpt der Mann nicht!*	Ah! The man is telping here! *Ah! Hier telpt der Mann!*	Look at this! *Guck mal da!*	Where is the man telping the balloon? *Wo telpt der Mann den Ballon?*
	no word condition: Look what's happening here! *Guck mal was hier passiert!*	Oh! Look at that! *Oh! Guck mal da!*	Ah! Look! *Ah! Sieh mal!*	Look at this! *Guck mal da!*	What do you see? *Was siehst du da?*

The memory test was conducted 7 days later (see Table 2). In each group the video stimuli involved the identical visual, acoustic and emotional information as in the learning test.

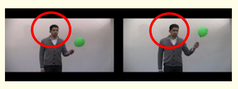
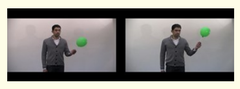
Table 2: Memory Test

	Question	Test	
		baseline	response
visual stimuli			
acoustic stimuli	**verb condition:** Do you remember? The man is telping a balloon! *Weißt du noch? Der Mann telpt einen Ballon!*	Look at this! *Guck mal da!*	Where is the man telping the balloon? *Wo telpt der Mann den Ballon?*
	no word condition: Do you remember? You saw something! *Weißt du noch? Du hast etwas geseh'n!*	Look at this! *Guck mal da!*	What do you see? *Was siehst du da?*

EXPERIMENT 2

The learning and memory test were carried out with two verb learning groups (n = 24): verb neutral and verb negative. The learning test was identically designed to the one in Experiment 1, however, the memory test was different (see Table 3). So children watched an identical action of an identical actor, whereas on the one side of the screen the actor displayed a neutral facial expression and on the other side a negative one.

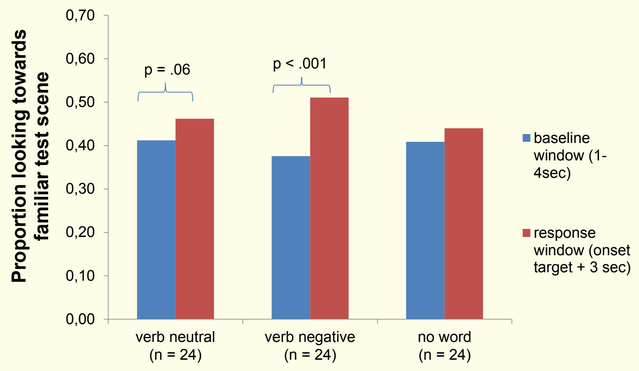
Table 3. Memory Test

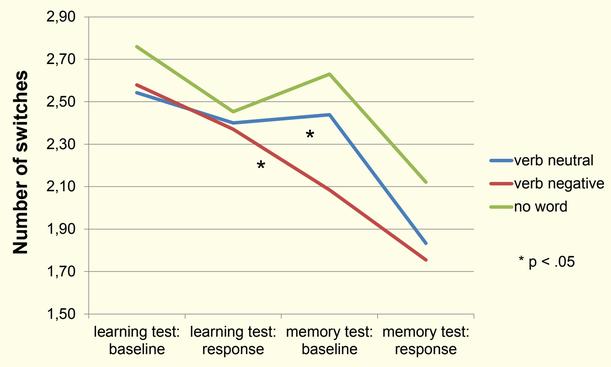
	Test	
	baseline	response
visual stimuli		
acoustic stimuli	**verb condition:** Look at this! *Guck mal da!*	Where is the man telping the balloon? *Wo telpt der Mann den Ballon?*

