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Author(s)	Yeung, Victoria Wai Lan; Kashima, Yoshihisa
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Communicating Stereotype-Relevant Information: How Readily Can People Individuate?

Victoria Wai Lan Yeung
Hokkaido University

Yoshihisa Kashima
University of Melbourne

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Correspondence concerning this manuscript should be addressed to Victoria Yeung, Center for Experimental Research in Social Sciences, Hokkaido University, N10W7, Kita-ku, Sapporo 060-0810, Japan. Email: victoria@lynx.let.hokudai.ac.jp or yeungvicki@gmail.com

Abstract

It is often suggested that people automatically form impression of target using stereotypes. However, people can flexibly deploy different types of individuating processes depending on communicative contexts. We showed that people can individuate targets from their social category by communicating stereotype-inconsistent information (person-group-individuation) when they are required to reproduce information about the targets; people can individuate targets from other individuals by communicating information that is distinctive about the targets (person-person-individuation) when required to identify the targets. Participants' performance is unrelated to information memorability (Experiment 1), and not affected by time pressure (Experiment 2). Human's adaptive capacity for individuation is discussed.

Keywords: communication, stereotypicality, individuation, distinctiveness

(Word counts: 100 words)

Communicating Stereotype-Relevant Information:

How Readily Can People Individuate?

In our everyday life, we encounter different people, form impressions and communicate about them. Researchers generally found that we tend to form an impression about the target by using stereotypical information than individuating information. Especially when we do not have enough time or motivation to process the individuating information more deeply (see Fiske & Neuberg, 1990, for a review). In other words, people seem to stereotype by default (Allport, 1954; Hamilton, 1979; Lippman, 1922). This cognitive tendency extends to communication – when communicating about people, stereotypes are disseminated through everyday conversation more often than not (e.g., Kashima, 2000; Lyons & Kashima, 2001, 2003 & 2006). An evolutionary analysis of this tendency claimed that it is adaptive to stereotype (Neuberg, 1992). According to this view, human ancestors, who constantly faced potential dangers such as attacks from strangers and wild animals, needed to make rapid judgments so as to quickly discriminate between friends and strangers, or between tigers and cats. As a result, humans evolved a cognitive module that uses the category-based information for making speedy judgment.

Nevertheless, Neuberg (1992) pointed out that this evolutionary account fails to consider the fact that some environments may not require immediate rapid judgments, but demand more in-depth, thoughtful judgments (e.g., to choose a potential partner). In such circumstances, responding with stereotypical thoughts and actions may be maladaptive; and it is more adaptive to gather, compare and use additional relevant information to create more individuated impressions of the target. Therefore, Neuberg (1992) suggested that it should be adaptive for humans to possess the capacity for *individuation*. He argued that humans should have evolved an adaptive system that enables them to use *flexibly* both stereotyping and individuating processes to evaluate the target depending on particular circumstances. That is, people should be able to override their initial tendency to stereotype, and to move toward more individuating processes (see the continuum model by Fiske, Lin & Neuberg, 1999) if the environment requires them to do so. In this paper, we

present evidence for Neuberg's (1992) argument that under some circumstances, people can attend to individuating information, and that they can individuate quite *readily*. More specifically, we seek to demonstrate that an adaptive capacity for individuation can be observed in the communication domain. Communicators can readily individuate a target person adapting to the different communication contexts even when cognitive resources are limited.

So far in the literature, *individuation* has meant constructing a person representation without using group stereotypes as much, but to give more weight to information that is contrary to the group stereotypes (e.g., Fiske & Neuberg, 1992). Nevertheless, there are at least two different ways to individuate a person. One way is this traditional meaning of individuation in the literature, that is, to distinguish a person from the stereotyped group "category". However, we suggest there is another way, that is, to distinguish a person from another individual. The former is the *person-group individuation*, but the latter may be called the *person-person individuation*. To illustrate, imagine a situation where you are talking with your friend about two lawyers, Mr. A and Mr. B, whom you met at a party. If you want to talk about one particular person, Mr. A, and wish to remind your friend which person you are referring to, that is Mr. A, but not Mr. B. It is one thing to individuate Mr. A as distinct from a typical lawyer and how atypical this person is as a lawyer (i.e., person-group individuation), and it is quite another thing to individuate Mr. A from Mr. B (i.e., person-person individuation) and say how different these two people are. Person-group individuation and person-person individuation are both "individuation" in the sense that they both identify a person as a unique individual who is distinct from others. In person-group individuation, these others are a group; in person-person individuation, these others are individuals.

The person-person individuation involves a cognitive process that differs from Fiske and Neuberg's (1990; also Neuberg, 1992) concept of "individuation" (i.e., person-group individuation). According to them, a target person is categorized first, and then individuated. That is, in order to individuate Mr. A, we need to first categorize Mr. A into a social category (e.g., occupational category such as a lawyer) before we can say how atypical Mr. A is as a lawyer. Yet,

the process of person-person individuation does not always require categorization. When we differentiate Mr. A from Mr. B, we can differentiate them using personal information without considering any categorical information. In this sense, the process of person-person individuation does not necessarily require the categorization process.

If Neuberg's (1992) evolutionary argument is right, people can adaptively individuate a person using these two variants, depending on the contextual demand. That is, people may use person-group individuation in one context, but person-person individuation in another context, depending on which type of individuation is more useful or adaptive in that particular context. In this paper, we attempt to extend Neuberg's evolutionary viewpoint to the communication domain. Our argument is that communicators, when faced with different communication contexts which require different ways to individuate the target, can adaptively individuate a target by communicating different types of information.

In fact, a considerable amount of research had shown that people can engage in the person-group individuation when they have sufficient cognitive resources and motivation to process information deeply. In typical person impression formation research, participants are given some expectations about a target person in the form of his or her group membership (i.e., stereotype-based expectations), and then are presented with stereotype-inconsistent information. Fiske and colleagues (e.g., Fiske, Neuberg, Beattie & Milberg, 1987; Goodwin, Gubin, Fiske & Yzerbyt, 2000) found that under the circumstances where people want to be accurate, they readily used more stereotype-inconsistent information in impression judgments. Similarly in person memory research, when people were given information that is consistent and inconsistent with the stereotype associated with the target's group membership, they tended to recall information inconsistent with the stereotype better than information consistent with the stereotype when they were motivated to process deeply the stereotype-inconsistent information (e.g., Macrae, Hewstone, & Griffiths, 1993; Dijksterhuis & van Knippenberg, 1995; cf. Fyock & Stangor, 1994). These results showed that under the circumstances where people are required to form a well formed

impression, they would reconcile inconsistencies in the information they have received. As a consequence, expectation-inconsistent information is processed more deeply and elaborately, resulting in a better recall of the expectation-inconsistent information than expectation-consistent information (see Stangor & McMillan, 1992).

