



Three figures, the same social actors, how many differences? Two differences, we would say. The context, represented as differences in the physical surroundings; and the perceivers' assembled stereotype about an unknown social target, represented as letters in the thought balloon. Together, these figures, intent to represent that stereotypes are context-sensitive. Stereotype content may be "stereotypes" in one context, "reosetypes" in another context, and "tereostypes" in another context! As plausibly and relevant as this hypothesis may be, only recently caught the attention of social cognition researchers.

Stereotypes have typically been seen as long-lasting and highly stable knowledge structures

However, recently started to emerge in social cognition literature several evidences suggesting that stereotypes are context-sensitive knowledge structures (Bodenhausen, Schwarz, Bless, & Wänke, 1995; Coats & Smith, 1999; Garcia-Marques, Mackie, & Santos, in press; Santos, 2001, in prep; Sia, Lord, Blessum, Ratcliff, & Lepper, 1997; Sia, Lord, & Lepper, 1999; Wittenbrink, Judd, & Park, 2001). The two studies that follow are in line with this recent approach to stereotypes.

Study 1: Are stereotypes context sensible?

In the social cognition literature there are some work suggesting that stereotypes are contextsensitive knowledge structures (Bodenhausen, Schwarz, Bless, & Wänke, 1995; Coats & Smith, 1999; Garcia-Marques, Mackie, & Santos, in press; Santos, 2001, in prep; Sia, Lord, Blessum, Ratcliff, & Lepper, 1997; Sia, Lord, & Lepper, 1999; Wittenbrink, Judd, & Park, 2001). However, we can only report two studies that test this prediction directly: the study of Coats and Smith (Coats & Smith, 1999) and Santos PhD work (Santos, in prep). Consequently, the main objective of this study is to provide further evidence that stereotypes context sensible knowledge structures. Specifically, in this study our objective was to answer the following question:

May contextually salient incongruent and irrelevant attributes be accepted as relevant attributes to describe the social group?

Method

Participants. 71 students from the ISCTE participating in this study for a course credit

Material. The test list used was developed from a pre-test done to 62 University of Lisbon students. In this pre-test participants were requested to generate five attributes that they considered typically associated to the group for each of 30 groups. With the pre-test data we selected 15 groups from a total of 30 using as an excluding criteria the existence of contradictory representations (i.e., the existence of antonymous or opposite valence attributes in the 15 most frequent attributes). Then, for each of the groups selected, we created a list of 6 attributes where: 2 were congruent (i.e., 2 attributes among the 15 most frequent), 2 incongruent (i.e., 2 antonymous of attributes among the 15 most frequent) and 2 irrelevant (i.e., 2 attributes that, themselves or their antonymous, were not mentioned as typical of the group by any participant).

Procedure. Participants were instructed to do a group attribution task. This task consisted of 90 trials where participants had to decide if a specific attribute belonged to a specific social group. Each of the 90 trials was composed by a pair of group-attribute presented sequentially and randomly selected. There were a total of 15 groups and, for each group, a total of 6 attributes (2 stereotype congruent, 2 incongruent and 2 irrelevant). To manipulate context salience, half of the attributes were subliminally primed with themselves before the attribution task screen. To control for the effect of memory monitoring half of the participants had one second and the other half three seconds of response deadline to do each trial of the attribution task (McElree et al., 1999). Response accuracy and response times were recorded for each trial.

Group attribution task (trial ex.)	+	Group	Prime	Group	Attribute
	1000ms	1000ms	33ms	1000ms	1000 or 3000ms

Except for response deadline and lists, all conditions were within-subjects. Predictions.

attributes will have low diagnostic value resulting in memory monitoring failure

the prime effect on response times (although it may still influence response accuracy).

compared to the no prime condition (**graphic 1**).

irrelevant and incongruent attributes, both Fs <1 (graphic 3).

The results support our predictions and show that:

Along with other studies (Bodenhausen, Schwarz, Bless, & Wänke, 1995; Coats & Smith, 1999; Garcia-Marques, Mackie, & Santos, in press; Santos, 2001, in prep; Sia, Lord, Blessum, Ratcliff, & Lepper, 1997; Sia, Lord, & Lepper, 1999; Wittenbrink, Judd, & Park, 2001) our evidences give strength to context-sensitive view of stereptypes. This view is totaly in accordance with the recent situated cognition aporach (Barsalou, 2002; Semin & Smith, 2002; Smith & Semin, 2004) and questions the preponderant role that has been attributed to enduring abstractions in stereotype assembling.

Are stereotypes context-sensitive knowledge structures? 2 What cognitive processes underly stereotype's context sensitivity? In this poster, you may find the answers to these two questions.

Discussio

Salient incongruent and irrelevant attributes of specific social roup may be accepted as relevant attributes to describe the group

Stereotypes, retosetypes or tereostypes? Processing fluency and stereotypes malleability

Study 2: Why are stereotypes context sensible?

