Stereotypes, Prejudice, and Discrimination: How We Can Use Psychology to Reduce Discrimination

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This paper aims to illustrate the origins of prejudice, its relationship to stereotypes, and how it can lead to discrimination. I will also outline potential solutions to reducing prejudice and discrimination. Stereotypes, prejudice, and discrimination are terms that we often use interchangeably, yet they are three conceptually distinct concepts that often overlap. A stereotype can be defined as an over-generalisation of a specific category or group of people based on observations of characteristics from a smaller sample. Stereotypes can be defined as cognitive biases, where we make generalisations about a group of people based on the characteristics of a smaller sample, hence any variation among individuals is ignored. Prejudice, on the other hand, refers to an affective bias where one holds a positive or negative attitude towards someone because of their membership in a particular group. Discrimination can often be a consequence of prejudice and is characterised as the aversive behaviours one expresses towards an individual or group because of their group membership. Implicit biases are arguably dangerous as they can affect our behaviour towards social groups and reproduce unequal treatment of individuals in society. Prejudice and discrimination are pervasive in society and understanding their causes can help us find ways to eradicate them.

As humans, we categorise objects in our physical and social environments based on different characteristics. Social categorisation can be defined as 'the classification of individuals based on social or physical attributes that have special meaning in certain social contexts' (Canales & Lopez, 2013, p. 128). Group membership can be based on many characteristics including race, gender, religion, age, or sexual orientation, for example. While infants have been shown to hold preferences for their own race and gender in habituation studies (Katz, 1983), this preference does not necessarily lead to prejudice (which in this paper is defined as negative affect) or discrimination, unless they are taught to associate a group with negative stereotypes (Conder & Lane, 2021)

STEREOTYPE VERSUS PREJUDICE VERSUS DISCRIMINATION

Stereotypes are arguably not necessary for prejudice, although they are sometimes associated. Devine (1989) suggests that we are often aware of stereotypes because of cultural and social exposure, but that does not mean that we necessarily endorse them. Here, Devine (ibid.) conducted a study in which White and Black participants were asked to write down a list of stereotypes they were aware of, and they were tested on a modern racism scale. The results showed no difference in knowledge of stereotypes in groups scoring high or low on the racism scale suggesting that the awareness of stereotypes does not make one prejudiced. Dual process theories suggest that stereotypes rely on an automatic process and a controlled process (Kahneman, 2013). Automatic processing, or system 1 thinking, happens unconsciously and occurs when we categorise people and objects. Controlled processes, or system 2 thinking, on the other hand, require careful thoughtful processing of emotions

and are necessary for inhibiting unconscious bias. Devine (1989) also proposes that inhibiting prejudice responses is comparable to breaking a bad habit. Like a bad habit, implicit bias is the result of system 1 thinking, as it occurs spontaneously outside of conscious awareness. With conscious thought and controlled thinking, prejudice responses can be inhibited—assuming an individual has the motivation to inhibit it, if they disagree with the stereotype. A possible mechanism for this inhibition is the constructivist notion (that is, the active integration of innate cognitive abilities and environmental influences from infancy onwards) that while these stereotypes may be inevitable because they are automatic, they can still be overcome through social learning and interaction with our environment. This suggests that it is possible to have stereotypes without prejudice.

Having illustrated that stereotypes and prejudice are conceptually distinct, I will explore how the two can overlap. When automatic processes are not controlled, they can result in prejudice. Correll and colleagues (2002) conducted a study investigating the effects of implicit bias, due to the possession of stereotypes, resulting in prejudice. In the study, participants played a video game where they pretended to be police officers and were instructed to shoot the man on the screen if he was holding a gun. They were subsequently presented with a picture of a Black man or a White man. In different conditions, the man was either holding a weapon or a neutral object such as a wallet. The participants were given 0.6 seconds to respond to each picture, thus controlled processing was inhibited. They found that on average, reaction times were faster in each condition when the man had a weapon. However, they also found that participants were more likely to make mistakes assessing the object when the man was Black indicated by the greater rate of false positives; that is,

the increased firing rates for black men with neutral objects than white men with neutral objects. This suggests that automatic responses based on stereotypes—in this case, the stereotype that Black men are more likely to be criminals (Oliver, 2003)—contributed to implicit bias resulting in prejudice in the form of increased false positives. Furthermore, Duncan (1979) explored the effects of race on the perception of aggression. Participants were shown a video of one man pushing another during an argument. In one condition they were shown a White man doing the pushing and in another condition a Black man doing the pushing. They found that participants rated the behaviour of the Black man as more aggressive than the White man, suggesting that stereotypes and implicit bias can affect our attitudes towards a group, therefore resulting in prejudice. This suggests that while stereotypes do not always lead to prejudice, in the absence of controlled processing, they can.