In the communication research, too, people have been found to communicate more stereotype-inconsistent information when the communication task required them to do so. For example, Ruscher and colleagues (Ruscher, 1998; Ruscher & Hammer, 1994; Ruscher, Hammer & Hammer, 1996) showed that conversants spent more time to discuss expectation-inconsistent information when they were required to reach an accurate consensual impression of the target (see also Stern, Marr, Millar & Cole, 1984). Likewise, in a serial reproduction task (Allport & Postman, 1947; Bartlett, 1932) used by Kashima (2000), a participant was given an original story about target people who exhibited stereotype-consistent and -inconsistent behaviors, and told to communicate it to a second person, who was in turn told to communicate this secondhand information to a third person, and so on in a chain of communication up to a fifth participant. Those who received the original story (position 1 in the serial reproduction chain) reproduced stereotype-inconsistent information more than stereotype-consistent information. This pattern remained for position 2 in the serial reproduction chain as well although it was reversed towards the end of the reproduction chains: stereotype-consistent information was more likely reproduced than stereotype-inconsistent information in position 5.

However, in contrast to the person-group individuation, to the best of our knowledge, little is known about the person-person individuation. Can people individuate targets in the sense of person-person individuation, depending on the communicative contexts? Our argument is that, if people have an adaptive capability to individuate a target person flexibly, as Neuberg (1992) argued, they may be able to perform the person-group and person-person individuations when the communication context demands them to do so. In other words, people should be sensitive to the different types of communication context, because some communication contexts may demand

them to engage in person-group individuation, while the others may demand them to engage in person-person individuation. After communicators realize the different requirements for individuation posed by different communication contexts, they should adaptively communicate different types of information to individuate the targets.

At least two different types of communication contexts have been used in the literature and we will examine them in this paper. The first type is *reproduction*, a communication context where people are required to transmit the first-hand information about a target person to a communication partner. Kashima's (2000) serial reproduction experiment is an example. The second type is *referential communication*, a communication context where people are required to transmit the information about a target person to a communication partner so as to help the partner correctly identify the target person. Krauss and Weinheimer's (1966) classical study used an analogous context, although it involved nonsense figures rather than people, in which a communicator verbally described a nonsense figure and an audience was required to identify which figure the communicator is describing. A number of studies have been conducted using this paradigm (for a review, see Krauss & Fussell, 1996).

Examination of individuation processes in these communication contexts is critical as they differ in relative emphasis placed on two types of meaning that a verbal communication can have. One type of meaning, *reference*, relates a verbal expression to objects in the world, whereas the other type of meaning, *sense*, relates a verbal expression to other verbal expressions (cf. Lyons, 1995). The referential communication context highlights the importance of what a verbal expression (e.g., the person we met at the party) refers to which person, whereas the reproduction context does not place as great an emphasis on reference, but rather highlights the internal coherence within the communicated story (Lyons & Kashima, 2006). To put it differently, referential communication contexts require communicators to attend to how linguistic signs "hook up to the world," whereas reproduction contexts do not, and rather urge them to attend to the

internal structure of the communication *per se*, thus contributing to the reproduction of the linguistic signs themselves.

As a consequence, these two types of communication contexts are likely to require different types of individuation. In the reproduction contexts, Kashima (2000) reported that if communicators receive both stereotype-consistent (SC) and stereotype-inconsistent (SI) information about the target directly from the experimenter, communicators who seek to make sense of stereotype-inconsistent information (i.e., an instance of coherence within verbal communication) communicate more SI information to carry out person-group individuation of the target. In the referential communication context, however, person-person individuation is likely required in order to single out the target that the communicator refers as distinct from other potential referents. Here, communicating SI information (which is a piece of individuated information for the reproduction task) may not be sufficient. Rather, communicators should mention only the *distinctive* information that characterizes the particular target, but not the others, and avoid mentioning information that is not useful to distinguish the target from others (information that is shared with other targets) no matter whether the information is consistent or inconsistent to the stereotype.

The Present Study

The aim of this paper is to provide empirical evidence for the theoretical argument that people are able to individuate the target when they need to (Neuberg, 1992). We aim to demonstrate that such an adaptive tendency of human beings would also be exhibited in the communication domain. Different communication contexts (reproduction vs. referential communication) pose different requirements for individuation (person-group individuation vs. person-person individuation), and people can flexibly use different types of individuating information (stereotype-inconsistent vs. distinctive information) to individuate the target.

In order to test this, we constructed a new task in which participants are presented with two target persons. The two targets were described by information that is stereotypical of their social group memberships (SC information) and information that is contrary to their stereotypes (SI information). We also constructed two types of stereotype-relevant information. The first type is *distinctive* SC and SI information which is not shared between the two targets, and enables participants to distinguish one target from the other. The second type is *non-distinctive* SC and SI information which is shared between the two targets, and does not allow participants to distinguish one target from the other. We asked participants to do either a reproduction task or a referential communication task. The former task requires participants to undergo the person-group individuation process, while the latter task the person-person individuation process.

In Experiment 1, we expected that in the reproduction task, participants would communicate more SI than SC information regardless of its distinctiveness; but in the referential communication task, participants would communicate more distinctive than non-distinctive information regardless of its stereotypicality. We also included a memory task as a control to eliminate an alternative explanation that particular information is communicated because it is more memorable.

In Experiment 2, we manipulated participant's processing time (see Dijksterhuis & van Knippenberg, 1995; Bargh & Thein, 1985) to explore the effect of time pressure on participants' ability to individuate. The past research on impression formation and person memory has shown that people are prone to stereotype (fail to individuate) when they are under time pressure, or when their cognitive capacity is limited (Hamilton, Stroessner, & Driscoll, 1994; Macrae, Milne, & Bodenhausen, 1994; Macrae, Stangor, & Hewstone, 1996; Dijksterhuis & van Knippenberg, 1995; Rothbart, Fulero, Jensen, Howard, & Birrell, 1978; Pendry & Macrae, 1994; for a review, see Fiske, 1993). Nevertheless, people are far more accountable for their communication than for their personal impressions and memories that they do not let out to others. The greater accountability may strengthen the motivation to engage in individuating processes in the communication context

(Tetlock, 1992). We explored whether participants individuate the target as in Experiment 1 even though they are under time pressure.

