Original Research Article

Effect of Stereotypes Threat Exposure Condition on Episodic Memory in University Students

Abstract

This study investigates stereotypes threat effect on episodic memory among university students of three social categories (General, OBC, and SC/ST). Stereotype threat, characterized as fear of confirming negative stereotypes and hypothesized to differentially affect memory performance across these groups. 226 participants were randomly recruited and assigned in threatand non-threat condition; threat condition participants exposed with caste category relevant negative stereotypes adjectives. Episodic memory task used to assess their memory performance.Findings reveal the significant effect of threat condition on different social category students. General category students made fewer memory errors and were less affected by stereotype threat. Conversely, OBC students demonstrated improved memory performance in the absence of threat, while SC/ST students were most susceptible, showing increased memory errors under threat conditions. These findings highlight the varied effects of stereotype threat on cognitive performance across social categories, emphasizing the need for interventions to reduce its negative impact on academic performance and cognitive functioning.

Key words: Stereotypes Threat, Episodic Memory, University students

Introduction

In contemporary society, stereotypes continue to wield significant influence, shaping perceptions and behaviours while often resulting in unjust judgments formed through a biased lens (Allport, 1954; Tajfel, 1981). As aptly stated, "Stereotypes are the clichés that lead to stigmatization, and as soon as we begin to realize them, they begin to fall apart" (Bodenhausen & Macrae, 1998). These stereotypes are overgeneralized and preconceived notions about individuals based on characteristics such as gender, race, social class, age, etc. (Fiske, 1993; Devine, 1989). The process of stereotyping involves attributing generalized and simplified traits to groups of people, often through verbal labels or as a reflection of prejudice

or authoritarianism (Adorno, 1950; Eagly& Diekman, 2005). This indicates that the degree of prejudice is not determined by the mere existence of stereotypes but rather by the characteristics of these stereotypes and how they are used in an individual's thinking (Allport, 1954; Jost & Banaji, 1994).

While closely related to prejudice, stereotypes differ in that they represent a specific type of concept, whereas prejudices are a particular form of attitude. Stereotypes are not confined to any single aspect of life; instead, they have permeated various domains, inhibited the free exchange of ideas and fostered environments where stereotype threats can thrive (Steele & Aronson, 1995; Spencer, Steele, & Quinn, 1999). Stereotype threat emerges when individuals from stigmatized groups find themselves in situations where negative stereotypes provide a framework for interpreting their behavior (Steele, 1997).

When we talk about stereotypes, there comes a phrase: "Stereotypes are the clichés that lead to stigmatization and as soon as we begin to realize them, they begin to fall apart" (Bodenhausen & Macrae, 1998). Since these stereotypes are born in the mind, they not only affect any single aspect of human life but also govern and regulate almost every part of human life (Fiske, 1998). Stereotypes can be considered to be a special class of concepts and prejudices as a special class of attitudes (Dovidio et al., 2005). In today's era, this stereotype is not only limited to any particular domain, instead, its branches are expanding beyond imagination (Schmader, Johns, & Forbes, 2008).Every individual is potentially vulnerable to stereotype threat because everyone has at least one social identity that may be the target of a negative stereotype in certain situations (Aronson & McGlone, 2009; Steele et al., 2002). Consequently, stereotype threat is pervasive in domains where relevant stereotypes exist; even if not explicitly examined in research, these processes are still active (Schmader et al., 2008). The threat is internalized and persistent, serving as a constant reminder that others may doubt one's abilities (Steele, 1997; Steele & Aronson, 1995).

Stereotype threat, a psychological phenomenon, causes individuals to underperform due to the fear of confirming negative stereotypes associated with their social group (Steele & Aronson, 1995). This underperformance has been closely linked to disruptions in memory, particularly in working memory and episodic memory (Schmader & Johns, 2003; Rydell, McConnell, &Beilock, 2009). In stereotype threat situations, cognitive resources that would normally be dedicated to memory tasks are instead used to cope with the stress and anxiety of the situation (Beilock et al., 2007; Schmader & Johns, 2003). This diversion of cognitive resources impairs the processes involved in encoding and retrieving information, leading to

decreased memory performance (Schmader & Johns, 2003; Beilock et al., 2007). As a result, the decline in memory function contributes significantly to the overall reduction in task performance under stereotype threat (Rydell et al., 2009). This provides direct evidence supporting Steele and his colleagues' hypothesis (Steele & Aronson, 1995) that performance deficits under stereotype threat are due to intrusive thoughts occurring during task performance. These results align with recent research by Schmader and Johns (2003), which shows a reduction in working memory capacity under stereotype threat and further specifies that it is individuals' domain-specific disruptive thoughts that negatively impact performance (Schmader et al., 2008). Specifically, using the thought listing technique, the current study demonstrated that participants under stereotype threat spontaneously engage in negative task-related thinking, which subsequently inhibits their performance (Schmader & Johns, 2003).