Alternatively, prejudice can occur as a result of wanting to enhance our self-image rather than because of stereotypes. For example, Tajfel and colleagues (1971) proposed that we categorise our social world based on group membership creating an 'us' (ingroup) versus 'them' (outgroup) narrative and our social group membership is a source of self-esteem creating our social identity. Thus, to enhance our self-image, we may find negative attributes of an outgroup. Tajfel and Turner (1979) suggest that we categorise people to understand and identify them based on distinct characteristics. We categorise ourselves within a group (social identification) and adopt the norms and beliefs of the group. Eventually, it is proposed that our identity and self-esteem become attached to the group so we try to maintain the group's image to preserve our self-esteem. This means that other groups could be devalued if group esteem is low in order to improve our self-image. This phenomenon can be observed in Tajfel and colleagues' minimal group paradigm. In the study, participants were randomly and arbitrarily assigned to one of two groups (Tajfel et al., 1971). They found that group categorisation occurred when the participants were simply aware that there was a difference between their group and another, suggesting that arbitrary differences are sufficient for group identification, hence the term, "minimal groups". They found ingroup favouritism within each group during different tasks and when they were told that they performed worse than the other group, they still rated themselves as more favourable than the other group. This suggests that when we identify with a group, we try to preserve our own and the group's self-image, and one method for this is the devaluation of the 'outgroup'.

Studies have also shown that prejudice is used as a means to preserve one's individual self-image, not just within our social group. For example, a study by Fein and Spencer (1997) investigated the effects of prejudice on preserving self-image. Participants were assessed on their social and verbal skills and received either positive or negative feedback on their assessments, and were then given a task to complete. In this task, they were asked to evaluate one of two job applicants. The two job applications were identical in every way (including the photo and video interview), except for their name. In one condition the applicant was Jewish named Julie Goldberg, and in the other condition, the applicant was non-Jewish named Maria D'Agostino. They found that the rating participants received from their assessments affected the evaluation of the job applicants such that, when their self-esteem was high, their evaluation of the applicants was positive, but when they were feeling low self-esteem, they rated the Jewish name applicant significantly lower than the non-Jewish name. This suggests that prejudice can be used as a means of promoting one's self-esteem.

PREJUDICE CAN LEAD TO DISCRIMINATION

While prejudice does not always lead to discrimination, discrimination is often a result of negative prejudice. I will use employment as an illustrative example. The participants in Fein and Spencer's (1997) study exhibited prejudice towards the job applicants by having more positive or more negative views, which in turn affected their application rating. Here, prejudice led to discrimination. Unfortunately, prejudice toward names has been shown to lead to discriminatory practices in employment (Ahmad, 2019). This can happen when names that are associated with a particular culture or group based on stereotypes are prescribed to individuals. Discrimination is not confined to overt actions, but

can also be internalised where such biases manifest through institutional and systemic inequalities. Critical race theory, originating in the mid-1970s (Delgado & Stefancric, 2017), suggests that racial inequality is the product of a racialised social system in which 'societies […] allocate differential economic, political, social and even psychological rewards to groups along racial lines' (Bonilla-Silva, 1997, p. 474). Many studies have investigated internalised unconscious bias and how this has contributed to institutional racism and inequality. A study by Kline, Rose, and Walters (2021) investigated name-based employment discrimination. In this study, Kline and colleagues sent 83,000 job applications with half of the applications using either distinctly Black- or White-sounding names. They found that even when the Black name applications were filled with better experiences, they were 10% less likely than White name applications to receive a follow-up. This is an example of discrimination as when people are prejudiced toward a group of people, it can alter their judgements about their abilities and overt actions are taken, such as deliberately denying them employment. This suggests that prejudice can lead to institutional discrimination. This has also been found with ableism discrimination in the workplace based on the premise that people without disabilities are superior to those with disabilities (Linton, 1998). Researchers found that in 1,200 applications with randomly assigned information about the applicant's disability, those with a disability were less likely to receive a follow-up. Therefore, prejudice can result in discrimination at a structural and institutional level.

The covert nature of institutional discrimination means that it is often difficult to see the true cause of the inequality. This is evident in education. For example, Meghji and Saini (2017) propose that as a result of a post-racial understanding of inequality, people believe that ethnic minorities have unequal access to opportunities by their own fault rather than because of societal failures. For example, some suggest that the reason that fewer Black students are admitted into university is that they are 'unacademic' and that neighbourhoods are segregated because of 'people gravitating towards those "like themselves"' (Meghji & Saini, 2017, p. 673). This is evidence of internalised racism, as people believe that they are making decisions based on simple facts, yet ignore the factors that continue to propagate these inequalities, such as education and health care barriers preventing equal access to opportunities. Institutional racism refers to the ongoing processes that perpetuate unequal access to opportunities. It is prevalent in employment as shown above, but also in education, and can explain how children may have an unequal head start in life. Mandell (2008) suggests that racialised urban spaces have been created because public transport systems have been strategically located to benefit White neighbourhoods compared to non-White neighbourhoods. Increased access to transportation means that they have better access to employment opportunities, as well as education opportunities, because it makes it more difficult for non-White students to access better schools outside of their area. This illustrates that minority groups can be disadvantaged by being grouped in underprivileged neighbourhoods as a result of a broader systemic issue and therefore the schools closest to them are under-resourced. This results in the reproduction of inequality, as they have poorer performing schools; thus, students achieve fewer qualifications, resulting in lower paid jobs, resulting in this vicious cycle being perpetuated. Furthermore, school practices are often seen as fair because performance is determined by standardised tests, but some fail to acknowledge the historical conditions which continue to disadvantage students of colour such as the 'stereotype threat' (Steele & Aronson, 1995). This occurs when students are made aware of the negative stereotypes against them, causing them to underperform in standardised testing because of the anxiety related to confirming stereotypes. Tyson (2011) suggests that the over-reliance on test scores leads to a racialised tracking system used to separate students of colour into different classes, causing a type of segregation amongst classes, and this means they can end up grouped in lower-level classes (Blaisdell, 2010). Underperforming in standardised tests means that they are less likely to have access to further education or the same jobs available to their White counterparts, exemplifying how educational institutions reproduce racial inequality. Furthermore, society has often taken a 'colourblind' approach to issues of race which refers to the belief