Experiment 1

Method

Participants. Seventy-two students (24 males, 48 females; $M_{age} = 20.1$, $SD = 3.9$) from University of Melbourne participated as part of their course requirements. Twenty-four participants were randomly assigned to do the reproduction task, another 24 the referential communication task, and the remaining 24 the memory task.

Stimulus Development. A series of pilot studies were conducted to develop stimuli. First, we identified social categories that have overlapping stereotypes. This was needed to construct target profiles that have shared SC and SI information. Thirteen participants (4 males, 9 females) were recruited from convenience samples to categorize 13 occupations into pairs which they identified as having similar stereotypes. Results showed a lawyer and a politician (*white collar pair*), and a construction worker and a football player (*blue collar pair*) were perceived to share similar stereotypical characteristics.

We then wrote 16 stereotype-relevant behavioral descriptions (8 SC and 8 SI) for each of the white collar and blue collar pairs. A separate group of forty-three students (13 males, 30 females; $M_{age} = 19.44$, $SD = 2.58$) from University of Melbourne were presented with a list of these behaviors, and were asked to rate on a 7-point scale the typicality (from 1 = *unlikely to do the behavior* to 7 = *likely to do the behavior*) of each of the behavioral descriptions. They were also encouraged to generate possible behaviors that are typical and non-typical of the occupational pairs. The mean rating was calculated for each stereotype-relevant behavioral item. Items having a standard deviation of less than 1.5 were included. Items with a mean rating of less than 3 were identified as SI items and items with the mean ratings of greater than 5 were identified as SC items. These original items in addition to some new items generated by the participants were used to

construct two stimulus set. The first set had 50 stereotype-relevant behavioral items for white collar targets. The second set had 40 stereotype-relevant behavioral items for blue collar targets.

Another forty participants (11 males, 29 females; M_{age} = 20, *SD* = 2.9) were asked to do a typicality rating task in order to validate whether these two sets of stereotype-relevant items were perceived to be consistent and inconsistent with the characteristics of the corresponding occupations, and whether the items are equally stereotypical and counter-stereotypical for the two targets in the same pair. Half of the participants were presented with a set of 50 stereotype-relevant behavioral items for white collar targets, and the other half a set of 40 stereotype-relevant behavioral items for blue collar targets. They rated the likelihood (from 1 = *very unlikely* to 7 = *very likely*) for a person from the specified occupation to perform each of the behavioral items. They also rated the desirability (from 1 = *very undesirable* to 7 = *very desirable*) for each behavior.

The same group of participants were then shown 10 pictures, each contained the face of a man, and were asked to guess the men's age and to rate the men's attractiveness level (from 1 = *unattractive* to 7 = *attractive*). Pictures having similar ratings were used in the main experiments as pictures of a lawyer ($M_{attractiveness}$ = 3.5, *SD* = 1.5; M_{age} = 37.1, *SD* = 5.19), a politician ($M_{attractiveness}$ = 3.0, *SD* = 1.3; M_{age} = 36.1, *SD* = 4.49), a construction worker ($M_{attractiveness}$ = 4.2, *SD* = 1.4; M_{age} = 25.6, *SD* =2.4),and a football player ($M_{attractiveness}$ = 4.1, *SD* = 1.6; M_{age} = 25.4, *SD* =1.5) respectively.

Behavioral items with a mean typicality rating of greater than 4 (*SD* < 2) were identified as SC items; while those of less than 4 (*SD* < 2) were identified as SI items. Items with a mean valence rating of greater than 4 (*SD* < 2) were identified as positive items; while those of less than 4 (*SD* < 2) were identified as negative items. Positive and negative behavioral items that were equally stereotypical or counter-stereotypical for both occupations of the same type (white collar or blue collar) were chosen. For example, for the white (blue) collar pair, we only chose a behavioral item that is perceived to be an SC positive behavior for both a lawyer and a politician (a construction worker and a football player). Based on this criterion, 6 SC positive behaviors, 6 SC

negative behaviors, 6 SI positive behaviors, and 6 SI negative behaviors shared by a lawyer and a politician (a construction worker and a football player) were chosen to form the final set of stereotype-relevant stimuli for the white collar (blue collar) pair. Table 1 presents the SC and SI items along with their mean ratings of typicality and valence for the four targets.

[insert Table 1 here]

The final stimulus set had the following characteristics:

(1) Each stimulus set contained two targets and 32 stereotype-relevant behavioral items described in relatively simple and short sentences.

(2) Each target was described by 8 distinctive behaviors (i.e., behaviors that are not shared): 2 SC distinctive positive (SC_d +), 2 SC distinctive negative (SC_d -), 2 SI distinctive positive (SI_d +) and 2 SI distinctive negative (SI_d -) behaviors. And 8 non-distinctive behaviors (i.e., behaviors that are shared): 2 SC non-distinctive positive (SC_n +), 2 SC non-distinctive negative (SC_n -), 2 SI non-distinctive positive (SI_n +), and 2 SI non-distinctive negative (SI_n -) behaviors.

Different versions were used. The behavioral descriptions were counterbalanced across different versions, so that the non-distinctive (distinctive) behaviors presented in one version would become distinctive (non-distinctive) behaviors in the other version.

Procedures. Participants in each condition were given the photos of two men and were told about their occupations. Half of the participants were told that one man is a lawyer and the other is a politician (white collar group). The other half of the participants were given another set of photos, and were told that one man is a construction worker and the other is a football player (blue collar group). Participants then read the behavioral descriptions about the two men, one after the other, on the computer screen at their own pace.

In the reproduction condition, participants were asked to generally describe each man to a communication partner (purportedly another student who knows nothing about the two men). Specifically, they were given this instruction: "*We constantly meet a number of people in our life,*

perhaps at school, at work or at a party, and they would tell us their stories. Imagine a situation where you had attended a party, and you met two men there. They told you something about themselves. You enjoyed the conversation with them very much. After the party when you met your fellow student, you want to talk about these two men to him/her. What would you tell? In this experiment, you will be given the information about two men (their names, photos, occupation and some behaviors they did). You have to tell your communication partner (a fellow student who knows nothing about these two men) about these two men. You should not talk about the physical appearance of the two men, but you can talk about the men's behavioral descriptions. After you tell your partner about the two men, your partner will be asked to retell about each man to another fellow student. Your task is to tell about these two men to your partner so that your partner can retell them to another fellow student".

