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CONFLICTING NATURE OF SOCIAL-PRAGMATIC CUES WITH MUTUAL EXCLUSIVITY REGARDING THREE-YEAR-OLDS' LABEL-REFERENT MAPPINGS

The present research aims at finding to what extent social-pragmatic cues that conflict with mutual exclusivity lead preschoolers to exclude a novel object as a referent for a novel word. Sixty early and late 3-year-old preschoolers randomly participated in one of the three conditions. In the first condition, preschoolers' tendency to select an unfamiliar object for an unfamiliar word is investigated in the absence of social-pragmatic cues that contradict mutual exclusivity. The second condition is aimed to investigate if partial social-pragmatic cues, such as pointing towards a familiar object, interfere with mutual exclusivity. In the third condition, pointing towards a familiar object is accompanied by gazing alternately between the familiar object and preschoolers to investigate whether preschoolers abandon or still honor mutual exclusivity. The results indicate that in the absence of any social-pragmatic cues, preschoolers use a familiar object as a cue leading them to match a novel object with a novel word. Partial cues such as pointing towards familiar objects do not make any significant difference in preschoolers' familiar/unfamiliar object selection for an unfamiliar word. If both of the social-pragmatic cues are available, preschoolers suspend mutual exclusivity in indirect word learning situations.

Keywords: mutual exclusivity, word learning, social-pragmatic cues, gaze alternation, pointing

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Introduction

Any input source in first language acquisition environments, including TESOL teachers in SLA process, can teach children how to label some body parts or casual clothes with world-wide known 'Head, shoulders, knees and toes' and 'Put on your shoes' nursery rhymes respectively, provided that the songs are accompanied by social-pragmatic cues. Everyone knows that the singer of these songs should point towards intended referents simultaneously. In the absence of the cues of pointing towards the referents in the songs –when the social-pragmatic cues are excluded by making children listen to the songs from a tape recorder, they cannot learn which label exactly refers to which referent.

In addition to pointing, it is commonly assumed that the speakers' gaze directions between a child and the intended object are the other social-pragmatic cues enabling children to pay close attention to a particular referent for an unfamiliar word. Even 18- to 19-month-old infants take the speakers' line of regard into consideration before mapping a novel label onto any object (Baldwin, 1991, 1993). Both pointing and gaze direction clarify how indirect word learning occurs from the point of the social-pragmatic account. These behavioral cues help children learn an unfamiliar label for a novel object. Contrary to the default assumptions of mutual exclusivity, children also label an unfamiliar object with multiple words (lexical overlap) (Banigan & Mervis, 1988) by means of those social-pragmatic cues. Mutual exclusivity is regarded as children's default assumption in indirect word learning situations, referring to their tendency towards selecting an unfamiliar object for a not-yet-known word. They are very likely to label an unfamiliar object with a novel word instead of a familiar one. An already-known object leads children to exclude it as an option for a potential referent for a novel word. For example, children are introduced to a familiar 'ball' and an unfamiliar 'spark plug', which they are most likely to encounter for the first time. Then, they are expected to make a selection between these two objects as a referent for a fabricated word 'loki'. It is highly probable that children exclude familiar 'ball' from the options and select the unfamiliar 'spark plug'. They infer that a 'ball' cannot be both a 'ball' and a 'loki' at the same time because an object can be paired with only one basic level category (Markman, 1989, 1992).

Social-Pragmatic Cues Interfering with Mutual Exclusivity

Despite the fact that social-pragmatic cues are very effective in drawing children's attention to a certain point, some research findings reveal that non-ostensive pragmatic cues are inefficient at getting children to suspend mutual exclusivity. Gaze direction individually as a social-pragmatic cue cannot dissuade 2-year-olds from honoring mutual exclusivity in Graham, Nilsen, Collins and Olineck (2010). Although the experimenter's gazing at an unfamiliar object facilitates toddlers' selection of an unfamiliar object for an unknown word, his

gazing at a familiar object in a way that conflicts with mutual exclusivity does not lead toddlers to match the unfamiliar word with the familiar object. In a similar way to Graham et al. (2010), Jaswal and Hansen (2006) investigate if social-pragmatic cues that are in active disagreement with mutual exclusivity have any effect on preschoolers' referent selection for a novel word. Although speakers use behavioral cues such as either pointing or gaze direction conflicting with mutual exclusivity in order to manipulate preschoolers' word-referent selection, preschoolers do not prefer matching novel words with familiar objects, suggesting mutual exclusivity is an inherent assumption in indirect word learning.

