

# Unlocking the power of productive classroom talk for early second language acquisition

## A study into the effects of a task-based intervention

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This study investigates whether participation in classroom interaction and a specific type of affective priming using parents' pictures had positive effects on ethnic minority children's L2 vocabulary acquisition. A quasi-experimental study was set up in which preschoolers-at-risk were engaged in a task-based intervention with different types of affective priming while they were participating in, or overhearing, classroom interaction in the L2. The results of the study indicated significant main effects of (1) the children's prior proficiency in the second language and (2) their participation in productive classroom interaction on their vocabulary acquisition. A significant interaction effect was found for overhearing and school disliking. For affective priming, no significant effects were found. This present study provides evidence that both participating in, and overhearing, productive classroom talk are powerful ways to boost young children's L2 vocabulary acquisition.

**Keywords:** affective priming, teacher-child interaction, productive classroom talk, overhearing, vocabulary acquisition

### Introduction: Equal education opportunities

In many European countries, including Belgium, a high proportion of children with an ethnic minority background and a low socioeconomic status (SES) underachieves in education (Franck & Nicaise, 2018; OECD, 2016). In Flanders (the northern, Dutch-speaking part of Belgium) SES is a strong predictor of school success (OECD, 2017). Since the 1980s, research has shown that low-SES

children of an ethnic minority background struggle to build up proficiency in the school language, which, in turn, has a negative impact on their school achievement (Franck & Nicaise, 2018). To help low-SES children overcome this challenge, the Flemish government introduced extensive support programs. Although these programs seem to have had some effect, they have not entirely succeeded in helping minority children close the language proficiency gap with the mainstream school population (Franck & Nicaise, 2018; Van Avermaet et al., 2010).

When it comes to second language acquisition (SLA), which for young children strongly depends on implicit learning processes (Paradis, 2004, 2009), detailed insight into how to create a powerful learning situation for young ethnic minority children is crucial to raise the effectiveness of educational support programs. This is especially the case for L2 vocabulary acquisition, as it has been shown to be a strong predictor of academic success in general and L2 development in particular (Biemiller, 2006; Nation, 2001). In line with studies on the social gap in education, it has been shown that learners with greater prior L2 vocabulary knowledge outperform other learners and acquire new words more easily (Murphy & Miller, 2018).

For preschoolers, affective factors such as the teacher's sensitivity, social availability, and turn-taking reactivity may have strong effects on their L2 development (Amador & Adams, 2013; Lee et al., 2009; Spilt et al., 2015). Although some of these insights can be derived from theoretical approaches in what has come to be known as the social turn in SLA (Firth & Wagner, 2007; Lantolf, 2000), more empirical research, including intervention-based research, is necessary to foster the transfer of theoretical insights to educational practice (Gregg, 2006). The purpose of this paper is to examine the relationship between affective features and a task-based approach to L2 vocabulary acquisition by ethnic minority children.

## **Theoretical framework: Social foundations of language acquisition**

Because this study focuses on very young children, we discuss (1) the social foundations of implicit language learning processes, rather than explicit language learning processes, with special attention to vocabulary acquisition during classroom conversations and (2) studies on affective priming and linguistic behaviour, leading to the main hypothesis that drives this study.

### **Social foundations of implicit language learning processes**

The limited success of educational attempts to solve the social gap in education has been related to the nature of language learning processes (Jaspaert, 2015).

Especially with regard to younger children, it is argued that their success in learning a second language depends on implicit rather than explicit learning processes (Paradis, 2004, 2009). Although implicit learning has been defined and operationalized in many ways (Frensch & R nger, 2003), most scientists seem to agree that implicit and explicit learning processes can be distinguished by the level of awareness or consciousness that is involved. Explicit learning is often defined as a conscious learning mechanism whereas implicit learning is viewed as a learning process that takes place unconsciously (Hulstijn, 2002; Lee et al., 2009). As Hulstijn (2002) indicates, “implicit learning is unstoppable in the sense that it is not under conscious control and that its processing components cannot be verbalized” (p.206). Based on Reber’s work, Bransford et al. (2006) argue that, despite the complexity of many types of implicit learning, the underlying process can be defined as “the rapid, effortless, and untutored detection of patterns of covariation among events in the world in the absence of conscious, reflective strategies to learn” (p.210).

Although the exact definition of implicit learning, and its links to concepts such as noticing and awareness is still a matter of debate, it is generally believed that implicit learning processes are not controlled by the individual learner but are influenced by situational and affective stimuli that are significant for the learner’s linguistic behaviour (Frensch & R nger, 2003; Paradis, 2009). These stimuli can be tasks, objects and persons in the environment (Bransford et al., 2006). Indeed, studies on what is called *the social brain* (Kuhl, 2010, 2011) and *the interactional instinct* (Joaquin & Schumann, 2013; Lee et al., 2009) show children’s desire to acquire language is mainly driven by affective and affiliative needs. From this perspective, children are not described as being equipped with a Chomskyan innate language device but rather with the ability to connect and interact with others: “What is innate is the child’s appetite for language learning” (Lee et al., 2009, p.5). In other words, social affiliation drives language acquisition.