that everyone should be treated equally regardless of race and culture (Williams, 2011), but it ignores structural issues reinforcing unequal practices. 'Colour blindness' in schools means that students are divorced from 'social, economic, and cultural factors that shape their past and present experiences' (Chapman, 2013, p. 614); therefore, when students of colour acknowledge the racism that they face, they are seen as irrational (Lopez, 2003), and are further outcast. Garrett A. Duncan proposed that 'allochronic discourse' (2005, p. 94) is used by schools as a means to blame the student for the systemic issues present in the schools. He states that it 'has a discursive function that shapes racial norms in United States society in ways that make them "commonsense" and susceptible to be taken for granted by most individuals' (ibid.). This illustrates that prejudice can become discriminatory when it becomes embedded in social norms and institutional practices.

HOW CAN WE REDUCE PREJUDICE AND DISCRIMINATION?

Having examined the relationship between stereotypes, prejudice, and discrimination, we must now consider how prejudice and discrimination can be reduced. Reducing the hostility among groups is not necessarily about avoiding stereotypes and prejudice, but instead about reducing intergroup conflict. The two main issues we face when trying to overcome discrimination and prejudice are: (a) some people do not want to change their thought processes or do not see them as problematic, and (b) discrimination and prejudice have become internalised and institutionalised so it is no longer just a problem at the individual level.

1. Dual-processing theories of stereotypes and how motivation can be used to overcome them

As previously mentioned, dual-processing theories propose that overcoming negative stereotypes and prejudice requires motivation to unlearn unfavourable habits and replace them with more favourable ones. In Devine's study (1989), participants took a modern racism scale (see McConahay et al., 1981) and were rated as high or low prejudice. All participants were asked to write down stereotypes about African-Americans and they found no difference between the high or low groups in the knowledge of stereotypes, illustrating that both groups were equally aware of prevailing cultural stereotypes. In one task, participants were primed with 80% stereotype-related words associated with African Americans and were then asked to rate a narrative about 'Donald' as hostile or assertive. They found that groups rated 'Donald' as hostile when primed, suggesting that automatic associations biased participants' decisions (Devine, 1989). In another task, participants were asked to write down thoughts related to Black Americans and they found that the low prejudice group wrote fewer negative thoughts, potentially in fear of appearing prejudiced (ibid.). This motivation arguably occurs when the automatic responses based on stereotypes are incompatible with a person's beliefs about a group, creating a cognitive dissonance which must be resolved (Gawronski et al., 2008). Ronis, Yates, and Kirscht (1989) suggest that overcoming automatic bias is like breaking a habit: there must first be motivation to change a thought or behaviour, and old thoughts must be suppressed and replaced with a new belief. This evidence suggests that prejudice can be reduced through conscious suppression. On the other hand, attempts to repress thoughts could have the inverse effects and bring them to the surface—a phenomenon known as the white bear effect (Wegner & Schneider, 2003)—that could increase bias rather than reduce it (Macrae et al., 1994). Alternatively, new values can be internalised through implicit bias training. Studies have previously shown that when a Black person is holding a neutral object it is more likely to be mistaken for a gun (Payne, 2001). Nonetheless, this bias has been found to be reduced with training. For example Plant and colleagues (2005) found that with practice and feedback participants were able to respond to the objects themselves rather than the men holding them, indicating that judgements were made based on facts not bias. In a follow-up task when given a word completion task, "R_ _E" was filled in as 'rule' or other non-racial words as opposed to 'race' suggesting that they were less likely to think about race than the control group. This evidence indicates that it is therefore possible to reduce implicit biases

through training; thus we can use the mechanisms of dual processing theories to reduce prejudice and discrimination.