In the referential communication condition, participants were asked to help a communication partner (purportedly another student who has the same set of photo and have read the same behavioral descriptions, but did not know the names and occupations of the two men) to accurately identify each man's name and occupation. They were told that their communication partner would attempt to identify the target person based on their descriptions of the target person. Specifically, they were given this instruction: "*We constantly meet a number of people in our life, perhaps at school, at work or at a party. Imagine a situation where you and your fellow student had attended a party, and both of you met two men there. They told you and your fellow something about themselves. You and your fellow enjoyed the conversation with them very much. After the party when you chatted with your fellow again, you tried to remind him/her of one of the men you both met at that party. What would you tell your fellow so that he/she would know which man you are talking about? In this experiment, you will be given the information about two men (their names, photos, occupation and some behaviors they did), you have to help a communication partner (a fellow student who knows about the two men's behaviors but did not know their names and occupations) identify each man's name and occupation. You may not refer to the physical*

appearance. However, since both you and your partner will be asked to read about what the men have done in the past, so you can talk about the men by referring to these behavioral descriptions. After you tell your partner about the two men, your partner will be asked to identify the name and occupation of each man. Your task is to use the behavioral descriptions to help your partner identify the right man".

In the memory condition, participants were asked to remember as accurately as possible the behavioral descriptions about the two men and recall the exact descriptions from memory, word for word. Specifically, they were given this instruction: "*We are often required to remember various information in our life. Sometimes it is necessary to remember this information in a very precise and accurate way, whether or not for study, work or some other activities. In this experiment, you will be given the information about two men (their names, photos, occupation and some behaviors they did). Your task is to remember accurately the behavioral descriptions about the two men and write the exact descriptions from memory. As this is to test how well and how accurately you can remember the behavioral descriptions, after memorizing them you need to write an exact copy of the behavioral descriptions from memory, word-for-word".*

For each condition, a practice trial was conducted and clarification was made to ensure participants understood their task. Figure 1 illustrates the experimental design across the three experimental conditions. When participants read about one man (Target 1), they would read the 8 distinctive behaviors about this man, and the 8 non-distinctive behaviors that are shared with another man (Target 2). Similarly, when they read about the other man (Target 2), they would read the 8 distinctive behaviors about this man and the 8 non-distinctive behaviors shared between the two men. In this sense, across conditions, all participants were presented with a total of 32 behavioral descriptions, among which the same 8 non-distinctive behaviors were presented twice. Participants in the three experimental conditions were presented with the same stimulus set.

[insert Figure 1 here]

For each stimulus set, the pictures of the two targets and the presentation order of the descriptions about the two targets were counter-balanced. The behavioral descriptions were presented in a random order. Across all conditions, participants did a distractor task before writing down their communication or recall. Lastly, participants were asked to evaluate all the behavioral descriptions in terms of typicality and valence to further validate the stimuli. They were thanked and debriefed.

Results

Validation data. Participants' mean typicality and valence ratings for each of the behavioral descriptions were comparable to those obtained in the pilot study. Across the four targets, there was no significant difference for the typicality and valence rating scores between Experiment 1 and the pilot study (all *p*-values were larger than .05). This validated that the behavioral items used in this study did provide positive and negative stereotypical and counter-stereotypical behaviors of the targets in the corresponding occupational groups.

Written Items. Two coders coded 1371 written items. One coder was the experimenter and was aware of the experimental conditions when coding. The other coder was blind to the experimental conditions and was naïve in terms of the aims and hypotheses. The written items were coded[1] for the gist of the original items, and were categorized as either SC (SC_d +, SC_d -, SC_n +, SC_n -) or SI (SI_d +, SI_d -, SI_n +, SI_n -) information (*d* = distinctive, *n* = non-distinctive; + = positive, - = negative). The Kappa measure of agreement showed that the two coders had a high level of agreement, $\kappa = .97$, $p < .001$. Disagreements were resolved by discussion.

A five-way factorial analysis of variance (ANOVA) was conducted with task (reproduction vs. referential communication vs. memory), and stimulus set (white collar vs. blue collar) as the between-subjects factors, and stereotypicality (SC vs. SI), distinctiveness (distinctive vs. non-

[1] The written items were also coded as modified items (i.e., modifying the original SI (SC) into SC (SI) information for the same target, N= 3), transferred items (i.e., transferring the behavioral descriptions belonging to one target to another target, N = 39), and new items (i.e., items were newly created by participants, N = 13). Since these three categories showed a very low overall frequency (only 4.01 % of the total written items), they were excluded from analyses.

distinctive) and valence (positive vs. negative) as the within-subjects factors. The dependent variable was the amount of stereotype-relevant information written down by participants. The main effect of valence was not significant, F (1, 66) = 2.45, ns. Participants wrote similar numbers of positive (M = .99, SD = .45) and negative (M = 1.04, SD =.48) behavioral items. The main effect of stimulus set was not significant, F (1, 66) = .09, ns. There was no significant difference between the white collar (M = 1.03, SD =.45) and the blue collar (M = 1.01, SD =.44) stimuli in the amount of stereotype-relevant information written down. Provided that there was no meaningful higher order interaction effect related to stimulus set, or valence, these variables were dropped from further analysis.

We expected that any difference in the use of stereotype-relevant information is due to the different task requirements for individuating the target, but not due to a memory bias (i.e., specific items are communicated because they are more memorable). To check if participants have a memory bias, we first analyzed the recall data in the Memory condition. A two-way ANOVA was conducted with stereotypicality and distinctiveness as within-subjects factors. The main effect of stereotypicality was not significant, F (1, 23) = 3.15, ns. When participants were instructed to memorize the information as accurately as possible, they recalled both SC (M = 1.28, SD = .33) and SI (M = 1.38, SD = .28) information equally well, t (23) = 1.78, ns. The main effect of distinctiveness was significant, F (1, 23) = 22.64, $p < .001$. Participants generally recalled more non-distinctive (M = 1.52, SD = .35) than distinctive information (M = 1.14, SD = .34), t (23) = 4.76, $p < .001$. This was presumably due to a frequency effect -- the non-distinctive information appeared twice in the stimuli, thus facilitating the recall.