Studies show that the quality of adult-child interactions is key to establishing social affiliation and driving language learning (Ramirez-Esparza et al., 2014). In particular, reciprocal associations in close teacher-child relationships were found to facilitate affiliation and early language development (Spilt et al., 2015). Next to close teacher-child relationships, high-quality teacher-child interactions make a crucial difference for early language learning. High-quality teacher-child interactions in the classroom context have been described by Black (2002, 2004) as *productive interactions*. In line with Edwards and Mercer (1987) and Barnes (2008), productive interactions are characterized by the fact that teachers and their students establish a joint frame of reference around a topic that interests the students. Furthermore, in productive interactions, students are given an active role in classroom talk in terms of topic nomination, as opposed to non-productive interac-

tions that are strongly controlled and dominated by the teacher. While productive interactions are characterized by teachers' open questions, the use of 'we' statements, and extended talk by pupils, non-productive interactions are characterized by closed teacher questions, initiation-response-feedback patterns, and cued elicitation. Black (2004) found that low-SES children stand a relatively high chance of being involved in non-productive interactions, turning them into passive learners, while higher or middle-class children are more often involved in productive interactions, as a result of which they are treated as full participants in classroom interaction.

Specifically, with regard to the L2 vocabulary acquisition by young children, research strongly suggests that implicit learning processes play an important role (Paradis, 2004, 2009). In classrooms, these can be fostered by inviting children to carry out meaningful, motivating tasks and offering them rich L2 input and chances to produce L2 output while trying to do so (Ellis, 2009; Long, 2014; Newton, 2015; Shintani, 2016; Van den Branden et al., 2009). In line with usage-based views on second language acquisition, Task-based Language Teaching (TBLT) is based on the hypothesis that, young children acquire language by using language in meaningful contexts to reach valuable goals (Ellis, 2009; Long, 2014). Research by Shintani (2016) has shown that tasks that offer children relevant and rich language input and that are found motivating by the learners, foster L2 vocabulary acquisition in an effective way. The learners' involvement can be promoted by having them work towards a non-linguistic result, for example solving a certain problem: "There is a clearly defined outcome other than the use of language (i.e. language serves as a means to achieve the outcome, not as an end in itself)" (Ellis, 2009, p. 223). In Shintani's research, for instance, young children were being asked to place animals at the right place in a zoo on the basis of oral L2 input, and in this way complete the zoo.

### Affective priming and linguistic behaviour

Previous studies on affective priming show that explicit or implicit reference to the presence of significant persons in given situations influences behaviour, including linguistic behaviour (Bargh & Williams, 2006). Kinzler et al. (2007) showed that the involvement of in-group members influences the behaviour of young children. Banse (2001) found that presenting unmasked faces of people whom participants like (e.g., the participants' partner or a close friend), leads to a positive connotation with target words more quickly than faces of persons the participants do not like. While marginally visible face primes of disliked persons can cause reverse priming effects, clearly visible face primes seem to activate automatic affective responses, beyond the conscious control of the individual's mind

(Banse, 2001). In other words, presenting primes of participants' significant others influences their linguistic behaviour, even without the significant others being physically present.

Furthermore, studies suggest that automatic implicit measures of the quality of a relationship are not necessarily correlated with explicit measures (Banse, 2001). Automatic activation of affective schemata seems to function, at least in part, independently of people's explicit evaluation of those schemata (Fazio et al., 1995). In line with these studies, Fitzsimons and Bargh (2003) found that relational primes of others the participants are close with, like mothers, influence linguistic performance. Firstly, participants who were primed with their mother outperformed the control group participants on a verbal task, independent of their explicit evaluation of the relationship with their mother. This effect was even stronger for participants who want to make their mother proud. In sum, it has been shown that affective priming (1) influences linguistic behaviour in laboratory settings, independently of significant others' physical presence and explicit evaluations of the quality of the relationship, and (2) might activate interpersonal goal(s) related to the parent-child relationship.

### Unanswered questions of affective priming

However, the available studies on affective priming leave two questions unanswered. A first unanswered question concerns the transferability of the findings of these studies to authentic classroom settings. The above-mentioned studies on affective priming have been conducted in tightly controlled laboratory settings; they do not reveal how affective priming works in classroom situations and whether this mechanism might be helpful for learners-at-risk. As proposed by Scribner (1997), claims of laboratory studies should be tested in natural situations as well.

A second unanswered question is in which particular types of classroom interaction affective priming effects can be found. To our knowledge, the affective priming paradigm has not yet been studied in addressed and non-addressed interaction – two naturally occurring learning situations for children in kindergarten classrooms. In addressed interaction, children are the principal *addressees* (Clark, 1996), while in non-addressed interaction children are not addressed directly but are, as *bystanders* (Clark, 1996), able to overhear a conversation between others. Previous studies on addressed and non-addressed interaction show that children learn new vocabulary both from being directly and indirectly involved in interaction (Akhtar, 2005; Akhtar et al., 2001; Newton, 2015). A study by Boderé and Jaspaert (2016) showed that children with various ethnic backgrounds learn novel words both in addressed and non-addressed situations.