Grassmann and Tomasello (2010) partly raise an objection to Jaswal and Hansen's (2006) findings. According to them, social-pragmatic cues such as gaze alternation between a child and an object, and pointing towards an object are more fundamental to word learning compared to lexical information. If the social-pragmatic context that Jaswal and Hansen (2006) provided was obvious enough to get preschoolers' attention, the preschoolers would opt to match novel words with ostensibly-pointed familiar objects. In order to see whether clear, ostensive pointing and gaze alternation between preschoolers and pointed objects make any significant difference, Grassmann and Tomasello (2010) replicate Jaswal and Hansen's (2006) procedure with some modifications. In the absence of any social-pragmatic cues, in the baseline condition, preschoolers' selection of novel objects for novel words shows consistency with mutual exclusivity. However, in the presence of non-ostensive pragmatic information, contrary to the participants who prefer matching novel words with novel objects beyond the chance level in Jaswal and Hansen (2006), the preschoolers' unfamiliar object selection for a novel word does not go beyond the chance level. Furthermore, if the social-pragmatic cues are ostensive enough, i.e., the pointing is assisted with gaze alternation, children are very less likely to choose novel objects. In other words, the more the social-pragmatic cues become salient, the more the preschoolers vote against mutual exclusivity and, furthermore, even the experimenters' contradictory pointing and gazing at a novel object for a familiar word do not divert preschoolers from selecting the pointed object (study 2). Additionally, the preschoolers' selection does not go beyond the chance level despite of the clear and ostensive social-pragmatic information if both of the objects are familiar. They choose either 'ball' or 'car', no matter to which familiar object the experimenter explicitly points (study 3).

Jaswal (2010) is another research replicating and extending Jaswal and Hansen's (2006) procedure and findings. He extends their study with participants who are a year younger than those in Jaswal and Hansen (2006). Similarly, he manipulates the constraint of mutual exclusivity with social-pragmatic cues. Toddlers are expected to match novel words with familiar objects after the experimenter has either pointed towards or gazed at familiar objects. Although the baseline condition, in which the experimenter makes a neutral request with

social-pragmatic cues' contribution (e.g., "Can you hand it to me?"), ensures that the toddlers understand the intent of the speaker pointing towards or gazing at an object, they are less likely to select familiar objects in response to (e.g., "Can you hand me the blicket?"). This result, similar to those in Jaswal and Hansen (2006), suggests that toddlers are loyal to the mutual exclusivity constraint even in the presence of partial conflicting social-pragmatic cues. Grassmann and Tomasello (2010) criticize Jaswal and Hansen (2006) for the non-ostensive social-pragmatic cues they provided. They allege that if they provided the preschoolers with ostensive cues insisting clearly that novel words refer to familiar objects, the preschoolers' tendency towards selecting a familiar object for a novel word would violate mutual exclusivity. Similar to Grassmann and Tomasello (2010), Jaswal (2010), in study 2, supplies ostensive social-pragmatic cues with the combination of both pointing and gazing cues. He finds that toddlers irresistibly select the familiar object for the novel word, suggesting that social-pragmatic cues can manipulate children's belief that a word belongs to only one category.

Broad Perspectives Towards Mutual Exclusivity

Although the issue is investigated in both toddlers and preschoolers, the exclusion of a familiar object as a potential referent for a novel word is not solely constrained by age. Lexical, and hence, linguistic competences are the issues already addressed to understand mutual exclusivity. Grassmann, Schulze, and Tomasello (2015) find that preschoolers' vocabulary size is the best determinant of whether preschoolers exclude a familiar object as an offer to a novel word. It is very likely that preschoolers who are able to both comprehend and produce a familiar word will not match an already-known object with a novel word. In other words, they are better at excluding a familiar object as a potential referent for a novel word when compared to those who are not able to produce but comprehend familiar words. Similarly, Kalashnikova, Mattock, and Monaghan (2016) find that 17-to-19-month-old infants with more extensive receptive vocabulary knowledge display consistent performance with mutual exclusivity on a referent selection task. It is very unlikely that they select a familiar object in response to an unfamiliar word. As the infants' familiarity with words develops, they get better at excluding a familiar object as a potential referent for an unfamiliar word. Kalashnikova et al. (2016) support the view that "ME is a gradually developing strategy in relation to infants' growing vocabulary proficiency" (p. 10), which also summarizes Grassmann et al. (2015) contrasting children much older than those in Kalashnikova et al. (2016) in terms of comprehension and production of vocabulary knowledge. It is inferred that lexical competence increases with the passing of time and turns into productivity. By then, the comprehension of lexical items in infancy plays a crucial role in infants' referent selection for a novel word. Apart from this research, the issue of lexical competence is extended to the

effects of linguistic competence on children's exclusion of a familiar object as an option for an unfamiliar word. Kalashnikova, Mattock, and Monaghan (2014) compare monolingual children with bilinguals to delve into their reactions to 'one word for one label' or 'multiple words for one label' correspondences. They find that whereas monolingual children frequently tend to use mutual exclusivity, bilingual children are apt to accept lexical overlap more frequently. That is to say, monolinguals are very likely to assume that one word belongs to only one category label. However, bilingual children tend to accept that an object may have more than one overlapping labels. There is also a developmental shift between age groups. Older monolingual and bilingual children's performances on mutual exclusivity and lexical overlap respectively differ significantly from those of younger children. As in the issue of lexical competence, as children grow older, they adopt a more consistent attitude towards either mutual exclusivity or lexical overlap compared to younger age groups.

