

Influential Factors of Stereotypes: A Review

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Abstract: This article overviewed the nature and nurture factors of stereotypes. The nature factor that influences stereotypes include the roles of neuron play in stereotyping and age influence on neuron sensitivity. The conclusion is neurons plays an important role in stereotyping. Previous research shows that the role of amygdala is about active and inhibit stereotypes. With people get older, People have lower neuron sensitivity. Therefore, the old adult with lack ability to inhibit stereotyping. Nature factors include cognitive stages and schemas. Research show that people with different cognitive stage are influencing their formation and development of stereotypes. Schema is the tool that people learn the world, it is also the origin of stereotypes. Schemas are shaped by previous experiences. However, people can strengthen stereotypes through assimilation. Conversely, people can adjust stereotypes by accommodation. This article summarizes stereotyping and the influential factors of stereotypes. Also, this article indicated the how to inhibit stereotyping to form a better society.

Keywords: stereotyping, neuron sensitivity, schema, age and stereotype

1. Introduction

In contemporary society, stereotypes have become pervasive, infiltrating various aspects of people's daily lives. While some stereotypes may initially appear positive, such as the notion that males are inherently stronger than females or the assumption that African Americans outperform Asians in sports competitions, it is essential to recognize that the intensification of stereotypes can have detrimental consequences. For instance, when stereotypes transform into rigid beliefs, they may give rise to harmful ideologies, like the notion that males should dominate the world due to their perceived strength, relegating females to a position of perceived weakness. Similarly, the notion that all individuals of a certain ethnicity, like labeling "yellow men," are uniformly weak, exemplifies the potential for stereotypes to evolve into prejudiced and divisive attitudes.

Unchecked growth and reinforcement of stereotypes can lead to the development of prejudices, fostering unwarranted opposition along racial and gender lines. Consequently, it becomes imperative for society to critically examine and control the proliferation of stereotypes. Failure to address and curtail the influence of stereotypes can result in the perpetuation of discriminatory beliefs, contributing to a climate of racial and gender animosity.

Hence, the primary objective of this article is to delve into the various factors that contribute to the formation and reinforcement of stereotypes. By understanding the underlying elements that influence the development of stereotypes, we can work towards fostering a more inclusive and

informed society, mitigating the potential harm associated with unchecked stereotypical beliefs. Through this exploration, we aim to contribute to the ongoing dialogue on stereotypes, emphasizing the importance of awareness and critical evaluation in shaping a more equitable and harmonious social landscape.

2. Key concept

2.1. The Concept of Stereotyping

In the past decades, researchers worked out several explanations of what is stereotyping. The most common explanation in social psychology is stereotypes are energy-saving devices. This is because stereotypes ignore diversity and details associated with individuals.[1]. Stereotyping also mentally classifying individuals to previous determined group characteristics, which make people understanding easier through shared trails [2]. In short, stereotypes are schemas, stereotypes could be right and wrong.

Some of the stereotypes are not good, especially racial stereotypes. That could lead to racial antagonism and racial discrimination, even forming the racial classes. People always think that stereotypes are always bad. However, this is a stereotype of the term “stereotype”. People still need to use stereotypes in daily life for positive purposes. For example, if there is an emergency event happening on the street, people are more likely to seek male help. It is because people have the stereotype that males are stronger than females. Therefore, males always get less harm while helping others than females, which will minimize the potential harm.

It leads to the conclusion that stereotypes could both lead to positive and negative effects on society and individuals.

2.2. Formation of Stereotypes

People always have stereotypes for groups. For example, gender, race, and nationalities. Those are dominant groups that came from nature. There are also some nurture-formed groups. For example, families and classes. According to Bloom’s study. The reason for the formation of group consciousness is adaptive bias, no matter with nature and nurture groups. Since people have group consciousness, stereotypes are formed [3]. People emphasize the difference between groups to explain reality [4].

For example, some people have the “rude” stereotype of African Americans. It may because they are meet an African American who acted rudely. Therefore, they emphasize the rude characteristics of all African Americans. That is one type of stereotype formation. Another type of stereotype formation is schema. According to the Extraiido IB Jacob Solomon once a newcomer is identified with a group, this information is incorporated into a mental schema, leading to cognitive shortcuts. Still taking African Americans as an example, if someone already has the “rude” schema of African Americans, and when they meet a new African American he or she will think the African American they meet is rude too. In conclusion, the formation and the procedure of stereotypes is people generalize the characteristics of an individual to the group they belong like race and gender. And then, the stereotype will narrow to other individuals who belong to the group.

2.3. Factors that Influence Stereotype

Stereotyping can be influence by cognitive factors and biological factors. Cognitive factors include previous experiences and schemas [2]. Also, precious researchers found that stereotypes could be active by both conscious and unconscious [5]. Biological factors that influence stereotypes are neurons. The activation of stereotypes has been linked to numerous neural correlates, including the

amygdala, the prefrontal cortex, posterior cingulate, and anterior temporal cortex [6]. This paper will analyze and discuss about those two factors.