Previous studies showed that a significant predictor of participating in addressed classroom talk is school liking. The study conducted by Ladd (2000) showed that early school liking as an affective factor influences the amount of classroom participation by preschoolers. The same effect was found for SES: children with a higher SES participate more in classroom interaction (and perform better). Also, low scores on school liking are associated with a negative teacher-child relationship (Ladd & Burgess, 2001) and a negative relationship between the child and the broader school community (Bergin & Bergin, 2009).

Since addressed and non-addressed interactions occur naturally in kindergarten classrooms in Western countries, and the affective priming paradigm has not yet been studied in classroom situations, both addressed and non-addressed speech are taken into account in the present research.

## Research question

The primary goal of the present study is to examine whether affective priming, when applied within productive classroom interactions, can be used to boost the early SLA of learners-at-risk. This was done by examining whether the incorporation of extensive visual reference to children's parents in the classroom has a positive effect on preschoolers' SLA with a Turkish ethnic minority background living in Flanders.

This study addresses the following research question: *What is the effect of affective priming in addressed and in non-addressed task-based classroom interaction on the vocabulary acquisition of young L2 learners-at-risk?* Based on laboratory studies on affective priming, it was hypothesized that presenting parents' face primes in the classroom would cause an affective priming effect, resulting in more successful L2 vocabulary acquisition. Prior L2 knowledge and school liking were taken into account as control variables.

## Method: Intervention study

To address our research question, we set up an intervention study in Flemish preschool education. In what follows, we will discuss the research design, research context, participants, materials, procedure, and analyses.

## Design

To test whether affective priming influences L2 vocabulary acquisition, a randomized  $3 \times 2$  between-subjects design was set up in which groups of participants

were exposed to a narrative task in the school language that contained eight novel words (neologisms). The story was told in three different conditions: a parent condition, a stranger condition, and a control condition. In the parent condition, children were able to see pictures of their parents in the background while the story was being told. In the stranger condition, the same was done, but against the background of pictures of unknown adults. In the control condition, the story was told against a traditional classroom background with no pictures.

In each condition, two groups of participants were present in the same classroom: an addressed and a non-addressed group. Participants in the first group were directly addressed and involved in a productive interaction (living up to the principles as described by Black, 2004) while they were participating in a task-based listening activity. Participants in the second group were given an individual activity nearby where they could overhear and observe the first group without being instructed to do so. Participants were randomly assigned to the first or second group. In both settings, the participants were exposed to a narrative listening task based on a story containing 8 neologisms specifically devised for the target group (see materials). To control for individual differences in prior L2 proficiency, a standardized language test was administered before the task-based activity. School liking was also checked. After the task-based activity, participants were tested individually in terms of novel word learning (see materials and procedure).

## Context

Within the framework of a larger research project, data collection took place in two former mining cities in Flanders, during the school year 2013–2014. Due to labour migration in the beginning of the 1960s, the Turkish community is well represented in both mining cities (Schoonvaere, 2013). In addition, the internal network of the Turkish community is often strong, both in Belgium and elsewhere in the Western world (Issa, 2005; Kagıtcıbası, 2005; Van Craen et al., 2007).

To recruit schools in the research area, a list of schools containing the target group was used. From this list, 18 schools were randomly selected. The principals of these schools were contacted and received written information about the project. In total, 8 schools decided not to participate in the research project due to involvement in other projects ( $n=3$ ), organizational difficulties ( $n=3$ ), lack of interest in the research project ( $n=1$ ), and changing school population ( $n=1$ ). The other 10 school teams were willing to participate, out of which 6 schools (4 Catholic schools, 2 state schools) were selected to participate in the present study. In general, all primary schools in Flanders are funded by the Flemish government in order to ensure equal access (Nusche et al., 2015). Catholic schools are

financed by the government but run by Catholic boards, while state schools are run by the Flemish Community. All schools were situated in or nearby underprivileged districts.

## Participants

There were 110 participants. Due to failure to gain permission from the parents ( $n=1$ ) and participant absence during the intervention ( $n=11$ ; 8 during the story-telling session and 3 during the administration of the test) data of 12 participants were missing. The absence of participants during the intervention can be explained by the fact that pre-primary education is not compulsory in Belgium. In addition, it is possible that some members of the Turkish community in Belgium perceive pre-primary education in a similar way as it is usually perceived in Turkey, namely as optional, perhaps because parents have limited knowledge of the content of pre-primary education in Flanders (Çivik et al., 2015; Sevimli-Celik et al., 2011), or because they believe it primarily addresses middle-class families (Agirdag et al., 2015).

In the final sample, 98 participants were included ( $M=5.38$  years old,  $SD=0.51$ , 59 boys, 39 girls). Table 1 shows the assignment of participants to the conditions of the three by two design.

**Table 1.** Distribution of participants

	Parent condition	Stranger condition	Control condition	Total
Addressed group	17	16	15	48
Non-addressed group	15	17	18	50
<b>Total</b>	<b>32</b>	<b>33</b>	<b>33</b>	<b>98</b>

### *Note.*

Class groups were randomly assigned to condition. Participants were randomly assigned to the addressed or non-addressed group.