2. How contact with other social groups and perspective-taking can reduce stereotypes and prejudice

Prejudice and discrimination can occur as a result of an 'us versus them' mentality. This othering process can reduce empathy for a group or individual and dehumanise them. Dehumanising the victim may make the perpetrator feel less empathy for their acts of aggression, which may explain atrocities like genocide in Rwanda and the Holocaust (Hodge, 2011). In Nazi Germany for example, the Jewish were othered and made to appear less human in propaganda to reduce empathy for them. This is not only seen in genocides but also in politics when politicians play into people's fear of the 'other'. The use of words like 'illegals' removes their legal status and legitimacy, and is a political tactic that can appeal to voters' threat sensitivity. Threat sensitivity, which can be defined as 'the likelihood that an individual will have a negative affective reaction to a potential face threat' (Tynan, 2005, p. 226), has been associated with conservative attitudes due to their resistance to change. Research has investigated this using physiological measures. Oxley and colleagues (2008) measured the galvanic skin response of participants (indicative of anxiety/threat sensitivity) after hearing sudden noises and being shown images of threatening stimuli. Results demonstrated that participants with lower sensitivity to the threatening stimuli were more likely to support left-wing policies (such as foreign aid and pacifism) whilst those with higher sensitivity were more likely to support right-wing policies (such as capital punishment and defence spending). This threat sensitivity and reduced empathy for other groups can be overcome through perspective taking and social contact. Stereotypes can be countered through interactions with members of a social group whose individual characteristics differ from the stereotype, and increased empathy through perspective-taking can reduce prejudice. In one study, researchers investigated the use of integrative complexity measures which 'assess how we think about our social world, from rapid, inflexible, closed thinking toward more deliberate, flexible, open thinking about our own and opposed groups' (Boyd-MacMillan et al., 2016, p. 111). Here, they found that these measures lead to greater understanding and empathy for other groups which reduced inter-group conflict (Boyd-MacMillan et al., 2016).

Similarly, Devine and colleagues (2012) highlighted five strategies to reduce negative stereotyping: (1) generate non-stereotype alternatives, (2) counter stereotype, (3) individuating, (4) perspective taking, and (5) contact-seeking. Using these methods, they found that after four weeks of practice, prejudiced White students showed a lower implicit bias towards Black students, as measured using the IAT. The aversive racism hypothesis (Gaertner & Dovidio, 1986) explains that prejudice is a result of avoiding contact with out-group members, and the contact hypothesis proposed by Allport (1954) is the idea that intergroup contact can reduce bias. Research has found that when multiculturalism is salient in a person's environment, they are less biased towards other cultures (Bodenhausen & Hugenberg, 2009). Studies have shown that in ethnically-heterogeneous schools, intergroup interactions are normal, but in ethnically homogenous schools, children are more likely to hold negative views about ethnic minority children and are likely to assume they cannot be friends (McGlothlin & Killen, 2006). Thus, cross-racial interactions can reduce anxiety in minority and majority groups, and this gives them the motivation to seek more cross-cultural friendships (Mallet, 2011). This suggests that prejudice can be reduced through cross-cultural contact. When more information is available about an individual and a motivation to reduce the stereotypes, implicit biases may be reduced as this information may contradict with the assumed stereotype (Bodenhausen & Hugenberg, 2009). Furthermore, evidence for perspective-taking comes from Gutierrez and colleagues (2014) in which participants were asked to either play a video game called 'fair game' or read a narrative about bias. In the game, players assume the role of a Black student named Jamal Davis who experiences racial bias while completing various 'quests' to get his degree. The findings show that those randomly assigned to the game group showed greater empathy and less bias towards outgroup members, implying that through perspective

taking, they see the person as an individual with unique feelings, in turn reducing their own prejudice(s).

3. How prejudice and stereotypes arise from in-group behaviour and how changing group norms can affect prejudice

Social norms are the 'rules or standards for behaviour that serve as guides for people's actions, help create expectations about how others will act and promote greater coordination in social life' (Neville et al., 2021, p. 2). Social influence is arguably a central part of human social life, as it guides our actions amidst uncertainty and can allow us to meet common goals by facilitating cooperation. Understanding the conditions required for social norms to influence behaviour can have important practical implications for social change. Stereotypes and prejudice are embedded in social and cultural norms, hence it is necessary to understand the contexts in which they arise and how they are maintained—particularly if we are to understand how they can be eradicated. Social and group norms determine what conduct and behaviour are appropriate, and this affects intergroup relations (i.e., a group's thoughts, feelings, and actions towards other groups). In-group favouritism, or bias, only becomes problematic and prejudicial when outgroup members are treated or viewed negatively for not belonging to that in-group. Tajfel and colleagues (1971) proposed that we categorise our social world based on group membership creating an 'us' versus 'them' narrative and our social group membership is a source of self-esteem and gives us a social identity. If adopting the identity of a group means conforming to their beliefs, then changing group beliefs about a stereotype can arguably reduce prejudice. Jetten and colleagues (1997) found that ingroup bias is moderated by salient norms, so when they believed it was more favourable to prefer the ingroup than to treat everyone equally, they were more likely to show ingroup favouritism. This effect was particularly strong for those with increased social identification (ibid.). This suggests that if social norms, as well as group norms, changed and encouraged equal treatment, then prejudice towards other groups could be reduced; thus, changing social norms could help to reduce prejudice at a broader sociological level.