Birch, Vauthier, and Bloom (2008) find that children consider the previous credibility of speakers in learning both new words and new object functions. However, children do not apply mutual exclusivity constraint to the learning of new object functions, although they apply it to the learning of new words. In other words, mutual exclusivity is special to word learning and cannot be extended to any other learning situations.

Contrary to Birch et al. (2008), Piccin and Blewitt (2007) suggest that mutual exclusivity is not only a linguistic constraint on the explanation of early word learning but also a general learning constraint storing general cognitive resources in it. It is also extended to non-word learning tasks, indicating that mutual exclusivity is an inherent mechanism both specifically regulating children's linguistic reactions to unfamiliar words and generally manifesting the cognitive resources they employ.

Similar to Birch et al. (2008), Diesendruck and Markson (2001) interrogate whether learners' tendency towards naming novel words is driven by an inherent constraint solely peculiar to word learning. Children are expected to select an object as a consequence of either a novel label or a piece of novel fact applied to objects. It is hypothesized that if an inherent constraint shapes children's word learning, a novel label should act as a cue leading them to select an unfamiliar object for it. Contrarily, children should randomly select either of the objects in the fact condition because the assumption previously determined is not assumed to be a general cognitive constraint easing all learning situations. The findings show that children's tendency to infer a not-yet-labeled object from a piece of novel information is not an inherent constraint to word learning but a general cognitive ability, suggesting that children neither refer to a single object with multiple labels nor accept more than one fact for the same object. Further results on the word labeling task indicate that children still assume words to be mutually exclusive even if a speaker requesting an object with an unfamiliar label is not

available while one of the two unfamiliar objects is introduced. This means that children assume that although the speaker does not attend to the labeling phase at the beginning, s/he knows what they have already known. This supports the view of Clark's principle of conventionality (1997) suggesting that language forms are conventional and shared by all speakers of a language. Consequently, children react to the speaker requesting an object with a novel label by selecting an unfamiliar object, namely honoring mutual exclusivity. Similar results with 2-year-old and even with 19-month-old children (Graham, Stock, & Henderson, 2006; Henderson & Graham, 2005) support the view of speaker extension effect of conventionality (Sabbagh & Henderson, 2007) suggesting that a word meaning known by a single member of a community is also and already shared with the remaining members of that community. These results also show that the development of theory of mind at this age is still in progress, indicating that an appreciation for conventionality is likely to appear in children's word labeling tasks as a consequence of their restricted theory of mind skills (Sabbagh & Henderson, 2007). The children who are introduced to the label of one of the two unfamiliar objects assume that the speaker knows the same label as well, although s/he is not available when one of the novel objects is introduced, indicating that children assume what is known by them is already-known information by others.

In conclusion, this section has attempted to provide a brief summary of the literature related to mutual exclusivity. There is numerous research investigating preschoolers' reactions towards the premise of it. The general consensus on the issue is that mutual exclusivity is an inherent assumption for word learning in the first couple of years in a child's life. However, a controversy among research findings comes into existence when social-pragmatic cues interfere with mutual exclusivity (Graham et al. 2010; Grassmann & Tomasello, 2010; Jaswal, 2010; Jaswal & Hansen, 2006). The present research also aims at finding to what extent social-pragmatic cues that conflict with mutual exclusivity lead 3-year-olds to exclude a novel object as a referent for a novel word.

Method

The present study replicates the procedure in Grassmann and Tomasello (2010), which is more of a reaction to Jaswal and Hansen (2006) in which the children are presented with one familiar and one unfamiliar object and requested to select the referent for a novel label as in the previous disambiguation research. While doing so, the experimenter either points towards the familiar object or looks at it. Namely, two social-pragmatic cues, pointing and gazing, are used in two separate situations. While the experimenter is pointing towards the familiar object, he does not look at the familiar object simultaneously (study 1). Similarly, the experimenter just looks at the familiar object instead of gazing alternately between the familiar object and children. The existing procedure, from Jaswal and Hansen (2006) and even in Graham et al. (2010), fails to

reflect the contradiction between mutual exclusivity and social-pragmatic cues. As a reaction to Jaswal and Hansen (2006), Grassmann and Tomasello (2010) criticize some of the conclusions that Jaswal and Hansen (2006) draw from their findings, asserting that if social-pragmatic cues of pointing towards the familiar object is accompanied by gazing at the familiar object and children interchangeably, the premise of mutual exclusivity suspends. In a similar way, Jaswal (2010) enriches pointing gestures with gazing at familiar objects in study 2. Ultimately, it can be inferred that previously published studies on the effect of social-pragmatic cues on mutual exclusivity are not consistent and are in need of further investigation.