Based on background data provided by the Flemish Department for Education and Training, all participants were indicated as learners-at-risk because of their low SES and non-Dutch home language background. Turkish was reported as the dominant home language of all participants: 80.6% of father-child communication and 74.5% of mother-child communication was reported as Turkish-only.

Except for four mothers holding a degree in higher education, most mothers were lowly educated: they had not attended primary education ( $n=18$ ), not fin-

ished primary education ( $n=24$ ), finished lower secondary education ( $n=24$ ), or finished higher secondary education ( $n=39$ ).

## Materials

For this study, three types of materials were used: (1) a Dutch language proficiency test and a school liking test, (2) affective primes, and (3) a narrative task based on a story with corresponding target word tests used as the dependent variable of the present study.

## Control measures

To control the participants' prior competences in Dutch (the language of the school), the standardized test *Individuele Taalniveautest Kleuters* [Individual Language Level Test Preschoolers] (Dudal, 2003), further referred to as INTAK, was administered before the experiment.

The INTAK is a test measuring Dutch vocabulary knowledge which contains 50 items. The items come in the shape of short sentences containing oppositions and analogies that preschoolers need to finish with the right word. An example of an opposition item is "*Een kabouter is klein maar een reus is ...*" [A gnome is small, but a giant is...]. An example of an analogy item is "*Een vis zwemt en een vogel ...*" [A fish swims and a bird...]. The maximum score is 50. The score for the INTAK was used as a covariate in the analyses of covariance (ANCOVA).

To control for participants' school liking, an innovative test was used. Since a verbal questionnaire like the Dutch version of the standardized School Liking and Avoidance Questionnaire (SLAQ) (Ladd & Price, 1987; Verschueren et al., 2009) was too difficult for our target group due to its highly verbal nature, the School Liking Picture Test (SLPT) was specifically developed for and piloted with our target group (Frijns, 2017). This test was developed as a visually supported ranking test which is known to be found easier by young children (Djalal et al., 2016) and relies less on verbal cues than the SLAQ.

The SLPT consists of five pictures of familiar places for the target group: school, home, the neighbours' place, the grandparents' place, and a sports area. The places were selected based on interviews with teachers ( $N=12$ ) and visits at participants' homes ( $N=36$ ). In line with Issa's (2005) and Coussées' (2006) findings, the interviews and visits revealed that the target group spends most of their time at home and in the neighbourhood (Frijns, 2017). Using pictures of those places, participants successively had to rank which place they liked most. The maximum score for a specific place was 5. To insert school liking as a factor in the ANCOVA, the scores were recoded to a three-point scale. The original scores 1

and 2 were transformed to 1 (school disliking), 3 was transformed to 2 (no marked preference for the school), and scores 4 and 5 recoded to 3 (school liking).

### Affective primes

All parents and adult strangers were photographed by the researcher using the same camera. Participants' parents were contacted via the school and were visited at home before the intervention took place. The strangers were photographed under the condition that they had had no contact with the target group in the research area. All photographs were in colour, printed on 15 × 20 cm glossy paper, and showed faces that looked approvingly.

### Task-based neologism story and test set

The task-based neologism story that the children were invited to listen to consisted of two parts, with a duration of approximately fifteen minutes each, and a test set (Frijns, 2017; Frijns & Jaspaert, 2016). In each part of the story, the main character is faced with a problem and asks the addressed children to help him by suggesting their own ideas. Hence, the learners' attention was focused on the classroom interaction and the problem-solving activity instead of the novel words they would encounter during the activity. This approach is in line with the principles of productive interactions (Black, 2002, 2004) and TBLT (Van den Branden et al., 2009), challenging learners to carry out meaningful tasks in interaction with others.

Listening comprehension was supported by visual cues like pictures and hand puppets. The listening activity systematically incorporated eight target words (four nouns, four verbs): six (three nouns, three verbs) possible but non-existing words in Dutch and two (one noun, one verb) existing words in Dutch that are common in the Netherlands but not in Flanders and can therefore be considered neologisms for the participants as well (see appendices A, B and C for the visuals and the translations). This way, we could be sure the participants did not know the target words beforehand and learning effects could be attributed to the intervention. The complete script of the intervention study, including the test set, can be found in the published methodology guide (Frijns & Jaspaert, 2016).

The neologism test set, further referred to as NTS, included a productive and receptive test of the participants' knowledge of the target words with a maximum score of 16. Significant correlations between the productive and receptive test allowed us to calculate a total language score for each participant. This sum score was used as the dependent variable of this study. For the NTS, participants were presented with a picture of a class group that was not familiar with the story

yet. Participants were asked to help them by, in the case of the productive test, naming the required materials to tell the story and, in case of the receptive test, collecting the right objects to tell the story. An example of an introduction and a test item is:

Look, these are all children together with their teacher. They are going to listen to the same story you heard yesterday. But the teacher has lost the toys that belong to the story. Luckily, there are some pictures of possible toys. If we give the teacher the toys she needs, she can tell the story. Can you hand over the right toys? The teacher needs the *sijkon*. Give her the *sijkon*. (Frijns & Jaspaert, 2016, p.76)