Social norms are multifaceted and are distributed along a continuum of social approval or disapproval (Jackson, 1966). Deutsch and Gerard (1955) describe two distinct types of social influence: informational and normative influence. Informational influence refers to the extent to which compliance occurs as a result of how typical or correct a behaviour is perceived to be, while normative influence is the desire to conform based on the perceived social approval or disapproval of a behaviour. Kelley (1952) suggests that our social groups, or reference groups, have a comparative function and a normative function. In a normative reference group, individuals compare their behaviour to others in the group, therefore the group members set the standards and norms that the individual will follow. Misperceptions about the social norms accepted by a reference group can result in an individual

adopting harmful behaviours such as drinking and substance abuse (Dempsey et al., 2018) or even discrimination (Crandall et al., 2002). To study the effects of social norms on prejudice, Crandall, Eshleman, and O'Brien (2002) investigated how the social appropriateness of prejudice determined which prejudice was expressed or suppressed. To measure the social acceptability of prejudice, they developed a list of 105 target groups of prejudice and asked 150 undergraduates to rank how acceptable it was to have a prejudice towards each group (0: definitely not ok; 1: maybe ok; and 2: definitely ok). The list included items such as negligent parents, illegal immigrants, and deaf people, among others. The most acceptable target was rapists (1.967) and the least was blind people (0.047). In a second study, 104 undergraduates were given three scenarios of discrimination (1: in dating; 2: in housing; and 3: in employment) with one of ten random targets and were asked how acceptable the discrimination was. Targets included 'racists, drug users, ex-convicts, rednecks, welfare recipients, environmentalists, fat people, Hispanics, Black Americans, and Native Americans' (ibid., p. 364). They found that the acceptability rating of discrimination correlated with the normative acceptability of prejudice for each target ($r = .86$). This suggests that the extent to which prejudice is expressed and tolerated depends upon the normative acceptability; therefore, social norms influence tolerance and prejudice. Changing the social norms can reduce the extent to which prejudice is expressed towards different target groups and this compliance over time can lead to the internalisation of the norms which will result in attitude changes.

CONCLUSION

In conclusion, stereotypes do not necessarily lead to prejudice because awareness of stereotypes does not always result in prejudice. Negative stereotypes can be overcome using controlled system 2 thinking, but automatic system 1 thinking can lead to prejudice in some instances. Prejudice is also caused by other factors, such as wanting to improve one's self-image. Prejudice leads to discrimination when one chooses to act upon their negative affect towards a group. Discrimination is an overt behaviour based on prejudice which negatively impacts a member of a group due to their group membership. Discrimination can also be internalised and reproduced through different institutions, such as schools. Three methods of reducing prejudice and discrimination were outlined: (1) we can use the premise of dual-process theories to reduce prejudice at an individual level by suppressing system 1 thinking and replacing existing beliefs with new ones; (2) we can become more empathetic towards other groups through perspective taking and increased inter-group contact leading to more peaceful outcomes; and (3) we can change group and social norms to reduce prejudice and discrimination in society. If prejudice and discrimination is deemed as less acceptable, prejudiced responses will be suppressed and hopefully internalised to change attitudes and beliefs for long-term change.

Interdisciplinary Commentary

From *All in the Family* to *Will & Grace*: What psychology can teach us about fighting prejudice through the media

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As Anoble explains, psychology has provided the world with much knowledge on how to effectively reduce prejudice, but putting these lessons into practice in the real world is never as easy as it is in the lab. In this commentary, I will explore how if entertainers continue to increase diversity in the media and humorously subvert prejudiced views, the ordinary individuals who consume this content can reduce their prejudices.

In the above article, the author presents three strategies to combat discrimination: (1) implicit bias training, (2) intergroup contact and perspective taking, and (3) changing social norms. As Anoble observes, a core problem is taking these strategies, known to work in psychological studies, and actually using them to bring about real world change.

In an ideal world, everyone would be open-minded and well-intentioned. All one would have to do is point out an individual's biases and ignorance and that individual would be prompted to seek out the truth, learn how to improve their actions, and proceed to take active efforts to better themselves. As we well all know, this is not the world we live in. Some people do not know they are biassed, others do not care, and still others know and care, but never get around to doing much about it. It would be easy for a student such as myself to tell people to simply interact with people of other cultures—when 41% of the student population at my university consists of international students and London is less than an hour's ride away by train—but for many people around the world, interacting with people of different cultures is simply not an option in their day-to-day lives (University of Cambridge, 2021). Implicit bias training and perspective taking are effective ways at combating prejudice, but as Anoble points out, in order for these methods to be effective, one must have the motivation to combat their prejudice in the first place. One can also tell society to simply change its social norms in order to reduce prejudice, but actually doing so, history has shown, is an often long and arduous process.