3. Nature Factors

3.1. The Role of Neurons

Researchers design an experiment to support that neurons play an important role in racial stereotypes. They are aimed at analyzing the co-variation of neural regions associated with arousal, inhibition, and control upon the activation of negative stereotypes can offer valuable insights into whether individuals make deliberate efforts to regulate or mitigate biases. Researchers found that contexts that prime negative racial stereotypes seem to hinder the downregulation of amygdala activation [6].

Researchers have chosen twenty-three white undergraduate students to be the participants of the experiment. They are excluded from drugs and alcohol. They are using functional magnetic resonance imaging (fMRI) to investigate participants' brain movement when they watch different colors of faces (black and white). To make sure no extremist variable influences participants' brain activity.

The experimenter provided a negative racial stereotype context. Participants have listened to violent and misogynistic rap (VMR) in the background. No music (NM) and death metal (DM) were used as control conditions in separate blocks. Researchers found the result that when participants were presented with a Black face at faster exposure speeds (30 ms), and thus did not have the time to initiate controlled processes, they exhibited an enhanced amygdala response compared to implicitly presented White faces. Results shows that participants evaluated the VMR (mean = 3.86, standard deviation = 1.39) and DM (mean = 3.19, standard deviation = 1.69) songs as generating similar negative feelings, with no significant difference observed ($F(1, 20) = 1.89, P = 0.18$). Additionally, participants rated the VMR song (mean = 5.81, standard deviation = 0.81) as more stereotypical of Black individuals compared to White individuals (mean = 4.00, standard deviation = 1.82), showing a significant difference ($F(1, 20) = 14.14, P < 0.01$). Conversely, the DM song was rated as more stereotypical of White individuals (mean = 4.81, standard deviation = 1.47) than Black individuals (mean = 2.81, standard deviation = 1.66), also demonstrating a significant distinction ($F(1, 20) = 17.14, P < 0.01$). However, under controlled conditions, when participants were exposed to NM in the background, rapid presentation of Black faces resulted in activation of both amygdala regions, compared to White faces. Increased activity was also detected in both sides of the OFC and the left DLPFC in response to Black faces compared to White faces during fast exposure. Additionally, PPI analyses indicated a negative relationship between amygdala activity and the activity in the left OFC and bilateral DLPFC. In summary, while researchers observed higher activation for Black faces in both the amygdala and prefrontal regions compared to White faces, further analyses hinted at a more nuanced inverse connection between these brain regions [6]. That shows the correlation between the amygdala and stereotype activating.

Even though the amount and identity for participants that researchers chosen for this experiment limited the generalizability of the study, the result still reliable. that because of the structure and function of brain of every people are almost. therefore, even small amount of sample can represent a large population.

Also, there is another conclusion that came up with the experiment condition which is stereotyping is very easy to activate and influence. for example, music [7]. In the Ryan research, researchers can easily create a negative stereotype background by different types of music. This shows people's stereotypes are dynamic.

3.2. Age and Neural Sensitivity

As previous section mentioned, amygdala plays important rule to impede the activation of stereotype [6,8]. Moreover, Von Hippel, W., Silver, L. A., & Lynch, M. E. found that increased reliance on stereotypes and heightened levels of prejudice observed in elderly individuals compared to their younger counterparts are posited to stem from impairments in inhibitory mechanisms [9]. As anticipated, elderly individuals exhibited a persistent reliance on stereotypes even when explicitly instructed otherwise, a behavioral pattern not observed in younger individuals.

Additionally, disparities in prejudicial attitudes were evident between the two age groups, and these differentials in both stereotyping and prejudice were found to be mediated by age-related variations in inhibitory capacity. Notably, the discerned proclivity of elderly individuals to regulate their prejudiced responses was underscored by self-reported data indicating a stronger inclination towards the desire for prejudicial control relative to younger individuals. These findings collectively suggest that deficiencies in inhibitory processes may contribute to an inadvertent escalation of prejudicial tendencies among elderly individuals, despite their expressed intention to exercise control over such predispositions. Thereby, the elder people with more severe stereotypes are because the lack sensitivity of neurons like iron with rust. Moreover, that can also because that old adults have more complex experiences, which means they have stronger stereotypes than younger people. That factor will be explain specifically in the later section (nurture approach).

4. Nurture Factor

As mentioned in the section two, the formation of stereotypes are basically caused by wrong schema [2]. Therefore, this section will discuss about how the cognition strengthen and adjust negative stereotypes.

4.1. Cognitive Stage

Researchers have discerned a noteworthy convergence in the underlying mechanisms governing gender stereotypes and racial stereotypes, suggesting a shared cognitive foundation. This observation opens avenues for extrapolating certain insights derived from gender stereotypes to enhance people understanding of racial stereotypes [10].