Before administering the story and test set, a tripartite method was used to develop and test the materials. This method consisted of a combination of (1) proofreading by colleagues, (2) presenting all target words to Turkish mother tongue speakers, and (3) piloting. First, the story and the test set were proofread by linguists ( $n=7$ ) and education professionals ( $n=4$ ). Secondly, each target word was presented to Turkish mother tongue speakers living in Flanders ( $n=3$ ); they were asked whether the neologisms reminded them of Turkish words. Since the Turkish language proficiency of our target group varies (Verhoeven & Vermeer, 2006), we wanted to exclude any associations that might unintentionally benefit (or disadvantage) children with a higher proficiency in Turkish compared to children with a lower proficiency. Thirdly, the story was piloted twice. First, it was presented to a Dutch mother tongue speaker (boy, aged 4.3, high SES) to discover possible associations of the neologisms with existing Dutch words the researchers were not aware of. Next, the story was piloted in a classroom with 12 non-participating Turkish preschoolers ( $M=5.08$  years old,  $SD=.29$ , 7 boys, 5 girls) with the same SES as the participants of the present study.

Based on the results of the tripartite method, the intervention was optimized, and an extensive methodology guide was published (Frijns, 2017; Frijns & Jaspaert, 2016). The guide contains the story, the NTS and a detailed script for the storyteller and the test administrators. The following set of target words was included: the neologisms *sijkon* (noun), *kiemas* (noun), *tefsan* (noun), *raastelen* (verb), *tresselen* (verb) and *stieperen* (verb) and the words *drolletjes* (noun plural) and *optillen* (verb). For all target words, the orthographic neighbourhood size and the summated type bigram frequency were checked with the WordGen 1.0 software (Duyck et al., 2004).

The target words appear in the story with a frequency ranging from 15 to 75 times. No significant relation was found between frequency of the target words and participants' mean score for the productive and receptive knowledge of the words, indicating that all words were offered with a frequency that made them learnable.

## Procedure

Before the intervention, the INTAK was administered individually by the same trained test administrator. In each condition, the participants were presented with the same narrative task based on the story containing the target words. The story was told to all participants by the same trained teacher, who was new to all participants. The teacher (female, aged 23, Belgian nationality, Flemish), holding a bachelor's degree in Teacher Primary Education, had a background comparable to the average kindergarten teacher in Flanders. Prior to the intervention, the storyteller arranged each classroom according to the script. The storyteller installed two cameras capturing the addressed and non-addressed participants and a voice recorder. At the start of the intervention, all children were provided with a name sticker so that the storyteller could interact with them easily. Also, in order to contribute to an emotionally safe environment, the storyteller was instructed to react positively towards any utterances the participants produced in their home language.

The addressed learners were invited to actively participate in productive interactions: they had to formulate possible solutions for the problems of the main character of the story. The non-addressed learners were asked to do an individual activity nearby. This group could see the affective primes (parent or stranger condition) and listen to the story while they were encouraged to colour a drawing. Each storytelling intervention started with the instruction for the non-addressed group. Afterwards, the storyteller interacted with the addressed group in a productive way following the guidelines derived from Black (2002), using the target words naturally and without alluding to conscious vocabulary learning in any way.

To measure the effects of the experiment on participants' SLA, productive and receptive tests were administered individually the day after the treatment by two trained test administrators who were not present during the story-telling session. To avoid interference with participants' positive or negative experiences in one of the experimental conditions, the SLPT was administered individually by the same trained test administrator two months after the experiment. All test sessions were recorded to control for the standardized procedure, and all data were anonymized.

## Analyses

ANCOVA's were conducted using the Statistical Package for the Social Sciences. The total score for the experiment was used as a dependent variable; participants' initial language proficiency as measured by the INTAK was used as a covariate.

Participants’ school liking and the experimental conditions were introduced as factors. To calculate effect sizes, the measure partial eta squared was used as this measure partials out the effect of independent variables and interactions (Richardson, 2011). To interpret the partial eta squared the following guidelines were used: a value of .0099 can be perceived as a small effect size, a value of .0588 can be interpreted as a medium effect size, and a value of .1379 can be seen as a large effect size (Cohen, 1969). In line with recent research on the use of effect size measures in educational and L2 research, Cohen’s benchmarks are considered general guidelines, not prescriptions (Norouzian & Plonsky, 2018; Plonsky & Oswald, 2014; Richardson, 2011). Although some benchmarks of effect size measures like *d* can be considered as an underestimation of the effects generally found in L2 research (Plonsky & Oswald, 2014), partial eta squared values can be benchmarked against Cohen’s suggested criteria of small, medium and large effects and are widely used in research designs like the current study (Norouzian & Plonsky, 2018; Plonsky & Oswald, 2014; Richardson, 2011).

Results

Descriptive statistics

In Table 2 the mean, standard deviation, and the range for the pretest INTAK and the total language score for the experiment as measured by NTS are presented.

**Table 2.** Descriptive statistics for INTAK and the NTS (*N*=98)

	Pretest INTAK			NTS		
	<i>M</i>	<i>SD</i>	Range	<i>M</i>	<i>SD</i>	Range
Score	17.76	8.96	1–37	6.53	3.04	0–14

*Note.*

The maximum score for the standardized language pretest INTAK is 50. The maximum score for the NTS (neologism test set) is 16.