RESULTS

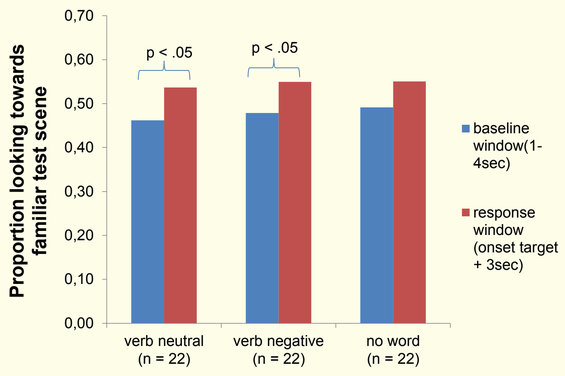
EXPERIMENT 1

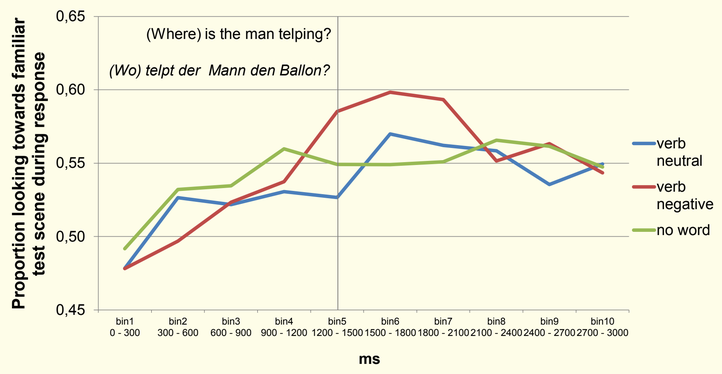
Learning





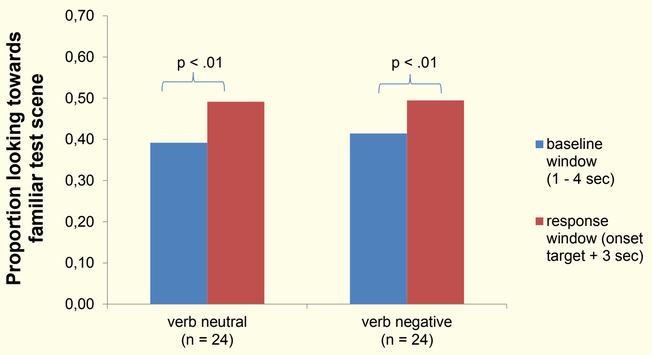
Memory

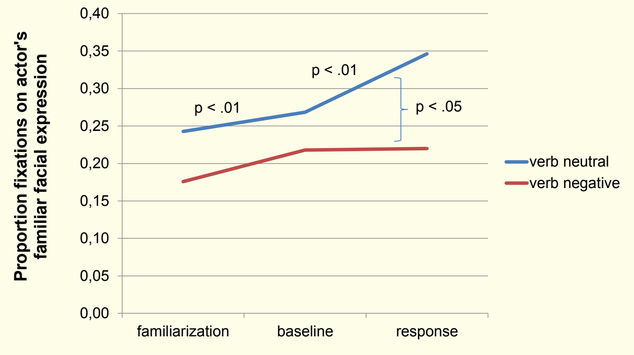




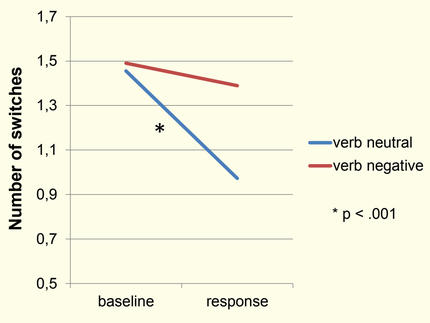
EXPERIMENT 2

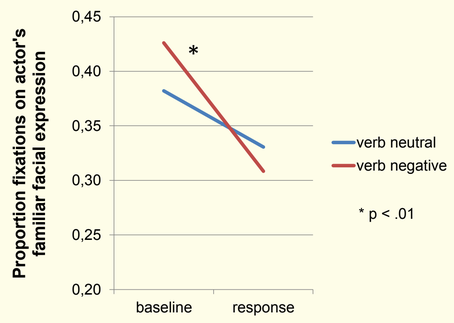
Learning

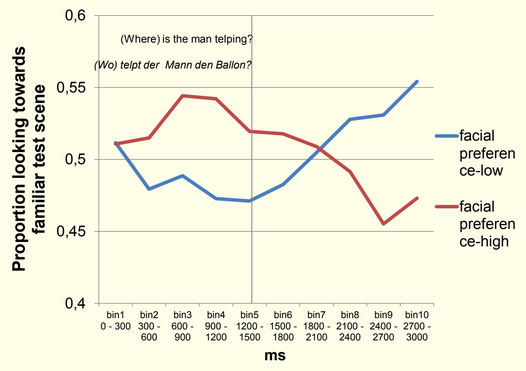




Memory







CONCLUSION

The results of **Experiment 1** suggest that children benefit from intrinsic emotional input cues when learning a verb meaning. Since the results of **Experiment 2** did not replicate this finding, the conclusion is fragile and further studies are necessary.

In line with studies that investigated the influence of extrinsic emotional cues we may conclude that emotional information increases children's attention to the presented action the unknown verb is referring to. Beyond that, we may also conclude that the intrinsic emotional input cues influence **the content of what** is learned. As the results of **Experiment 2** indicate, only children of the verb neutral condition increasingly considered the actor's facial expression when learning the verb and recognizing it during test. In contrast, children of the verb negative condition did not show a similar effect. This contradicts hypotheses based on 'valency & arousal' approaches that would predict greater effects for negative facial expressions. The difference between conditions is also reflected in children's memory performances: children in the neutral condition considered the facial expression more frequently when asked to remember the verb than children of the negative condition. Nevertheless, children of both conditions who attended to the displayed facial expressions more frequently during learning showed more looks towards the familiar scene at memory test than children who focused less on the actor's face during learning.

REFERENCES

Moses, L., Baldwin, D. A., Rosicky, J., Tidball, G. (2001). Evidence for referential understanding in the emotions domain at twelve and eighteen months. *Child Development, 74*, 718-735.

Waxman, S.R., Lidz, J., Braun, I. E. & Lavin, T. (2009). Twenty-four-month-old infants' interpretations of novel verbs and nouns in dynamic scenes. *Cognitive Psychology, 59,* 67-95.

ACKNOWLEDGEMENTS

We thank all the parents and infants for participating in our study. Furthermore, we wish to thank the team of the Babylab Potsdam for their technical support and help in collecting the data.

Contact: leisnerf@hu-berlin.de