In this commentary, I will suggest ways we can use psychology to reduce prejudice without requiring people to try new things nor make any active effort to better themselves. Rather, I will argue that we should continue to imbue activities people willingly and eagerly engage in with the psychological strategies we know can reduce prejudice. Namely, we should (1) continue to increase diverse representation in the media, and (2) use comedy to satirise bigotry and subvert prejudiced beliefs.

Parasocial Contact Hypothesis

In his Contact Hypothesis, Allport (1954) posited that increased contact with members of an out-group can reduce discrimination between majority and minority group members. In the intervening years, as Anoble describes, Allport's hypothesis has been robustly supported and shown to be one of the most effective ways at reducing discrimination. I concur with Anoble that individuals should seek out positive interactions with people of groups towards which they hold negative biases; but as previously stated, if one does not live in a diverse area or cannot travel to places where they can gain this exposure, the efficacy of intergroup contact at reducing prejudices is minimised or eliminated.

As suggested by Allport himself, exposure to different peoples via the media may have a similar prejudice reducing effect to in-person intergroup contact (ibid.). In 2005, Schiappa, Gregg, and Hewes formalised Allport's suggestion and proposed the Parasocial Contact Hypothesis (PCH; Schiappa et al., 2005). Among other things, they hypothesised that, '[e]xposure to positive portrayals of minority group members will lead to a decrease in prejudicial attitudes' (Schiappa et al., 2005, p. 110). Schiappa and colleagues (ibid.) proceeded to analyse the findings of three of Schiappa's recent studies at the time, two regarding prejudice against gay men and the other regarding prejudice against cross-dressers (Schiappa et al., 2004). In all three studies they found that increased exposure to positive portrayals of minority group members in the media led to decreased prejudice against members of those groups (Schiappa et al., 2005). In a similar 2006 study, Schiappa, Gregg, and Hewes found that for university students with fewer than three gay or lesbian friends, increased viewing frequency of the television show *Will & Grace* was negatively correlated with prejudice against gays and lesbians (Schiappa et al., 2006). Indeed, parasocial interaction was found to have a prejudice reducing effect to a degree similar to that of direct interpersonal relationships (ibid.). It is important to note that for students with three or more gay or lesbian friends, there was no statistically significant correlation between viewing frequency of *Will & Grace* and the amount of prejudice held against gays and lesbians (ibid.). This suggests that the prejudice reducing effect of parasocial interactions is stronger when one has fewer in-person interactions with the minority group in question. Overall, studies have found that exposure to positive representations of minority or out-group members in the media can reduce prejudices against people of other races (Fujioka, 1999), religions (Abrams et al., 2018), sexual orientations (Bond & Compton, 2015; Schiappa et al., 2006; Riggle et al., 1996), and gender identities (Li, 2021; Orellana, 2020).

The reasons for increased diversity in the media are manifold. The purpose of this brief summary of the PCH is merely to highlight the strong psychological evidence suggesting that increased diversity in the media can reduce prejudice. I also hope that it may inspire and guide those who seek ever more effective methods at reducing prejudice to a greater extent, amongst greater numbers and more diverse groups of peoples.

Subversive Humour

In the second half of this commentary, I will argue that there is psychological evidence to suggest that comedy can also reduce prejudiced attitudes when used in certain manners.

Some studies have found that comedy may help individuals recognize their own prejudices (Vidmar & Rokeach, 1974; Klapper, 1971, as cited in von Hodenberg, 2015). The ways in which comedy may be able to bring about this reckoning are likely multifarious. It is known that calling out an individual for prejudiced attitudes makes them less likely to express those views in the future (Czopp et al., 2006). Although individuals typically change their behaviour after being called out for their prejudiced views, they normally resent the individual who brought their prejudices to attention (ibid.). Calling out an individual's prejudice in a humourous way makes one less likely to see this interaction as confrontational (Kramer, 2013) and may result in the prejudiced individual holding less resentment for the person who called out their prejudice (Saucier et al., 2016). This may allow the comedian to have a sustained relationship with their audience, thus providing more opportunities for one's prejudices to be called out and questioned. Holmes and Marra describe this type of comedy which 'challenges or subverts the status quo' (2002, p. 70) as subversive humour. While subversive humour may be a powerful way to combat prejudice, it is far from the only way comedy can be used.