Context-sensitivity of non social categories has mainly been explained by partial retrieval from memory (Barsalou, 1982; Barsalou, 2002) and this explanation can easily fit the same phenomenon for social categories (Semin & Smith, 2002; Smith & Zárate, 1992; Smith & Semin, 2004). According to this account, stereotypes context-sensitivity result from a assembling process that uses contextual information as cues to access information stored in memory. According to the partial retrieval account, different contexts lead to different cues and different cues lead to the assembling of different stereotypes contents. However, we believe that stereotypes context-sensitivity can also be accounted by a fluency sensitive assembling process. According to this account, stereotypes context-sensitivity results from a assembling process were contextually salient attributes become part of the assembled stereotype because there are highly fluent (i.e., they are easy to process). Note that, according to this account, attributes become part of assembled stereotype independently of their association to the group in memory. Fluency effects are expected to be present every time memory monitoring fails. For instance, this can happen due to lack of knowledge about the source of activation (Ayers & Reder, 1998) or due to cognitive constrains (Jacoby & Whitehouse, 1989; McElree, Dolan, & Jacoby, 1999). According to the processing fluency account, different contexts lead to different salient attributes and different salient attributes lead to the assembling of different stereotypes contents.

The main objective of this study was to explore if processing fluency is a valuable account for stereotypes context-sensitivity. Specifically, in this study our objective was to answer the following question:

Participants. 115 students from the University of Lisbon participating in this study for a course credit. Material. Four lists of 35 objects were constructed for this study. Each list belonged to a specific target and was composed by three types of objects: 1) 15 old objects (i.e., objects exclusive to a specific target presented in the memorizing and recognition phase of the study); 2) 10 new objects (i.e., objects that were only presented in the recognition phase); and 3) 10 old mismatch objects (i.e., objects that were associated in the memorizing phase to a target different from the one in the recognition phase). To assure that there were no material effects, we use 5 different quartets of lists as a between subjects condition. **Procedure.** Participants were instructed to memorize 4 lists of objects, each belonging exclusively to one target person. After, participants were requested to do a recognition task for a total of 140 objects (35 for each target). To make the objects salient (i.e., to enhance objects processing), half of the items were primed subliminally with themselves immediately before the recognition. To control the use of memory monitoring outcome, half of the participants had 1 second response deadline and the other half 3 seconds. For each trial both response accuracy and response time were recorded. To assure that participates clearly understood and were familiarized with the recognition task, a training phase preceded the test phase. Recognition (trial ex.)

Design. The design was a 5 lists x 2 response deadlines (1 second or 3 seconds) x 4 targets (Francisco and Alexandre and Bernardo and Guilherme) x 3 type of items (old target matched and old person mismatched and new) x 2 priming (prime and no prime). The priming is nested with the last two levels of type of item and all factors except the first two are within-subjects.

Predictions. According to the processing fluency account our predictions were as follows

We expect this because we assume primed attributes will be more fluent and: for the 1 second response deadline condition responses will be based on the processing fluency once, due to cognitive constrains, memory monitoring outcome can not be used.

Lower **accuracy** in prime vs no prime condition in 3 seconds response deadline condition only for new items. We expect the prime effect on new objects becaus although memory monitoring outcome may be used it will be inconclusive once there is no diagnostic information in memory contradicting fluency derived from prime. On the other hand, for mismatch objects memory monitoring is expected to be conclusive because there is diagnostic information in memory contradicting fluency derived from prime (i.e., information in memory about another target person which the object belongs to).

Lower **response times** in prime vs no prime condition for new and mismatch objects only for 1 second response deadline condition. We expect this because we assume that primed objects will be more fluent and that higher fluency results in lower response times. Consequently, when responses are based on processing fluency prime will affect response times. On the other hand, whenever memory monitoring is triggered, prime effect on response times will cease (although it may still influence response accuracy).

May contextually salient objects be falsely recognized as belonging to a specific target?

Method

+	Target	Prime	Target	Object
1000ms	1000ms	33ms	1000ms	1000 or 3000n

Lower **accuracy** in prime vs no prime condition in 1 second response deadline condition for new and mismatch items.

Result

/e have run two mixed measures ANOVAs with 2 (prime) x 2 (response deadline) x 5 (stimulus replications), one for the new items and another onditions. The ANOVAs showed a significant prime main effect for the new items condition, t(1, 105) = 3,20, p = 0,04 (one-tailed; graphic 4 ponse deadline interaction for the old mismatch items condition, F(1, 105) = 4,00, p = 0.04 (graphic 5). Planed comparisons for the old mismatch items results showed a significant effect of prime in the 1 second response deadline condition, t(1, 105) = 3,70, p = 0.05 that disappears in the 3 seconds response deadline condition, t(1, 105) < 1 (**graphic 5**),

deadline (i.e., 1 second vs. 3 seconds), on response time (RTs) for yes responses (i.e., false recognitions). The results (see Table 3) are similar for new and old mismatc ondition participants took less time to respond in the prime condition that in the no prime both for new and old mismatch items, F(1,33)=4,225, p=0,05 and F(1,51)=49,989, p=0,00 (graphic 6). On the other hand, prime effect on RTs is no longer significant in the 3 seconds response deadline condition, both for new and old mismatch items, both Fs <1 (graphic 7).