Memory is crucial as it allows us to reflect on the past, enriching our lives with both joyful and sorrowful recollections (Baddeley, 1992; Tulving, 1985). Rather than merely storing facts, memory is a complex system that organizes experiences based on their significance and ease of access (Craik & Lockhart, 1972; Atkinson & Shiffrin, 1968). It categorizes information based on how long we need to remember it, separating inputs according to our needs (Baddeley, 2000). Memory indeed is an important aspect in every individual's life because without the ability to remember, we would be confined to the present and unable to reflect on the past (Tulving, 1985; Squire & Zola-Morgan, 1991). Memory enriches our lives, allowing us to experience the joy of happy memories and the sorrow of sad ones (Phelps, 2004; McGaugh, 2003).

People often view memory as a simple storage space for facts, but it's much more intricate (Schacter, 1996; Neisser, 1982). Memory is a sophisticated system that organizes experiences by their significance and how easily they can be accessed (Craik & Lockhart, 1972; Baddeley, 2000). Information is stored in different ways depending on how long we need to remember it, and our memories prioritize and categorize input based on its relevance to us (Baddeley, 1992; Squire, 2004). The processes of storing and retrieving information are constantly interacting (Anderson, 1983). Not every event or piece of information instantly becomes a permanent memory. Instead, information must go through at least three distinct stages to be remembered for more than about thirty seconds: the sensory register, short-term memory (STM), and long-term memory (LTM) (Atkinson & Shiffrin, 1968; Baddeley & Hitch, 1974).

Research exploring the effects of stereotype threat on episodic memory consistently finds that this psychological phenomenon can significantly impair memory performance. Stereotype threat occurs when individuals are concerned about confirming negative stereotypes associated with their social group, leading to a diversion of cognitive resources away from task performance, including memory-related tasks (Schmader, Johns, & Forbes, 2008).Empirical studies have documented that individual under stereotype threat conditions tend to exhibit poorer episodic memory performance. For instance, Hess et al. (2003) reported that older adults reminded of stereotypes regarding aging and memory performed worse on memory assessments than those not exposed to such reminders.

Similarly, Mazerolle et al. (2012) found that women facing stereotype threat showed lower episodic memory performance compared to men in situations where stereotypes were not activated. The adverse effects of stereotype threat on episodic memory are believed to stem from increased cognitive load and diminished working memory capacity. Under the pressure of stereotype threat, individuals often experience intrusive thoughts and anxiety, which consume cognitive resources that would otherwise be available for memory encoding and retrieval (Schmader &Beilock, 2012). Research by Beilock, Rydell, and McConnell (2007) suggests that the strain on working memory under stereotype threat is a critical factor leading to impaired memory performance. Interventions designed to mitigate stereotype threat's impact have shown potential in improving episodic memory outcomes. Johns, Schmader, and Martens (2005) found that reframing tasks to reduce the focus on stereotype-relevant abilities can ease the cognitive burden of stereotype threat. Keeping this view in the mind, objective of the study was to examine the effect of stereotype threat and non-threat conditions on episodic memory in various social category students.

Hypothesis: There would be a significant effect of social categories and exposure conditions on episodic memory.

Method

Participants

Study was conducted on 226 university students of three social categories General category (n=75), Other Backward Classes (OBC; n=71), and Scheduled Castes/Scheduled Tribes (SC/ST; n=80). Random sampling method was used to recruit and randomlyassign in two conditions (threat and non-threat conditions). Participants were enrolled in various UG and PG university courses.

Materials and Procedure

Social Stereotypes Scale (Tiwari and Kumar 2014)

Episodic Memory Task: To measure episodic memory, participants were presented with a short story containing specific details such as characters, events, time, and locations etc. They were instructed to read the story carefully. After a 10-minute study period, the story was taken away, and participants were given a 10-minute break. Following the break, they were asked to recall as much of the story as possible by answering 12 questions designed to test their memory of the story's details.

Competent authority of university and group of students were approached. The briefabout study were presented on them. Participants who gave consent to participate in the study, invited them in Psychology laboratory. A list of students was prepared and randomly assigned in threat and non-threat conditions. Each condition's participants were instructed separatelyand exposed with stereotypic wordslike your social category by which you are known in society and compare them with other social category students. For example, it was stated by experimenter that "Generally, it has been seen that academic performance are determined by people's caste and category, in comparison to your belonging category, other category members perform better than your own category, I am going to examine your memory ability using a test that has been used extensively by researchers to study social category effects on memory. However, general category students perform outstanding than scheduled caste/scheduled tribe, and other backward category in this task."Participants were first primed with stereotype-related sentences relevant to their social category. This priming was designed to activate any stereotype threat associated with their group. Social stereotypes scale negative items were rated and then episodic memory task performance were given. Non-threat condition participants received the same instructions and avoided the social category comparison and negative items of social stereotypes scale. Non- threat condition participants were instructed as "goal of this study is to examine the individual differences in memory ability and the factors that account for those differences. I am now going to examine your ability to process episodic information. In an effort to reduce potential biases, we will be using a task that has been shown to be appropriate for all students."