A three-way ANOVA was conducted with task (reproduction vs. referential communication) as the between-subjects factor, and stereotypicality and distinctiveness as the within-subjects factors. The main effect of task was significant, F (1, 46) = 24.65, $p < .001$. Participants in the reproduction condition generally communicated more stereotype-relevant information (M = 1.11, SD =.40) than participants in the referential communication condition (M

= .61, *SD* =.29). The main effect of stereotypicality was not significant, F (1, 46) = .55, ns. But the interaction effect of stereotypicality and task was marginally significant, F (1, 46) = 3.14, p = .08. As expected, participants in the reproduction condition did have a significant preference to use more SI (*M* = 1.17, *SD* =.39) than SC information (*M* = 1.05, *SD* =.44), t (23) = 2.22, p < .05. But this SI preference did not appear in the referential communication condition (SC: *M* = .64, *SD* =.34; SI: *M* = .59, *SD* =.35), t (23) = .62, ns. Figure 2 depicts the relevant means.

[insert Figure 2 here]

In line with the prediction, the interaction effect of task and distinctiveness was significant, F (1, 46) = 29.6, p < .001. Participants communicated more distinctive (*M* = .84, *SD* =.41) than non-distinctive (*M* = .39, *SD* =.42) information in the referential communication condition regardless of whether the information was SC or SI, t (23) = 3.71, p < .005. However, in the reproduction condition, participants used comparatively less distinctive (*M* = .95, *SD* =.40) than non-distinctive information (*M* = 1.27, *SD* =.46), t (23) = 4.48, p < .001, again presumably due to the non-distinctive information appearing twice. Figure 3 indicated that although participants in both communication conditions used similar amounts of distinctive information, t (46) = .98, ns, depending on the task requirement to individuate the target, the use of the non-distinctive information changed substantially. In the referential communication task, where person-person individuation was required, participants tended to suppress the use of non-distinctive information when compared to that of the reproduction task, t (46) = 6.9, p < .001.

[insert Figure 3 here]

Lastly, there was a significant interaction effect of stereotypicality and distinctiveness, F (1, 46) = 4.89, p < .05. Regardless of the communication condition, participants communicated more SI (*M* = .96, *SD* =.48) than SC (*M* = .83, *SD* =.42) information when the information was distinctive, t (47) = 2.17, p < .05. But when the information was non-distinctive, participants did not differ in the amounts of SC (*M* = .85, *SD* =.65) and SI (*M* = .80, *SD* =.68) information

communicated, t (47) = .86, ns. It seems that participants communicated SI distinctive information the most.

Discussion

Data in the reproduction condition replicated earlier findings in Kashima's (2000) reproduction experiment which showed that participants, who obtained the firsthand information directly, communicated more SI than SC information. This suggested that when participants were required to generally describe the targets, they simply underwent the person-group individuation process, and used stereotypicality (SI) information to individuate the target. However, in the referential communication condition, when participants were required to identify the right target, they underwent the person-person individuation process, in which communicating stereotypicality information is not useful anymore; instead participants chose to communicate distinctive information more. It should be note that even though non-distinctive information was more memorable, participants suppressed to use it. The disappearance of the stereotypicality effect and the emergence of the distinctiveness effect suggested that participants were able to flexibly select the type of information to best individuate the target person with respect to the task requirement for individuation. Concerning the memory data, when participants were required to purely memorize the information without a communicative intention, they could recall all types of information equally well. The memory data suggested that the obtained task effect was not due to a memory bias.

Experiment 2

In Experiment 1, participants read the stereotype-relevant information in their own pace. They had enough time to compare the information items and resolve its inconsistencies. Therefore, it is not too surprising that they could use the diagnostic information to individuate the targets. Nevertheless, Neuberg (1992) argued that humans may possess the *adaptive* capacity for individuation. If Neuberg is correct, humans should be able to exercise their adaptive capacity to individuate the targets even when their cognitive resource is limited. In Experiment 2, we

manipulated participants' processing time (see Dijksterhuis & van Knippenberg, 1995; Bargh & Thein, 1985), and investigated if time pressure has an effect on participants' individuating performance. If human's adaptive capacity for individuation can be extended to the communication aspect, we expect that participants could still be able to use the diagnostic information to individuate the targets as in Experiment 1.

Method

Participants and Procedures. Forty-eight students (26 males, 22 females; M_{age} = 24.1, *SD* = 6.4) from University of Melbourne participated as part of their course requirements. Half of them were randomly assigned to do the reproduction task, and half the referential communication task. In each condition, one half received the white collar stimuli and the rest the blue collar stimuli. None of them had participated in Experiment 1. The procedures were identical to that in Experiment 1, except that the stimuli were presented in every 2 seconds. This timing was used in the past research to give sufficient time pressure to prevent individuation in impression formation and person memory research (see Dijksterhuis & van Knippenberg, 1995). If we obtain individuation even in this condition, it provides strong evidence that people possess the capacity for individuation and are adaptive to individuate the targets with respect to different communication contexts.

Results

Written Items. All coding procedures were identical to that in Experiment 1[2]. Kappa measure of agreement of the coding of 483 items was high, $\kappa = .98$, $p < .001$. Following the statistical analysis of Experiment 1, a five-way ANOVA was conducted with task and stimulus set as the between-subjects factors, and stereotypicality, distinctiveness and valence as the within-subjects factors. Consistent with the result obtained in Experiment 1, the main effect of task was significant, $F(1, 44) = 79.65$, $p < .001$). Participants communicated more stereotype-relevant

[2] Following Experiment 1, the modified (N = 4), transferred (N = 21) and new items (N = 14) (total 8.07 %) were excluded from analyses.

information in the reproduction condition (M = .81, SD =.22) than in the referential communication condition (M = .35, SD =.12). The main effect of stereotypicality, F (1, 44) = 7.45, p < .01, and the main effect of valence, F (1, 44) = 4.76, p <.05, were significant. Regardless of the communication task, participants generally preferred to communicate more SI (M =.65, SD =.40) than SC (M = .51, SD =.27) items, t (47) = 2.7, p < .05; and more negative (M = .63, SD =.31) than positive (M = .53, SD =.36) items, t (47) = 2.04, p < .05. The main effect of stimulus set was not significant, F (1, 44) = 2.31, ns. Nevertheless, this main effect was qualified by an interaction effect of stimulus set and valence, F (1, 44) = 6.38, p < .05. While participants communicated similar amount of positive (M = .63, SD =.41) and negative (M = .62, SD =.29) items when reading the blue color stimuli, t (23) = .23, ns; they communicated significantly more negative (M = .65, SD =.34) than positive (M = .44, SD =.27) items when reading the white color stimulus, t (23) = 3.46, p < .005.