The above-mentioned studies include preschoolers aged between 2 and 4 years. More specifically, while the mean age for 2-year-olds is 23 months, it is 48 months for 4-year-olds in Grassmann and Tomasello (2010). Similarly, 3-year-olds with the mean age of 44 months are compared to 4-year-olds with the mean age of 49 months in Jaswal and Hansen (2006). Additionally, preschoolers' mean age is 30 months in Jaswal (2010). It can be inferred that the available data in these studies comes from early 2-year-olds, late 3-year-olds, and early 4-year-olds while lacking data from early 3-year-olds. Unlike Grassmann and Tomasello (2010) and Jaswal (2010), the present research extends and varies in the ages of the preschoolers participating in the study. While 2- and 4-year-olds in Grassmann and Tomasello (2010) and two-and-a-half-year-olds in Jaswal (2010) participate in those studies, the present study investigates the issue on early and late 3-year-olds. It includes the early 3-year-olds with a mean age of 38 months who are compared to late 3-year-olds with a mean age of 45 months, with the intention of collecting more specific data devoted to 3-year-olds and proving that the replication of the procedures from the above-mentioned studies with different age groups is possible.

Participants

All of the 60 early and late 3-year-olds participating in the present research were monolingual Turkish-speaking preschoolers. 30 of them were early 3-year-olds (ranging from 36 months to 42 months, M = 38.26), while the remaining 30 were late 3-year-olds (ranging from 43 months to 47 months, M = 45.76). The descriptive information across the three conditions are as follows:

Table 1. Participants across Conditions

	1st Condition		**2nd Condition**		**3rd Condition**	
	Early	*Late*	Early	Late	Early	Late
No. of Participants	10	10	10	10	10	10
Age Range (Months)	36–42	44–47	36–42	43–47	36–41	43–47
Mean	38,2	45,8	38,1	45,7	38,5	45,8

All of the 60 participants chose either novel or familiar objects. There were an additional 22 preschoolers who were not included in the final 60 participants since they were either unwilling to make any selection between the objects or very eager to choose both of them. Among these excluded preschoolers, there were also the ones the experimenter could not make eye contact in the third condition.

Design

Every participant was assigned to only one of the three conditions. They randomly participated in either the first (ME), second (Only-Pointing-Cue), or third (Pointing-Gaze-Cue) conditions. Each condition was conducted with 20 preschoolers, 10 of whom were early 3-year-olds while the remaining 10 were late 3-year-olds. No matter the condition, each participant received four trials. During each trial, the participants encountered two objects, one of which was unfamiliar. A ball, a pencil, a key, and a flower were used as familiar objects, while a spark plug, a ball bearing, a rubber earplug, and an oil sump plug were used as unfamiliar objects. The unfamiliar fabricated words, which were orthographically and phonetically similar to Turkish words, were as follows: vami, çepe, loki, and püke.

Procedure

The first condition: In this experiment, as the baseline for the assessment of mutual exclusivity, ME was tested in the absence of social-pragmatic cues. The experimenter and a child sat face to face. The experimenter introduced two objects in each of 4 trials (e.g., one familiar, a key, and one unfamiliar, a spark plug). Both of them were put on the table side by side and the experimenter said in Turkish, "Would you like to play with 'püke'? I would like to play with 'püke.' Let's play with 'püke.' Come on, give me the 'püke.'" The child was expected to choose one of the objects. The experimenter did not look anywhere but the child's face while waiting for the child's selection for one of the objects. The remaining three trials went on with the remaining three pairs.

The second condition: The procedure in this condition was very similar to the first condition with the addition of partial social-pragmatic cues. The experimenter introduced two objects, one of which was unfamiliar. He said in Turkish, "Would you like to play with 'vami'? I would like to play with 'vami.' Let's play with 'vami.' Come on, give me the 'vami.'" Unlike the first condition, requesting the unfamiliar object 'vami,' he pointed towards the familiar object with his index finger and kept pointing until the child made a selection between two objects. The experimenter repeated the same process for the remaining three pairs in the remaining three trials.

The third condition: The procedure followed in the preceding two conditions was also carried out in this condition. The experimenter again introduced two objects, one of which was unfamiliar to preschoolers. He said in Turkish, "Would

you like to play with 'loki'? I would like to play with 'loki.' Let's play with 'loki.' Come on, give me the 'loki.'" In addition to the social-pragmatic cues in the second condition, requesting the unfamiliar object 'loki,' he both pointed towards the familiar object and gazed at the child and the familiar object repeatedly. The researcher kept pointing towards the familiar object and gazing alternately between the child and familiar object until the child made a selection between two objects. The experimenter repeated the same process for the remaining three pairs in the remaining three trials.

In each trial, in the three conditions, the position of the novel and familiar objects were randomly counterbalanced. For example, a child took four trials no matter which condition s/he attended. While the novel objects appeared on the left of the children in two trials, familiar objects also appeared on their left in two trials. Thus, the experimenter avoided the children to develop a tendency for choosing familiar/unfamiliar objects in the same direction in each trial.

The experimenter provided no feedback on the preschoolers' object selection. Regardless of the children's familiar or unfamiliar object selection at the end of each trial, the experimenter acted in a neutral manner. Removing a pair from the table before putting on the next pair, he asked preschoolers some questions such as whether they knew how to use these objects, whether they liked playing with them, whether they had any of them, etc. The preschoolers were deemed to have made a selection between a familiar or a novel object if they picked or held it up, handed it to the experimenter, or pushed it towards the experimenter.