For the SLPT, there were 4 missing values. 44 participants ranked school as the least likable place or the second least likable place (score 1; school disliking), 17 participants did not mark the school as a negative or positive place (score 2), and 33 participants ranked the school as the best or second-best place where they like to spend their time (score 3; school liking). The Shapiro-Wilk Test showed the scores for the NTS were normally distributed ( $D(98) = .98, p = .078$ ).

# ANCOVA

Preliminary ANCOVA's revealed that the affective priming condition did not significantly affect novel word learning. This result was also found when excluding the stranger condition from the analysis and, in a separate analysis, when excluding participants who do not like home (as measured by the specific scores for 'home' of the SLPT) and, consequently, may not share the same interpersonal goal(s) with their parents as participants who like home or are rather neutral towards home. These findings indicate that none of the affective priming manipulations had a significant main effect on the students' vocabulary scores. Also, no significant main effects were found for participants' gender, age in months, and participants' mothers' educational background.

The ANCOVA, as is shown in Table 3, revealed two significant main effects and one significant interaction effect.

**Table 3.** The results of the ANCOVA ( $N=98$ )

Sources of variation	SS	df	MS	F	P	partial $\eta^2$
INTAK	392.232	1	392.232	92.617	.000	.516
(N)AS	55.680	1	55.680	13.148	.000	.131
SLPT	15.803	2	7.901	1.866	.161	.041
(N)AS * SLPT	26.790	2	13.395	3.163	.047	.068
Error	368.444	87	4.235			
<b>Total</b>	<b>4942.000</b>	<b>94</b>				

Note.

$R^2 = .581$ , Adj.  $R^2 = .55$

First, there was a significant main effect of the covariate INTAK, showing that participants' Dutch language competence before the start of the experiment had a significant impact on the number of novel words they learned through the experiment. For both the addressed and non-addressed participants, the INTAK was significantly related to their NTS score ( $r = .74$ ,  $p = .000$  for the addressed participants and,  $r = .69$ ,  $p = .000$  for the non-addressed participants). These findings indicate that participants with a higher prior L2 proficiency outperformed participants with a lower prior L2 proficiency. The effect size of prior L2 proficiency can be perceived as large.

The second significant main effect was found for the (non-)addressed subcondition ((N)AS), indicating that the way participants were addressed during the experiment significantly affected their performance on the NTS. The mean score for participants in the productively addressed subcondition ( $n=64$ )

( $M=7.22$ ,  $SD=2.80$ ) was higher than the mean language score for participants in the non-addressed subcondition ( $n=59$ ) ( $M=6.10$ ,  $SD=2.93$ ), indicating that the addressed participants outperformed the non-addressed participants. The effect size of the significant subcondition can be perceived as moderate to large.

Besides those significant main effects, one significant interaction effect was found for (N)AS and the SLPT. The mean NTS score for *non-addressed* participants who like school ( $n=15$ ) ( $M=4.73$ ,  $SD=2.55$ ) was significantly lower than the NTS scores of non-addressed participants who dislike school ( $n=23$ ) ( $M=7.04$ ,  $SD=3.21$ ). Indeed, for non-addressed participants, school liking was significantly negatively related to novel word learning ( $r=-.35$ ,  $p=.016$ ), supporting the results of the ANCOVA. For addressed participants, however, no significant correlation was found between school liking and novel word learning. Also, no significant correlation was found for addressed and non-addressed participants' INTAK scores and school liking. The effect size of the significant interaction effect between (N)AS and the SLPT can be perceived as moderate to large.

The significant main effects for the INTAK and (N)AS are also significant without adding the SLPT to the model, suggesting stable significant effects (INTAK:  $F(1,95)=98.214$ ,  $p=.000$ , partial  $\eta^2=.508$ ; (N)AS:  $F(1,95)=8.689$ ,  $p=.004$ , partial  $\eta^2=.084$  ( $R^2=.531$ , Adj.  $R^2=.521$ )). The effect size of prior L2 knowledge can be perceived as large, the effect size of (N)AS as moderate to large.

## Discussion

In what follows, we discuss (1) the effect of prior L2 proficiency, (2) the non-significant effects of affective priming, and (3) the effect of addressed and non-addressed speech for vocabulary acquisition in young L2 learners.

### The effect of prior L2 knowledge

Our research findings show that prior L2 proficiency boosts the success of novel word learning significantly, which is in line with the widely held view that learning is first and foremost determined by learners' prior knowledge (e.g., Ausubel, 1968; Hattie, 2009). Obviously, learners with a higher language proficiency have more opportunities to understand a neologism story and infer the meaning of novel words from the linguistic context. In another study, we have controlled for cognitive differences between the participants of the current study by administering a Digit Span Forward Task in Dutch suitable for preschoolers (Dudal, 2003). Results showed no significant differences between cognitive abilities of the young L2 learners related to their L2 performance (Frijns, 2017), suggesting that the

results can be attributed to the young learners' prior L2 knowledge and the interaction situation they found themselves in.