It is important to check if participants were sensitive to the task requirement of each communication task and thus individuate the target using the corresponding information (i.e., using counter-stereotypical information in reproduction condition, and distinctive information in referential communication condition). Although the interaction effect of task and stereotypicality was not significant, F (1, 44) = 1.73, n.s., it is important to show that for each communication task, participants did prefer to communicate a particular type of information that is useful for individuation. Results of simple t-test on stereotypicality for each communication condition revealed that it is the case. Participants did reproduce significantly more SI (M = .92, SD =.35) than SC (= .71, SD =.21) information in the reproduction condition. And such SI preference was absent in the referential communication condition (SC: M = .32, SD =.17; SI: M = .39, SD =.22), t (23) = 1.05, ns (see Figure 4). Furthermore, participants did communicate more distinctive (M = .59, SD =.24) than non-distinctive (M = .12, SD =.15) information, t (23) = 7.18, p < .001, in the referential communication condition, and such pattern was reversed in the reproduction condition (distinctive: M = .60, SD =.24; non-distinctive: M = 1.03, SD =.38, t (23) = 4.65, p < .001,

presumably due to the non-distinctive information appearing twice) (see Figure 5). Such interaction effect of task and distinctiveness was significant, F (1, 44) = 61.15, $p < .001$. These results are in line with our expectations.

[insert Figures 4 and 5]

Lastly, similar to Experiment 1, the interaction effect of stereotypicality and distinctiveness was significant, F (1, 44) = 4.68, $p < .05$. Regardless of the communication condition, participants communicated more SI (M = .72, SD =.39) than SC (M = .47, SD =.29) information when the information was distinctive, t (47) = 3.46, $p < .005$. But when the information was non-distinctive, participants did not differ in the amounts of SC (M = .56, SD =.55) and SI (M = .59, SD =.63) information communicated, t (47) = .44, ns.

Discussion

Even though participants were under time pressure, their ability to individuate the targets was not affected. They were still able to use the diagnostic information to individuate the targets. In the reproduction condition, they communicated more SI than SC information, in the referential communication condition, they communicated more distinctive than non-distinctive information.

The replication of a task effect under time pressure suggested that participants may indeed possess what Neuberg (1992) called adaptive capacity to individuate. Even pressed with time, they were so adaptive to individuate a person using the two different variants of individuation – using more stereotype-inconsistent information in person-group individuation posed by the reproduction task; and using more distinctive information in person-person individuation posed by the referential communication task.

Nevertheless, time pressure was not without any effect. Time pressure has effects on the following aspects of communication. First, when under time pressure, regardless of the communication task, participants tended to communicate significantly more SI than SC information, and more negative than positive items particularly when they read the *white* collar stimulus. This may be because SI and negative information is more surprising, unexpected and

interesting pieces of information, so it may have caught the attention of the participants especially when they had limited resources to process all information. Furthermore, communicating more negative behaviors when the behaviors were performed by the *white* collar targets may suggest that participants may perceive a white collar target performing negative behaviors to be more unexpected and surprising.

General Discussion

The conventional wisdom in social psychology is that people seem to stereotype by default (Allport, 1954; Hamilton, 1979; Lippman, 1922) -- they automatically form an impression of a person using category-based information, and it takes some effort to individuate the target. However, the current work provides some evidence that people actually are ready to individuate the targets when communication contexts required them to do so, and such process does not seem to require much time to eventuate.

Experiments 1 and 2 showed that when communication contexts pose a requirement for individuation, participants were able to overcome the default process of stereotyping, and engaged in individuation process. Particularly they were able to individuate a person using two different variants of individuation -- when participants were required to generally retell the information (a reproduction task that requires person-group individuation), they chose to communicate stereotype-irrelevant information (SI information) regardless of its distinctiveness; but when they were required to help a partner to identify a target correctly (a referential communication task that requires person-person individuation), they chose to communicate distinctiveness information (distinctive information) regardless of its stereotypicality. Clearly, such stereotypicality and distinctiveness effects were not due to the inherent memorability of the information, but participants' adaptive capacity to use different types of information to individuate the targets under different communication contexts. More importantly, such ability of individuation was not affected by time pressure. Participants were so ready to individuate the target even though they have limited processing time. This result seems to contradict the findings in impression

formation/memory research that insufficient processing time hinders people's ability to individuate the target (e.g., Dijksterhuis & van Knippenberg, 1995; Rothbart et al., 1978; Pendry & Macrae, 1994). Yet it supported the propositions by Neuberg (1992), who argued that humans should possess an adaptive capacity for individuation.

This research has the following contributions. First, it challenges our understanding about stereotyping in traditional social psychology and demonstrates how humans, as adaptive information processors (Neuberg, 1992), exercise their adaptive capacity for individuation. It highlights that different communication contexts pose different requirements for individuation (person-group vs. person-person), and people are ready to communicate diagnostic information (SI vs. distinctive) to individuate the targets with and without time pressure.

Second, past social cognitive research generally looks at people's memory processes when forming impressions about a social target. However, major psychological processes may not be fully understood until we have studied them more systematically by adopting different perspectives. The current research adopted a communication approach and provided a complimentary perspective to understand the social cognitive processes. Specifically, it demonstrates how human's adaptive capacity for individuation can be extended to and reflected in the communication domain.

Extending from that, the distinction between reproduction and referential communication contexts points to an intriguing possibility for language-based approaches to stereotypes (Kashima, Fiedler, & Freytag, 2008), particularly for linguistic intergroup bias (Maass & Arcuri, 1992) and linguistic expectancy bias (Wigboldus, Spears, & Semin, 2005). Much of the research on these linguistic biases has been conducted within one type of communication context that is more akin to reproduction than referential communication. In these studies, people are given some information about a target and his or her social category membership. Depending on the target's category membership or on whether the target conforms to expectations, people communicate about the target with more or less abstract linguistic categories. However, it is unclear whether the same

biases would emerge in referential communication contexts. Empirical research is needed to investigate this.