Results

Table-1 represents the mean and standard deviation of episodic errors across categories (General, OBC, and SC/ST) and conditions (threat and non-threat) for the participants.The

analysis revealed that the participants from the General category exhibited a mean episodic error of 2.79 (SD = 1.42) under the threat condition, which slightly increased to 3.03 (SD = 1.54) under the non-threat condition. The overall mean for this category across both conditions was 2.91 (SD = 1.47). The mean values indicate that General category members accounted for fewer episodic errors, thus performing better compared to members of the OBC and SC/ST groups in both conditions. Notably, the mean episodic error for the General category was lower in the threat condition compared to the non-threat condition.For the OBC category, a noticeable shift was observed with a mean episodic error of 3.89 (SD = 1.47) under the threat condition, which decreased to 3.06 (SD = 1.57) under the non-threat condition. The total mean for the OBC category across conditions was 3.48 (SD = 1.57). The mean episodic error for the OBC category was lower in the threat condition compared to the non-threat condition, indicating that participants from the OBC category performed better than those from the SC/ST category in both conditions.Participants from the SC/ST category demonstrated a pronounced increase in episodic errors under the threat condition, with a mean of 6.62 (SD = 1.57), compared to a reduced mean of 4.95 (SD = 1.72) under the non-threat condition. The total mean episodic error for this category was 5.89 (SD = 1.68). The SC/ST category showed the highest mean episodic error under the threat condition compared to the non-threat condition and also when compared to both the General and OBC categories.

Table-1: Mean and SD of Episodic error on Category and Condition

Category	Condition	Mean	SD
General	Threat	2.7949	1.41755
	Non threat	3.0278	1.53969
	Total	2.9067	1.47202
OBC	Threat	3.8889	1.46926
	Non threat	3.0571	1.57074
	Total	3.4789	1.56624
SCST	Threat	6.6222	1.57088
	Non threat	4.9429	1.72224
Total	5.8875	1.68383	

Table-2: Summary ofTwo-way ANOVA Social Categoryand Condition

Source	df	Mean Square	F
Category	2	178.319	80.516**
Condition	1	32.325	14.596**
Category * Condition	2	17.588	7.941**

Error	220	2.215
Total	226	

Note: - ** (p<.01), * (p<.05)

The analysis of variance (ANOVA) was conducted to examine the effects of social category and condition on episodic errors. The results revealed statistically significant main effects and interaction effects.The main effect of Social Category was highly significant, [F(2, 220) = 80.516), (p < .01)] indicating that episodic errors vary considerably across different social categories. This suggests that the social background of participants plays a crucial role in their susceptibility to episodic errors.The main effect of Condition was also significant, [F(1, 220) = 14.596), p< .01], signifying that the presence or absence of stereotype threat significantly influences episodic errors. This finding underscores the impact of external psychological factors on memory performance.Moreover, the interaction effect between Social Category and Condition was significant, [F (2, 220) = 7.941),p< .01], highlighting that the effect of stereotype threat on episodic errors is not uniform across social categories. This interaction indicates that certain social groups are more affected by stereotype threat than others, leading to differential impacts on episodic memory performance.

Discussion

The results of this study illustrate the significant role of stereotype threat in influencing episodic memory performance across different social categories. Participants from the General category exhibited fewer episodic errors compared to those from OBC and SC/ST categories, which is consistent with Steele and Aronson's (1995) findings that higher-status groups are generally less susceptible to stereotype threat. This may be due to a lower level of internalized negative stereotypes, as evidenced by the General category's relatively stable performance even under threat conditions.

For the OBC category, a decrease in episodic errors when stereotype threat was removed suggests that stereotype threat adversely affects performance, corroborating Schmader, Johns, and Forbes (2008), who demonstrated that such threats increase cognitive load and anxiety, impairing performance. The reduction in errors for the OBC group under non-threat conditions supports the idea that removing stereotype threat can improve cognitive outcomes.

In contrast, participants from the SC/ST category showed the highest episodic errors under threat conditions, reflecting a heightened sensitivity to stereotype threat. This finding aligns

with Major and O'Brien's (2005) research, which found that marginalized groups experience more severe performance decrements under stereotype threat due to greater anxiety and concern about confirming negative stereotypes. The substantial difference in episodic errors between threat and non-threat conditions highlights the critical need for targeted interventions for these groups.

The significant interaction between social category and condition reveals that the impact of stereotype threat varies across different groups, supporting the research of Inzlicht and Schmader (2012). Their work suggests that while stereotype threat affects all individuals, its impact differs based on social category and the perceived relevance of the stereotype.

Implication

Findings of the study will be helpful to understand the main causative factors and consequences of stereotype threat on retrieval from long term memory (episodic and semantic). The research assume that student's stereotype threat can mutually and independently affect the retrieval from memory stores (semantic and episodic). Present study will also be useful for principal and teachers in planning and organizing student's activities as well as providing holistic development of adults. It will also be informative for society that students are not just stand for academic's success but also necessary to inbuilt a better cognitive ability.

These findings emphasize the significant impact of stereotype threat on episodic memory, particularly in situations where individuals are vulnerable to stereotype-related stress. The literature highlights the need for strategies to diminish the influence of stereotype threat to support better memory performance across different groups.

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