Results

The preschoolers' novel object selection was the dependent variable, also known as test variable, for statistical analyses in each of the three conditions. Each participant had a score of 1/4, 2/4, 3/4, or 4/4 based on their novel object selection from a total of four trials. No matter which condition a participant attended to, how often they selected the novel object in line with mutual exclusivity determined their score. For example, a participant got three points if they selected a novel object in three out of four trials. Additionally, half of the trials, 2/4, was determined to be the chance level, also known as hypothesized value.

The one-sample t-test, which helps to compare the test variable (the sample mean) to the hypothesized value (the chance level) in order to determine whether they are statistically different from each other, was run to make statistical analyses in each of the three conditions.

In the first condition, both early 3-year-olds ($M = 3.20$ (80%); $SD = .632$; $t(9) = 6.000$; $p < .001$; Cohen's $d = 1.898$) and late 3-year-olds ($M = 3.40$ (85%); $SD = .516$; $t(9) = 8.573$; $p < .001$; Cohen's $d = 2.713$) select novel objects for novel words beyond the chance level.

Figure 1 summarizes the percentages of the novel/familiar object selection 3-year-olds make as the referents for the novel labels.

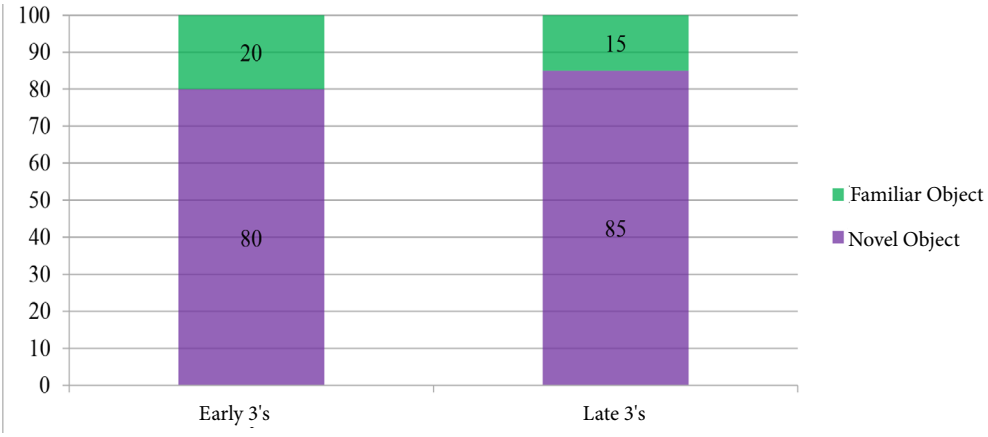

Figure 1. 3-year-olds' mean values of novel/familiar object selection in the absence of any social-pragmatic cues

Figure 1 indicates that preschoolers significantly honor mutual exclusivity in 82.5% of the trials on average, suggesting that they select a familiar object for an unfamiliar word in 17.5% of the trials.

In the second condition, in order to test whether pointing towards familiar objects as a social-pragmatic cue confutes mutual exclusivity, preschoolers' suspension of mutual exclusivity by selecting familiar objects for a novel word is investigated. In the presence of a partial social-pragmatic cue, pointing towards an already-known object for a novel word, neither early 3-year-olds (M = 1.20 (30%); SD = .632; t(9)= –4.000; p > ,001 (p = .003; Cohen's d = –1.265) nor late 3-year-olds (M = 1.70 (42.5%); SD = .483; t(9)= –1.964; p > ,001 (p = .081; Cohen's d = –0.62) significantly sustain mutual exclusivity. They choose novel objects for novel labels at the chance level, indicating that pointing towards a familiar object–even if it is not statistically significant–attenuates preschoolers' tendency towards selecting novel objects for novel words.

Figure 2 summarizes the percentages of the novel/familiar object selection 3-year-olds make as the referents for the novel words when a kind of social-pragmatic cue in contradiction with mutual exclusivity is available.

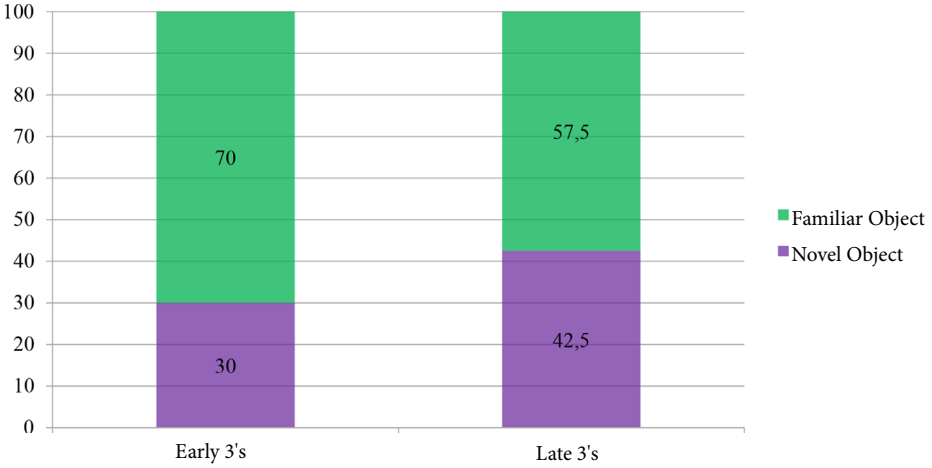

Figure 2. 3-year-olds' mean values of the novel/familiar object selection in the partial presence of social-pragmatic cues conflicting with ME (pointing towards familiar object)