Comedy can just as easily (if not more easily) be used to perpetuate prejudice rather than eliminate it (Ford et al., 2008). Malicious jokes do

this with ease, but even well intentioned subversive jokes can be misinterpreted or delivered poorly and have the ironic effect of promoting the very viewpoint they aim to undermine (Baumgartner & Morris, 2008; Ford et al., 2019; Vidmar & Rokeach, 1974; Saucier et al., 2016). Despite the ever present risk of misinterpretation, the continued success of satire—from Erasmus's *In Praise of Folly*, to Voltaire's *Candide*, to Netflix's *Don't Look Up*—strongly suggests that the majority of people, most of the time, get the joke. This was also the conclusion von Hodenberg (2015) researched in regard to *All in the Family*, and Baumgartner & Morris (2008) reached in regard to *The Colbert Report*, despite some misinterpretations of these shows. Indeed studies on *All in the Family* have revealed that watching the show: made about a fifth of people realise they had prejudices they were not aware of (Vidmar & Rokeach, 1974); made viewers 'high on parental authoritarianism or lifestyle intolerance' (Wilhoit & de Bock, 1976, p. 34) more likely to feel 'uncertain about their own ideas' (ibid.); and brought some to see the 'error of their ways' (Klapper, 1971, as cited in von Hodenberg, 2015, p. 240). (For a more detailed discussion on the many studies examining the ways in which All in the Family may have both reduced and reinforced prejudiced views, see von Hodenberg, 2015, pp. 238–248).

The psychological evidence suggests comedy can be used to both fight prejudice as well as reinforce it. Comedians may be able to use comedy to fight prejudice both by explicitly calling prejudices to attention in a humorous manner, ensuring that when attempting satire, the implicit criticism of their satire comes across more strongly than the explicit views expressed (Ford et. al, 2019), and by engaging in 'debriefing session[s]' (Saucier et al., 2016, p. 81) after relevant jokes to ensure they are not misinterpreted (something already regularly practised by late-night comedians such as Trevor Noah and John Oliver; ibid.). One can hope that with an increased awareness of the power of comedy to either fight or reinforce prejudice, well intentioned entertainers may more wisely and effectively use it for good.

Conclusion

Anoble presented a knowledgeable discussion of the lessons the field of psychology has to teach us on how to better our efforts at combating discrimination. I hoped to add to this discussion by addressing some of the practical problems Anoble cited. Specifically, I discussed how we can reduce people's prejudiced views by imbuing activities people already eagerly engage in, such as media and comedic consumption, with the lessons we have learned from psychological studies. This commentary is interdisciplinary; not only by looking at humour and media studies through a psychological lens, but by taking the lessons we have learned from the intersection of various academic disciplines and applying them to the real world in order to better it.

N A T U R A L   S C I E N C E S

The Scientist Stereotype: How influences in the early stages of a child's development can affect their attitudes towards science

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The Scientist Stereotype is a view of the "typical" scientist that has been introduced throughout history and reinforced partly by Hollywood interpretations. There have been a number of studies that have attempted to investigate the abundance of this stereotype in primary school children, and how this may have changed. I will discuss how these studies have shown the effect of introducing a National Curriculum for science in England on the stereotypes that may be believed by children and, more recently, the effect of

the COVID-19 pandemic on the preconceptions that children in Northern Spain hold. I will then explain the importance of dispelling these stereotypes if we are to remove the barriers to a career within the scientific community for the groups that do not identify with this stereotype in order to produce a diverse and talented community of scientists.

In this commentary, I will discuss the 'Scientist Stereotype' in the context of the above article by Anoble. Stereotypes are integral to society, as it is how we, as human beings, categorise people into groups, but these may further lead to biases and prejudices affecting how members of one group may treat or view members of another. However, controlled (conscious) processes can overcome the negative effects of stereotypes by inhibiting unconscious biases and resulting in processing of emotions. The presence of a stereotype can influence social norms, which can further affect behaviours and intergroup relations. Combatting these stereotypes could present a potential solution to reducing biases and prejudice.

Attitudes towards science are difficult to define, as there are many factors that can affect the outcome. However, Klopfer (1971) sets out guidelines that can be used to help characterise affective behaviours which include: having a positive attitude towards science and scientists; the adoption of scientific attitudes; the enjoyment of scientific learning experiences; the acceptance of scientific enquiry as a way of thought; the development of interests in science-related activities; and the interest in pursuing a career in science related work. The presence of negative stereotypes can hinder the adoption of positive attitudes towards science, and therefore decrease the number of people interested in working in the scientific community, or accepting the thoughts and results of scientific study (Osborne et al., 2003).

Multiple studies have tested young children's perceptions of scientists, using the "Draw-a-scientist" test in order to identify any stereotypes that may be present. One such study—initially carried out in 1990 in the North East of England (Newton & Newton, 2011) and then repeated six years later in 1996 (Newton & Newton, 2007)—identified a number of identifying characteristics that were present in a statistically significant number of drawings. The children were handed a plain piece of A4 paper and instructed to "draw a scientist". From the resulting drawings, the main characteristics that could be identified as "stereotypical" of a scientist were: male gendered, middle-aged or old, bearded, balding, wearing a lab coat and glasses, working alone and inside, and surrounded by test tubes and chemicals. This is not an accurate representation of the modern-day scientist, who can have any background or appearance, works with the latest technology, and with a diverse team of other scientists to collaborate with and share their unique experience. It is crucial that the traditional stereotype is dispelled if the scientific community is to grow to become as diverse and exciting as it has potential to be, and if positive public attitudes towards science are to be adopted.