Furthermore, most past impression formation research seemed to assume that *all* SI information is individuating (e.g., Fiske, Neuberg, Beattie & Milberg, 1987; Goodwin, Gubin, Fiske & Yzerbyt, 2000). The current findings, however, suggested that it is not always the case. In the referential communication task where person-person individuation is required, SI information is not useful to individuate the target, rather distinctive information (no matter whether it is SC or SI) is. This result has implication for future research: we cannot generally conclude that SI information is useful individuating information without knowing what type of communication context is involved. For an impression formation task involving single target (e.g., Neuberg & Fiske, 1987; Fiske & Neuberg, 1999) or a reproduction task involving a single target (e.g., Kashima, 2000) or multiple targets (Experiments 1 and 2), where person-group individuation is called for, SI information may be useful individuating information. But for a referential communication task involving multiple targets, where person-person individuation is called for, SI information may not be useful.

However, it should be noted that we are not suggesting that the relationship between the two types of individuating information, i.e., SI and distinctive information, are mutually exclusive. In fact, they can be overlapped. In a referential communication task, participants would communicate more SI information as long as this piece of information is distinctive to the target. In fact, results of both Experiments 1 and 2 showed that participants communicated SI distinctive information the most.

In conclusion, the current research supplements the past literatures and highlights people's adaptive capacity for individuation in constructing message. It is important to note that the process we outline here may not necessarily the same as the processes involved when other different communication requirements are involved (e.g., when a communication task requires participants to entertain or surprise a communication partner; or a communication task requires participants to

maintain a good relationship with a partner). Future research should investigate different strategies communicators adopt when having different communication task requirements; and the circumstances where participants would individuate and where they would not.

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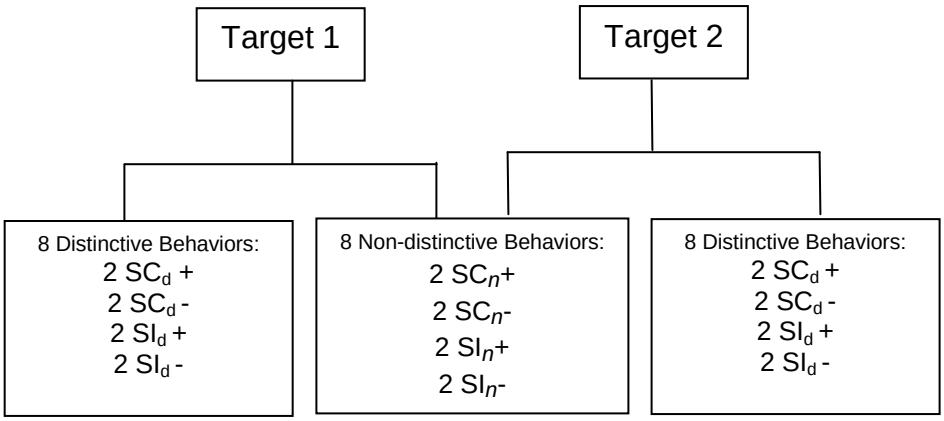
Table 1

The SC and SI behaviors performed by the four targets along with the mean ratings of typicality and valence.

Targets	Robert the Lawyer		John the Politician	
Behavioral Type	Typicality Rating (SD)	Valence Rating (SD)	Typicality Rating (SD)	Valence Rating (SD)
SC+ items (e.g., He spoke eloquently and persuasively)	6.19 (.85)	5.80 (1.18)	6.03 (1.07)	5.77 (1.29)
SC- items (e.g., He told lies to protect himself)	5.29 (1.10)	3.19 (1.63)	5.30 (1.09)	3.17 (1.45)
SI+ items (e.g., He donated 1/3 of his income to a charity organization)	3.05 (1.31)	5.24 (1.57)	3.80(1.44)	4.78 (1.10)
SI- items (e.g., He had his ear and tongue pierced)	2.33 (1.35)	1.97 (1.34)	1.88 (1.14)	1.73(1.24)

Targets	Bob the Construction Worker		Brett the Football Player	
Items	Typicality Rating (SD)	Valence Rating (SD)	Typicality Rating (SD)	Valence Rating (SD)
SC+ items (e.g., He watched footy on the weekend)	5.60 (1.23)	5.54 (.96)	6.09 (.84)	5.62 (.99)
SC- items (e.g., He fought back when provoked)	5.49 (1.08)	3.27 (1.74)	5.36(1.14)	3.31 (1.92)
SI+ items (e.g., He engaged in an intellectual debate)	3.11 (1.14)	4.67 (1,45)	3.37 (1.33)	4.69 (1.41)
SI- items (e.g., He knitted at home)	2.35 (1.23)	2.72 (1.49)	2.70 (1.41)	2.79 (1.50)

Note: The data presented above are the mean ratings of the 6 items for each behavioral type.



Note. *d* = distinctive, *n* = non-distinctive; + = positive, - = negative.

Figure 1. The distribution of behavioral items (SC/SI x Distinctive/Non-distinctive) used in Experiments 1 and 2