Figure 2 indicates that pointing towards a familiar object in a way that conflicts with mutual exclusivity dramatically decimates preschoolers' novel object selection for a novel word. However, the fact that preschoolers' novel object selection does not go beyond the chance level is not statistically significant.

The third condition contains the case in which contrastingly pointing towards a familiar object is strengthened with the addition of gaze alternation. The experimenter both points towards the familiar object and alternates his looks between the child and familiar object to manipulate the preschoolers' object selection. The results show that 3-year-olds significantly suspend mutual exclusivity by choosing a familiar object instead of an unfamiliar one in response to an unknown word. Namely, both early 3-year-olds ($M = .30$ (7.5%); $SD = .483$; $t(9) = -11.129$; $p < .001$; Cohen's $d = -3.519$) and late 3-year-olds ($M = .20$ (5%); $SD = .422$; $t(9) = -13.500$; $p < .001$; Cohen's $d = -4.265$) select familiar objects for novel words significantly beyond the chance level and abandon mutual exclusivity.

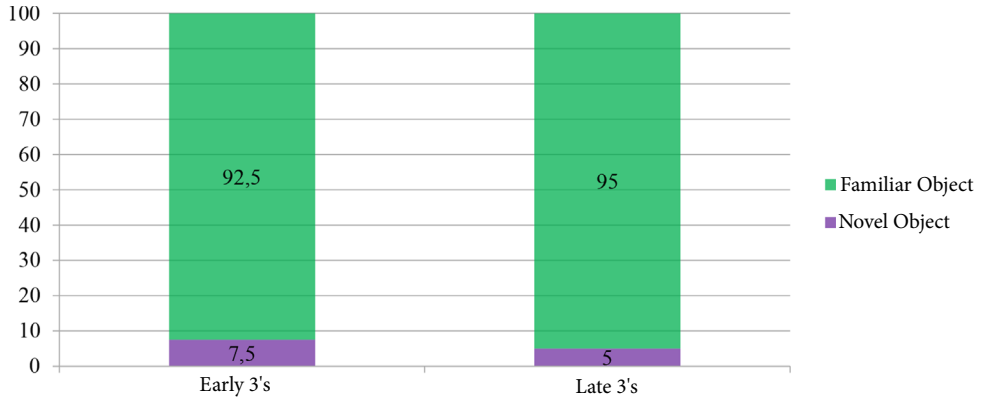

Figure 3. 3-year-olds' mean values of the novel/familiar object selection in the full presence of social-pragmatic cues conflicting with ME (pointing towards familiar object with gaze alternation)

Figure 3 indicates that the social-pragmatic cues of pointing towards a familiar object with gaze alternation between the preschoolers and familiar object, boost preschoolers' selection of the familiar object for an unfamiliar word over 90%, suggesting that 3-year-olds significantly abandon mutual exclusivity.

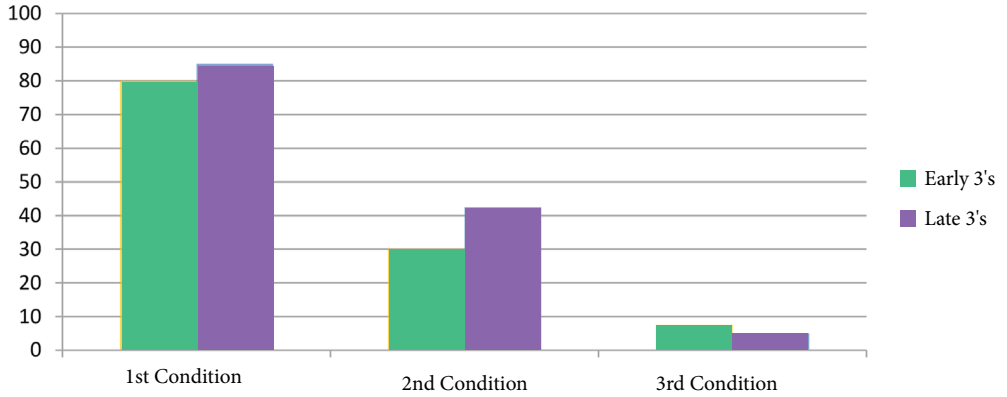

Figure 4. Preschoolers' novel object selection across the conditions

Figure 4 summarizes preschoolers' novel object selection in each condition. Here, it can easily be seen that the preschoolers' novel object selection for unfamiliar words dramatically declines in the partial/full presence of social-pragmatic cues.