In light of this, the biases and prejudices produced as a result of the "scientist stereotype" have an enormous impact on the number of people from Black, Asian, and minority ethnic (BAME) backgrounds, women/non-binary persons, and members of any groups that do not identify with the stereotype choosing to enter the scientific community. The stereotype also affects the accessibility of science for these groups and presents a number of barriers to scientific careers, therefore reducing the number of members of these groups that pursue a career in science. These stereotypes also affect representation in scientific studies due to low BAME participation, which can lead to inequalities in medical practice or broader understanding of differential effects across these groups (Smart & Harrison, 2016).

It is important that "traditional" stereotypes are challenged, especially when considering the media and pedagogy that is inculcated into young children, as these stereotypes are what shape the child's view of the world and, in the absence of controlled processing—which is necessary for inhibiting unconscious bias—can lead to prejudices being formed. These prejudices can affect the views that a person may hold for their entire life; thus, it is crucial to ensure that children are given accurate information when they are young. In the case of the "Scientist Stereotype",

this may cause a child to feel that they are different to the stereotype, so they may feel as though they would not be accepted. This can lead to the child not pursuing a career in science, technology, engineering and/or mathematics (STEM), or perhaps even having a negative view or being dismissive of the work produced by the scientific community. The dangers associated with this have been highlighted in the global response to the COVID-19 pandemic, with some having a negative attitude towards science dismissing many public health requests. With the knowledge that pandemics of this scale are likely to only increase in frequency (Chin et al., 2020), it is more important than ever to increase the public's confidence in scientists, which starts by educating children and making sure that inaccurate stereotypes are not being reinforced, by either the media or by education within schools.

Between the 1990 Newton and Newton study and the repeat study six years later, the National Curriculum order for science was taught to all primary school children in England, increasing the children's exposure to and learning about science. When the experiment was repeated, it was found that there was no statistically significant change in the drawings produced by the children. The presence of glasses was still high; however, this could be partially explained by the children learning of the importance of wearing safety spectacles in labs. In addition to this, the number of drawings of scientists with beards was slightly lower. 97% of scientists were drawn to be working inside, and there were significantly more drawings with test tubes and chemical apparatus. There were only four instances of plants in the drawings, and only 2% showed computers or technology (Newton & Newton, 2007). Therefore, it was concluded that the teaching of a national curriculum did not aid in widening the children's perceptions of the appearance and work of a scientist.

However, a more recent study (Quílez-Cervero et al., 2021) suggests that children's perceptions of scientists may have been altered as a result of the COVID-19 pandemic. In this study, the drawings of 128 primary school-aged children were analysed, using the analysis rubric defined in the "draw a scientist" test prompt. These students were aged between six and eight and were from Northern Spain. This differs from the previously discussed studies, which tested a larger number of children over a wider age range, and tested children from North East England. This study also differed from those carried out by Newton and Newton as, in this study, interviews were also conducted with each child in order to obtain explanatory information about the drawing. This aided in the collection of more accurate and detailed information on what each child intended to draw, controlling for any differences in the children's artistic ability (Losh et al., 2008). The results of this study appear to be significantly different from those from previous studies. There was a higher incidence of female scientists, scientists working as a team rather than alone, and there was a large proportion of drawings (47.7%) that showed the scientist's appearance to be 'broader than traditional' (Quílez-Cervero et al., 2021, p. 6).

One particular difference that stands out is the number of children drawing male versus female scientists. In the 1996 study (Newton & Newton, 2011), the majority of both boys and girls illustrated the scientist as male, with 100% of 10 year old boys and 80% of 10 year old girls drawing a male scientist. These proportions were not significantly different from the results of the study in 1990 (Newton & Newton, 2007). However, in the 2021 study, only 40% of the grade one students drew a male scientist—45.83% of the boys and 35% of the girls. A larger proportion of students drew female scientists (22.7%), or drew both male and female scientists. 22.7% of the drawings from grade one could not be categorised into male or female, meaning that the gender was neither obvious in the drawing or mentioned by the student.

This result could be suggesting a change in the way that children are viewing the scientific profession and scientists, in general. In the previous studies, it was clear that children had consumed the media's stereotypical portrayal of scientists: namely, typically an older male, working in solitary conditions, and with chemicals and test tubes. This stereotype is not an accurate portrayal of the majority of scientists, and may have historically discouraged girls from wanting to pursue a career in STEM. According to the Department for Education UK government, 44% of all STEM entries at A-Level are from female students and, across all A-Level STEM subjects, female attainment at top A*-A grades has increased more than for males (Office for National Statistics, 2021). According to these statistics, chemistry is the only STEM subject at A-Level where males are more likely to achieve an A* grade than females. This further evidence and the results of the 2021 study (Quílez-Cervero et al., 2021) both provide hope that, in light of the recent COVID-19 pandemic and the increased attention that has been placed upon the scientific community, the public's perception of the scientist stereotype may be changing to reflect the diverse, collaborative, exciting profession that it has become.

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