Discussion

The results support our predictions and show that:

Contextually salient objects may be falsely gnized as belonging to a specific target

Our results also suggest that memory monitoring will only succeed when there is sufficiently diagnostic information available in memory, i.e., when there is information that contradicts the fluency derived from priming (the case of old mismatched items). Naturally, this interpretation claims for further test of the specificities of memory monitoring processes.

Applied to stereotypes, these results suggest that contextually available cues may be incorporated in stereotype assembling independently of their association with stereotypes in memory. This is to say that processing fluency seems a valuable account for stereotypes context-sensitivity. In fact, according to partial retrieval one could not expect prime effects on new and mismatch objects. However, due to the relatively asocial nature of the material used in this study, further tests are needed in order to strength the value of processing fluency in accounting for stereotypes-sensitivity

Stereotypes, retosetypes or tereostypes?

We would say it depends on the context. After all, stereotypes seem to be context-sensitive knowledge structures. Specifically, this means that depending on the contextual salient cues, one may assemble a "stereotypes" about a social group with the contents that have been consensually regarded as part of the stereotype, or assemble a "retosetypes" that incorporate contents that have been regarded as irrelevant and incongruent. But what is this phenomenon really telling us?

Theoretical implications

Question the preponderant role played by abstractions or prototypes in the stereotype assembling process.

The abstractionist assumption that stereotypes are represented and accessed in memory as general units or summaries of highly representative information about a group does not allow to predict stereotypes context sensibility. Abstractionist models played a preponderant role as explanations about the way knowledge is represented and accessed in memory during almost two decades because they explained, trough input simplification, how a cognitive system with limited resources deals with a highly complex social world. However, it seems that we may be sensible to this highly complex social world and deal with it using contextualized subunits of knowledge assembled trough highly efficient retrieval processes or trough mere processing fluency. This idea is much more in line with our and similar evidences and, altogether, gives raise to a new recent view of human cognition - the situated cognition view (Barsalou, 2002; Semin & Smith, 2002; Smith & Semin, 2004).

Need to understand the cognitive processes underlying stereotypes context sensibility.

We described two possible accounts: partial retrieval, which is an assumption of several memory models (e.g., Hintzman, 1986; Ratcliff & McKoon, 1988; e.g., Smith & Zárate, 1992), and processing fluency, derived form Jacoby and colleges dual processes model (e.g., Jacoby & Whitehouse, 1989; McElree et al., 1999) and from source of activation confusion model (Ayers & Reder, 1998). Partial retrieval predicts stereotypes context sensibility once it assumes that contextual information is used as a cue to retrieve information from memory. Processing fluency predicts stereotypes context sensibility once it assumes that contextually available cues may be incorporated in stereotype assembling independently of their association with stereotypes in memory.

Our second study results suggest that **processing fluency** is a valuable account for stereotypes context sensibility. However this does not mean that partial retrieval process does not account for stereotypes context sensibility. In fact, we believe that these two processes are compatible explanations for stereotypes context sensitivity. For instance, whenever a person for some reason (e.g., lack of resources) is not allowed to integrate memory monitoring outcome in the assembled stereotype, we predict that stereotype context sensibility may be mainly due to processing fluency (i.e., due to a belief illusion). However, whenever memory monitoring outcome can be used in the assembling process, we predict that both context sensible parallel matching retrieval and processing fluency are responsible for stereotypes context sensitivity. Naturally, this is issue that claims for further test, particularly about the specificities of memory monitoring processes.

Practical implications

Our and similar evidences (Bodenhausen et al., 1995; Coats & Smith, 1999; Santos, in prep; Sia et al., 1997; Sia et al., 1999; Wittenbrink et al., 2001) bring both, good and bad news:

Good news: stereotypes are not the rigid and unchangeable cognitive structures that we fear them to be. For instance, harmful stereotypes are not immune to change!

Bad news: also stereotypes may change, this change is not enduring once it will vary from context to context.

These evidences speak a clear message. One should not think in modify (harmful) stereotypes only by developing a counter-stereotypical view of a given social group once this view will also be permeable to contextual influences. To modify harmful stereotypes it is fundamental to change the contexts surrounding the given group members.

It seams the problem around stereotypes is not in the way we think about specific social groups. The problem is in the way we built contexts that allow us to think that way!