### The non-significant effects of affective priming

The research findings show the way affective priming was set up in this study did not have a significant impact on SLA. Two possible explanations can be formulated. The first explanation is derived from psycholinguistic and neuropsychological research. The second explanation originates from educational research.

First, the effect of habituation may explain the absence of affective priming effects. Since the tests were administered the day after the intervention and not, as in most laboratory studies, immediately after the participants were confronted with the prime, there may have been an immediate affective priming effect, as found in previous studies (e.g., Fitzsimons & Bargh, 2003), that disappeared after a day and had no impact on the children's vocabulary acquisition. Habituation effects have been found in other studies as well, for example in word recognition studies in psycholinguistics, showing that repetition priming effects in lexical decision tasks are stronger for low-frequency than high-frequency words (Sandra, 2009). This research shows repetition of low-frequency words draws the participants' attention more than the repetition of high-frequency words.

Also, neuropsychological research shows that the presentation of familiar objects and faces is associated with decreased responses in brain regions (Hassler et al., 2013; Henson et al., 2002), leading to neuropsychological habituation. The latter may indicate that the presentation of the parents' pictures was initially (un)consciously noticed by the participants, but over time, as familiar faces were present during the full storytelling sessions, neuropsychological habituation may have occurred. In other words, what is familiar and frequently presented loses its informative value and, consciously or unconsciously, will no longer be noticed, so that affective priming is not facilitated either. Another possibility is that no affective priming effect occurred, even immediately after exposure to the prime. In that case, it is theoretically possible that a different operationalization of affective priming (so, using other pictures or artefacts) has better effects.

The second explanation could be that affective priming was overruled by other stimuli in the experimental environment or by intersubjective factors that were more relevant in terms of SLA. These stimuli might be a combination of (1) productive teacher-child interactions in the addressed condition and (2) the attractiveness of the narrative task. The addressed participants were actively stimulated to suggest their own ideas, which made them not only listeners but also active participants being able to share ideas with the teacher. The teacher did not evaluate their ideas (which would be more likely the case in non-productive inter-

actions) but, instead, tried them out to solve the *sijkon*'s problems together with the children, and in this way established an environment of joint attention and joint problem-solving. In this way, the addressed group were treated as full-blown participants, where "identities of full participation" (Black, 2004, p. 45) could emerge and participants' affiliative and affective needs were addressed (Amador & Adams, 2013).

It is possible that affective priming has stronger effects for assignments and in environments in which children feel less involved and have fewer opportunities to develop identities of full participants. Within the framework of a study into the free contributions of university staff to coffee and tea, photos of flowers and eyes were alternately hung behind the piggy bank, without any explanation. On average, the employees contributed almost three times as much in 'eye weeks' as in 'flower weeks' (Kahneman, 2011, based on research by Zajonc & Rajecki, 1969). It may well be that priming understood as environmental cues directing behaviour unconsciously is more effective for tasks or decisions people are less likely to enjoy like paying for coffee. Another recent study reveals immediate priming effects on behaviour but habituation effects in the long run, indicating that priming might be only effective during temporary interventions focused on influencing people's unconscious on-the-spot decision-making (Vuletic & Payne, 2019).

Both the idea of the attractiveness of the narrative task and Black's (2002, 2004) concept of *identities of full participation* can be supported by the further exploration of the data. The recordings of the test administrations were reviewed to verify what children spontaneously reported about the task-based intervention. Generally, the additional data show that the *kiemas*, who claimed to have magical droppings, was reported to be funny while the *sijkon* was appreciated because of his colourful look and need for assistance. Participants' reactions on how they helped the *sijkon* suggested they really felt they were involved, and even got strongly immersed in the ongoing productive interactions:

"In my class, we all found lots of ideas. I said: you [the *sijkon*] must go check quietly. Is he [the dog] gone? No, we said 'no'." (participant 68)

"Me, K. and Y. gave him a carrot. Then he was better again!" (participant 61)

"We helped him [the *sijkon*] and he helped us a bit. [He] said 'Thank you. I cannot do anything without you.'" (participant 13)

"For this story, you need lots of ideas." (participant 26)

Also, the attractiveness of the task-based activity was not only indicated by addressed participants but also by several non-addressed participants who admitted they, sometimes secretly, enjoyed the story: "I was watching [the story] but if

the teacher saw me, I had to colour quickly” (participant 60) and “I did not listen to the story, I coloured and listened. I love stories. My mum and dad do not read a book aloud” (participant 54).

So, all this suggests that the affective priming effect, if there was any, may have been temporary and may have been overruled by other stimuli in the learning environment like the task-based activity and the children’s eager participation in productive classroom talk.

### The potential of productive classroom talk

Our results show that productively addressed interaction based on a task-oriented activity leads to more vocabulary acquisition than unaddressed interaction based on the same input. On average, participants who are addressed productively learned, on average, four out of eight new words, while unaddressed participants acquired an average of three. The fact that addressed interaction leads to more vocabulary acquisition than non-addressed interaction is in line with another study on the early Dutch L2 vocabulary acquisition by preschool children in Flanders (Boderé & Jaspaert, 2016).