In a seminal investigation conducted by Levy, G. D., and Carter, D. B., the inquiry into gender stereotypes unveiled a nuanced interplay with distinct stages of cognition [11]. Focused primarily on various facets of children's gender recognition, the study systematically probed the influence of cognitive developmental stages on the utilization of stereotypes for gender identification. Notably, the research established a robust association between children's gender schematization, encompassing a spectrum of cognitive gender schema factors, and their ascriptions of gender role stereotypes.

Despite these revealing associations, it is imperative to highlight that the isolated consideration of the stage of gender constancy in children did not manifest a significant correlation with these attributions. This nuanced finding underscores the complexity inherent in the relationship between cognitive developmental stages and the formation of stereotypical perceptions. Consequently, the research posits that the developmental trajectory of cognition plays a pivotal role in shaping the cognitive processes underpinning stereotyping.

Moreover, the interplay between nature and nurture is brought into sharp relief, as the identified developmental stages are subject to dual influences. On the one hand, age, as a manifestation of innate factors, contributes to the shaping of cognitive stages. On the other hand, experiences, constituting external influences, play a pivotal role in shaping the developmental trajectory of cognition. This duality emphasizes the multifaceted nature of the factors that contribute to the cognitive underpinnings of stereotyping.

In essence, this comprehensive exploration not only illuminates the intriguing parallels between gender and racial stereotypes but also underscores the intricate interplay of cognitive development and sociocultural influences in shaping stereotypical perceptions. The nuanced understanding derived from this research holds substantial implications for refining strategies aimed at mitigating stereotypes and biases in society.

4.2. Schema and Stereotypes

The concept of schema, described in the psychological literature, is the basic source of stereotypes. Renowned psychologist Bartlett's seminal contributions help explain the complexity of schema theory, providing a comprehensive understanding of how schemas are constructed and processed. A key aspect of schema theory holds that schemas are dynamic entities that are constantly shaped and influenced by an individual's unique experiences [12].

In the framework of schema theory, cognitive process can be divided into two stages: pre-assimilation and adaptation. Assimilation involves using existing schemas to explain and interpret new situations, thereby integrating new information into existing cognitive frameworks. Instead, adaptation requires adapting established patterns to the needs of new situations, facilitating a more accurate representation of the external world [13].

In the context of stereotypes, assimilation becomes a relevant explanation for the perpetuation and reinforcement of stereotypes. Individuals tend to use patterns they already have to interpret and make sense of new information. For example, consider a person who has a preconceived "rude" schema about African Americans. If the person encounters a new African American who is joking with a friend, the assimilation process may lead them to interpret this amusing behavior within the framework of a preexisting "rude" schema, which will reinforce and solidify existing stereotypes.

Oppositely, accommodation itself is a constructive mechanism that mitigates and counteracts stereotypes. The process of adaptation is similar to the correction of false schema and involves adapting to an existing cognitive framework in the face of information that contradicts established beliefs. When individuals recognize that their schema about a particular object or group is inaccurate, the adaptation process allows for the correction of these misconceptions.

The concepts of assimilation and accommodation provide a key perspective for understanding the perpetuation and possible mitigation of stereotypes. Assimilation reinforces existing stereotypes by interpreting new information through preconceived patterns, while adaptation provides a positive means to correct and refine cognitive frameworks in the face of evidence that contradicts established beliefs. This nuanced understanding contributes to a broader discourse on cognitive processes and reveals the mechanisms of stereotype formation, perpetuation, and correction within the realm of schema theory.

5. Conclusions

Through this study, the authors found that both neuronal and cognitive processes play an important role in both the activation and suppression of stereotypes. It is worth mentioning that stereotypes tend to expand as individuals age, a phenomenon attributed to the decreased sensitivity of neurons in older people. This reduced sensitivity hinders the ability to effectively suppress stereotypes. In addition, older adults often struggle with more complex and entrenched cognitive schemata, which makes it more challenging to absorb new information and adjust existing stereotypes. However, it must be acknowledged that stereotypes can also be reinforced through assimilation. In addition, as individuals progress through the cognitive stage, the development and reinforcement of stereotypes escalate accordingly. This led to the conclusion that stereotypes intensify with age. Based on this finding, strategies for controlling stereotypes emerge.

Based on this, there are several ways to curb stereotypes. First, individuals can train their neurons to manage and regulate deeply ingrained stereotypes. This includes developing cognitive flexibility and enhancing the brain's ability to adapt. Second, since people are young and stereotypes are weak, the proactive approach involves the adaptation of incorrect patterns. By addressing and correcting misconceptions early on, individuals can effectively curb the reinforcement of stereotypes. Another key aspect is promoting a shift in perspective away from viewing individuals solely through the lens of a society or population group. By striving to understand people on an individual level, rather than relying on preconceived notions about the groups they belong to, individuals can contribute to breaking down the barriers of stereotypes.

In conclusion, this study provides valuable insights into the dynamics of stereotypes, highlighting the dual dependence of stereotypes on neural and cognitive processes. Stereotypes escalate with age, highlighting the need for active intervention. Proposed strategies - training neurons, early adaptation to incorrect schemata, and focus on personal understanding.

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