In order to test the effect of the two nominal independent variables, i.e., the three experimental conditions and age (early 3-year-olds vs. late 3-year-olds), on the dependent variable, i.e., preschoolers' selection of novel objects for unfamiliar words, a 2x3 between-groups ANOVA test is carried out. The results show that there is a significant difference across the conditions with regard to the preschoolers' selection of novel objects for novel words ($F(2, 54) = 165.565$,

$p < .001$, $\eta p2 = .860$). To put it another way, novel objects for unfamiliar words are significantly selected more frequently in the first condition (in the absence of any social-pragmatic cues) than in both the second (only pointing towards familiar objects) and third (pointing is accompanied by gazing) conditions. Also, a statistically significant difference occurs between the second and third conditions with regard to preschoolers' selection of novel objects for unfamiliar words, implying that preschoolers' mean difference score of selecting novel objects for the second and third conditions is significant.

There is no developmental shift between the age groups ($F(1, 54) = 2.104$, $p > ,001$, $p = .153$, $\eta p2 = .038$), suggesting that the difference between early and late 3-year-olds' selection of novel objects for unfamiliar words is not significant.

Discussion

The present research aims at finding to what extent social-pragmatic cues that conflict with mutual exclusivity (Markman & Wachtel, 1988) lead preschoolers to exclude a novel object as a referent for a novel word. In the first condition, as the baseline for the assessment of mutual exclusivity, preschoolers are tested in the absence of any social-pragmatic cues to investigate whether they really use mutual exclusivity in indirect word learning situations. It is found that if no social-pragmatic cue is available, preschoolers use a familiar object as a cue leading them to match a novel object with a novel word.

This finding reminds us of Clark's principles of conventionality and contrast (1988), suggesting that "for certain meanings, there is a conventional form that speakers expect to be used in the language community, i.e., if one does not use the conventional form that might have been expected, it is because one has some OTHER, contrasting meaning in mind" (p. 319). On a trial in which a familiar 'flower' and an unfamiliar 'rubber earplug' are presented as options to preschoolers, they decide the unfamiliar 'rubber earplug' as the referent of a fabricated word 'çepe'. The children infer that 'flower' is a kind of conventional form, whose meaning is shared by each individual in a society. If the experimenter had intended to refer to 'flower', he would evidently have requested 'flower'. Therefore, the novel object 'rubber earplug' appears as the most suitable option for the novel word 'çepe', which is also a conventional form, and for which the preschoolers probably infer that they have not had any referent yet.

The second condition is aimed to investigate if partial social-pragmatic cues, pointing towards a familiar object, interfere with mutual exclusivity. In a situation very similar to the first condition, preschoolers are pointed towards a familiar object in the decision phase to see whether social-pragmatic cues dissuade them from choosing a novel object for an unfamiliar word. The findings indicate that although it is not statistically significant, the preschoolers go on choosing novel objects for unfamiliar words at chance level. Additionally, their

tendency to select novel objects for unfamiliar words dramatically dips below 50%. The fall in their selection of novel objects is also demonstrated in previous studies. Pointing towards a familiar object while asking for an unfamiliar word causes a noticeable effect on the preschoolers' tendency to accept mutual exclusivity in Grassmann and Tomasello (2010). 2- and 4-year-olds' selection of novel objects in the partial presence of social-pragmatic cues decreases by nearly 30% and their novel object selection does not go beyond the chance level. Jaswal (2010), contrary to Grassmann and Tomasello (2010), finds that neither pointing towards familiar objects nor gazing alternately between the child and the familiar object separately violates mutual exclusivity. Pointing as a social-pragmatic cue alone leads toddlers aged 2;6 to pick out familiar objects for unfamiliar words 2.12 times in 6 trials. That is to say, novel objects are chosen for unfamiliar words 3.88 times out of 6, implying that children of this age do not abandon the assumption of mutual exclusivity in favor of partial social-pragmatic cues. Similarly, 3- and 4-year-olds in Jaswal and Hansen (2006) pick out pointed familiar objects for novel words in only 12.5% of the trials and do not suspend mutual exclusivity by going on matching novel words with novel objects.

In the third condition, pointing towards familiar objects is accompanied by another social-pragmatic cue, gaze alternation. In addition to the second condition, in which the experimenter just points towards familiar objects, he both points towards the familiar objects and alternates his gazes between the preschoolers and the familiar objects. As a result, the preschoolers' novel object selection dramatically dips below 10%, provided that the pointing is reinforced with gazing at the familiar object and child alternately. In other words, in the presence of both social-pragmatic cues, preschoolers' selection of the familiar object surges over 90%, implying that 3-year-olds suspend mutual exclusivity in indirect word learning situations. Similarly, 2- and 4-year-olds in Grassmann and Tomasello (2010) and toddlers aged 2;6 in Jaswal (2010) abandon mutual exclusivity when both social pragmatic cues insist that the familiar objects are the referents for unfamiliar labels. These results remind us of those reported by Graham et al. (2010). In the absence of pointing towards a familiar object, gazing at a familiar object individually in a conflicting way seems incapable of having toddlers follow the speaker's intentional cues to match a not-yet-known word as a label with a familiar object.