The significant difference between the two conditions can be attributed to the opportunities the children were offered to actively participate in productive interaction rather than only overhear productive interaction. The latter still led to vocabulary acquisition but generated a lower degree of involvement. Productive interaction, more than overhearing interaction, may boost the interactional instinct (Amador & Adams, 2013), an intrinsic factor that drives young children to engage and maintain interaction with significant others (Lee et al., 2009). Furthermore, in this particular intervention, the addressed children’s feelings of social affiliation may have been boosted by the fact that they were joining forces in trying to perform a challenging task and solve a shared problem *together*.

However, it should be noted that the non-addressed learners or bystanders also acquired new words, which means that overhearing or observing a productive conversation between the teacher and other children can also be considered a powerful situation for L2 vocabulary acquisition. This is encouraging news for all kindergarten and preschool teachers who have to work with relatively large groups of children, making it difficult to involve them all at the same time in the same productive way during task-based interactions. In addition, the results show that unaddressed school dislikers acquired more new words than unaddressed likers. The dislikers, unlike the likers, were perhaps less likely to follow the teacher’s instructions and focus on the individual coloring activity as the teacher had instructed them to do. Such an explanation is in line with previous research into the relationship between school liking and school performance,

showing that school likers are more likely to identify with the school context and comply with the teacher's requests (Ladd, 2000). However, for addressed participants, no significant difference between likers and dislikers were found, suggesting that participating in productive classroom talk might contribute to a powerful learning environment for both school likers and dislikers. Since the SLPT was administered two months after the intervention study, it seems safe to state that the results reflect general school liking experiences, rather than specific evaluations of the intervention study. All this suggests that the way the task-based interaction was set up might have played a key role for vocabulary acquisition of young L2 learners.

### **Conclusion: Towards more equal education opportunities**

The purpose of this study was to examine the effect of affective priming on early L2 vocabulary acquisition in two classroom learning situations: addressed and non-addressed productive classroom talk. First, the present study aimed to verify to what extent affective priming effects occur not only in laboratory settings but also in classroom situations as well, especially for learners-at-risk such as ethnic minority children in Western countries.

Overall, the results of this field experiment show affective priming as operationalized in the current study did not have a significant impact on young L2 learners' vocabulary acquisition. Therefore, our findings do not confirm the hypothesis that ethnic minority children display more effective vocabulary learning if they are primed with their parents' faces. The study also showed that the participants' prior L2 skills and the way in which the learners were addressed during the task-based interaction had a significant effect on L2 vocabulary learning. In addition, a significant interaction effect was found for non-addressed interaction and school liking. Specifically, the results show that young L2 learners-at-risk acquired significantly more new words (1) if they had more prior L2 skills and (2) if they were productively addressed while being actively engaged in a task-based language learning activity. In addition, our research shows that the non-addressed participants who disliked school learned significantly more new words than their unaddressed peers who like school. For addressed participants, however, school liking did not make a significant difference in terms of vocabulary acquisition. These results suggest that both addressed and unaddressed productive classroom talk potentially promote early vocabulary acquisition by L2 learners-at-risk.

Evidently, the present study has clear limitations. First, the acquisition of a limited number of new words was studied, on the basis of which any generalization to second language acquisition in general should be treated with extreme

caution. Second, the research was set up in the specific context of a number of Flemish schools with mainly pupils with a Turkish background. Generalizing the results to any L2 learner with an ethnic minority background in any specific learning environment should be done with extreme caution. Finally, we have not investigated the current operationalization of affective priming among first language (L1) learners. If a future replication study with L1 learners does not show significant affective priming effects on L1 learning either, it seems safe to state that it is not affective priming that supports language learning of disadvantaged pre-schoolers so much as the way teachers talk with them. Overall, our research indicates that both productively addressed and unaddressed interactions potentially impact on L2 vocabulary acquisition by non-Dutch preschool children with a low SES. In other words, instead of affective priming, it is likely that productive teacher-child interactions addressing learners' affiliative and affective needs strongly contribute to enhancing equal L2 learning opportunities from the early start.

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## Appendix A. Story pictures task-based neologism story



Story picture 1: The dog in front of the *sijkon's* home (= *tefsan*)



Story picture 2: The old lady and her carrot garden



Story picture 3: The old lady's house

Design: Bart Dierickx and Carolien Frijns

## Appendix B. Target nouns



*sijkon*

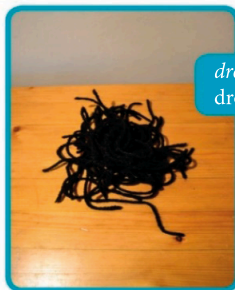


*kiemas*

*tefsan* (= the  
*sijkon's* home)



*drolletjes* (= the  
droppings of *kiemas*)



### Noun distractors used for the receptive noun test:



Noun distractor 1  
(not in story)



Noun distractor 2  
(not in story)



Noun distractor 3  
(not in story)



Noun distractor 4  
(used in the story:  
owl character)



Noun distractor 5  
(used in the story:  
dog character)

## Appendix C. Target verbs



*raastelen* = throwing the nose in the air while stamping with the feet and turning around



*tresselen* = moving the head up and down



*stieperen* = doing a high jump, followed by two small jumps on the spot




*optillen* = lifting up

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