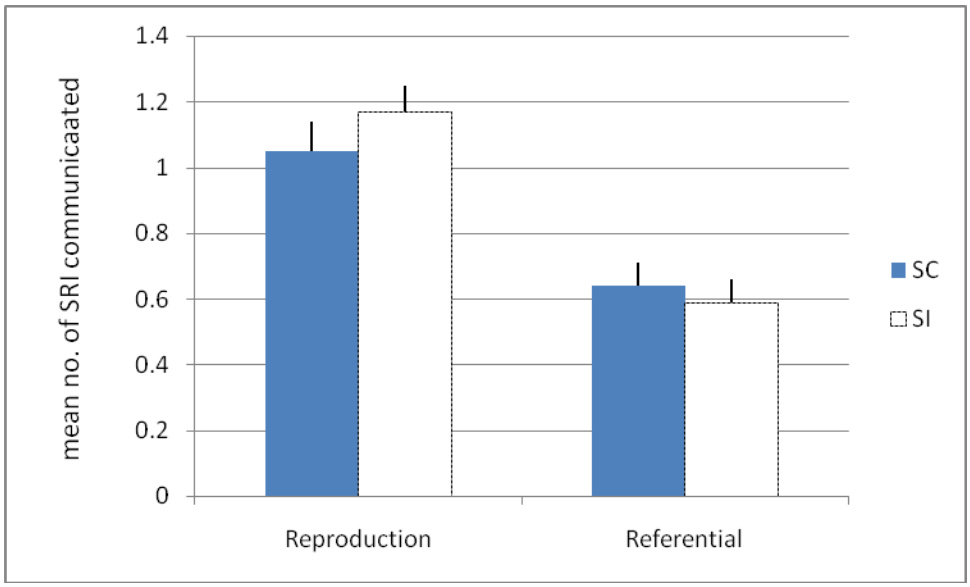


Figure 2. The Interaction Effect of Task and Stereotypicality in Experiment 1

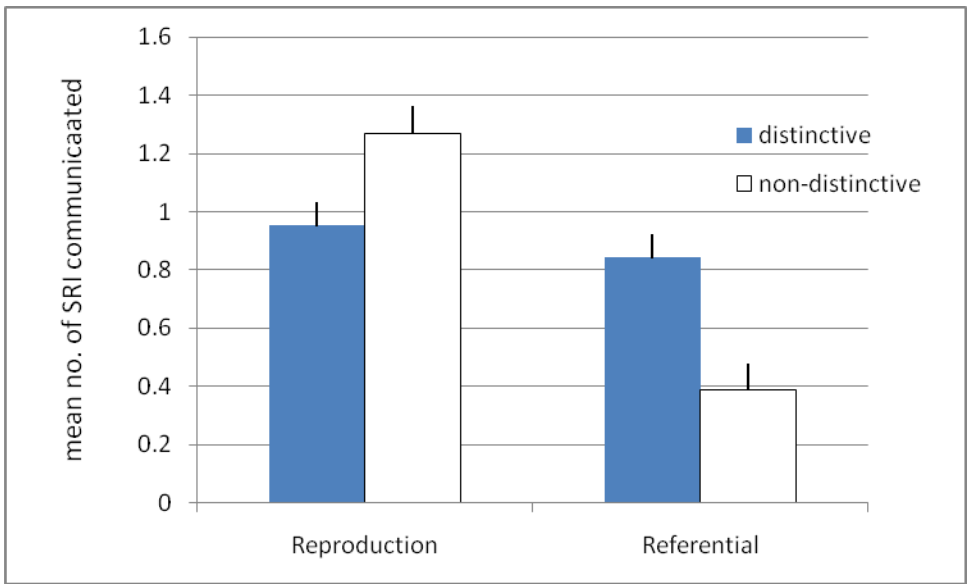


Figure 3. The Interaction Effect of Task and Distinctiveness in Experiment 1

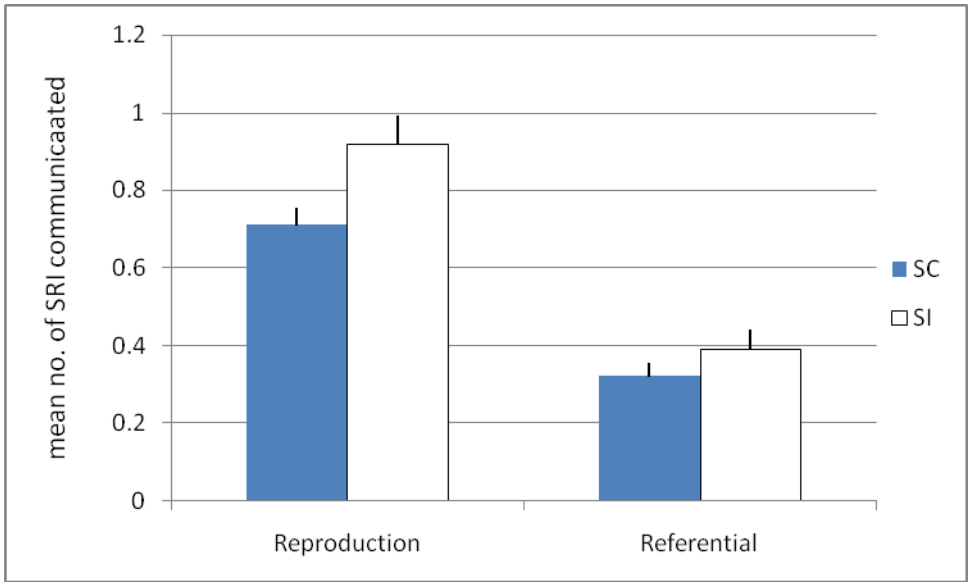


Figure 4. The Interaction Effect of Task and Stereotypicality in Experiment 2

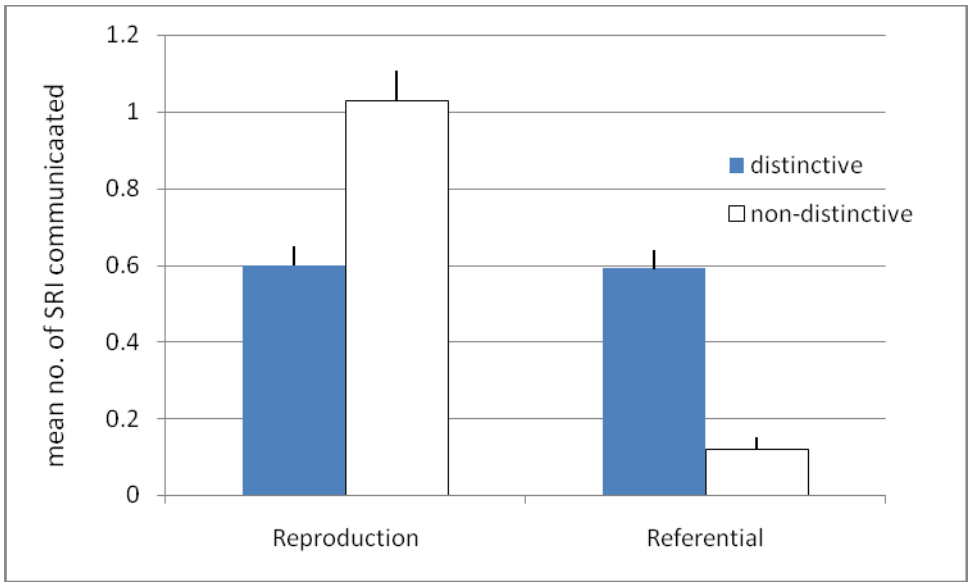


Figure 5. The Interaction Effect of Task and Distinctiveness in Experiment 2