Both early and late 3-year-olds show similar tendencies towards selecting novel objects in each of the three conditions, meaning that they do not show significant differences in any of the conditions. However, there is a statistically significant difference among the conditions with regard to the selection of novel objects. In the absence of any social-pragmatic cues, preschoolers honor mutual exclusivity and strictly assume that a lexical item should belong to only one category. However, even individual pointing towards familiar objects leads them to select unfamiliar objects at chance level, indicating that they seem a bit

confused about the referents for unfamiliar words. In a similar way, pointing towards familiar objects accompanied by gazing alternately between the familiar objects and the preschoolers deters preschoolers from choosing novel objects as referents for novel words. It can be inferred that adults' communicational intents lead preschoolers to give up assuming that an object can be paired with only one basic level category (Markman, 1989, 1992).

As a default generalization in indirect word learning situations, mutual exclusivity leads children to presume that a lexical item should belong to only one category. Namely, an object labeled as 'flower' cannot be alternately labeled as superordinate 'plant' or subordinate 'poinsettia'. If mutual exclusivity was the essential inherent assumption to which children primarily apply in word learning situations, they could not have learned any superordinate or subordinate category names for an already-named object. Social-pragmatic cues seem very effective to get learners to understand speakers' "communicative intentions" (Tomasello, 2000, p. 401). It can easily be inferred that understanding speakers' intentions for any already-named-object is likely to cause lexical overlap. That is to say, an object can have multiple labels contrary to mutual exclusivity (Waxman & Hatch, 1992). For example, Piccin and Blewitt (2007) investigate the effectiveness of the presence of a particular benefit on children's referent selection. In order to gain as many stickers as possible, 3-year-old children violate mutual exclusivity by labeling an unfamiliar object with two unfamiliar words. However, the removal of the benefit leads them to bring the default mutual exclusivity assumption back in such a manner that an object has only one label. Similarly, Gollek and Doherty (2016) carry the issue a step further by investigating mutual exclusivity bias with the addition of pragmatic cues insisting the novel word refers to the familiar object. They find that children who develop theory of mind abandon the predisposition towards matching a novel word with a novel object, indicating that additional pragmatic cues cause children to assign a novel word as a label to an already-known object. Another example of what is meant by children's accepting lexical overlap is Haryu and Imai (1999) examining the circumstances under which mutual exclusivity sustains and suspends. They argue that children should override mutual exclusivity to match novel labels with subordinate and superordinate category names, hypothesizing shape similarity among the newly and existing labeled objects determines whether children override or adhere to mutual exclusivity. If shape similarity is high, it is assumed that children interpret that a novel word has a hierarchical relationship with the existing object and suspend mutual exclusivity. Conversely, low shape similarity leads mutual exclusivity to emerge: the object previously labeled should be excluded from the alternative referent options for the not-yet-known word. They found that high shape similarity is the determinant leading 3-year-olds to override mutual exclusivity and enroll the new word as the subtype of the already-familiar word.

The above-mentioned research refers to children's flexible appeal to mutual

exclusivity. It can easily be inferred that children, if necessary, quit attaching credence to the premise that a lexical item should belong to only one category. As also shown in the findings of the present research, "young word learners are remarkably adept at exploiting multiple sources of information to establish appropriate mappings between words (e.g., 'ball') and objects (e.g., balls)" (Graham et al., 2010, p. 449). Different situations with the absence and presence of the speakers' intentional cues cause a discrepancy in children's label-referent mappings.

Conclusion

Mutual exclusivity is an inherent assumption for word learning in the first couple of years of life. There are a number of studies investigating preschoolers' predispositions towards mutual exclusivity. However, the literature devoted to the issue consists of research findings engendering a lot of controversy. Scholars are divided as to whether social-pragmatic cues interfere with mutual exclusivity (Graham et al. 2010; Grassmann & Tomasello, 2010; Jaswal, 2010; Jaswal & Hansen, 2006). Also, the present study aims at investigating to what extent social-pragmatic cues, which are assumed to be conflicting with mutual exclusivity, lead 3-year-olds to exclude a novel object as a referent for a novel word while forming new label-referent mappings. Three conditions were created to investigate their reactions towards mutual exclusivity in the absence and partial or full presence of social-pragmatic cues. The results show that in the absence of any social-pragmatic cues, preschoolers use a familiar object as a cue leading them to match a novel object with a novel word. The partial presence of social-pragmatic cues does not make any significant difference in preschoolers' familiar/unfamiliar object selection for an unfamiliar word. In the condition with the full presence of social-pragmatic cues accompanying each other, preschoolers suspend mutual exclusivity in indirect word learning situations.

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