Dehumanization, Prejudice and Social Policy Beliefs Concerning People with Developmental Disabilities

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Abstract

We investigated the nature of prejudice toward people with developmental disabilities, its potential roots in dehumanization, implications for social policy beliefs affecting this target group, and strategies for reducing prejudice toward people with developmental disabilities. Studies 1 (N = 196, MTurk) and 2 (N = 296, undergraduates) tested whether prejudice took a hostile or ambivalent (both hostile and benevolent components) form. Consistent support for a hostile prejudice model was found, comprised of beliefs that people with developmental disabilities may harm others, should be kept separate from others, and are dependent on others. Also, greater dehumanization was associated with greater prejudice, and prejudice mediated the effect of dehumanization on participants’ social policy beliefs. Study 3 (N = 151, MTurk) provided construct validity for the newly developed multidimensional measure of prejudice. Study 4 (N = 156, undergraduates) showed that presenting a person with developmental disabilities in either humanizing or individuating ways reduced dehumanization and prejudice and, in turn, increased the favorability of social policy beliefs.
Although research related to stereotyping and prejudice has examined a variety of target
groups, such as women, racial and ethnic groups, and immigrants, the prevalence and nature of
prejudice toward people with developmental disabilities has received little attention.
Developmental disabilities are chronic mental and/or physical impairments that begin before the
age of 22 and cause severe limitations in several domains (Developmental Disabilities Assistance
and Bill of Rights Act, 2000). Autism and Down syndrome are two of the most commonly
diagnosed developmental disabilities in the United States (Facts about Down Syndrome, 2011;
Data & Statistics, 2013). Despite a long history of marginalization and mistreatment (O’Brien,
1999; Braddock & Parish, 2001; Gallagher, 2001), prejudice toward people with developmental
disabilities is poorly understood. Indeed, little is known about how to conceptualize this type of
prejudice, nor how to measure it (Werner, Corrigan, Ditchman, & Sokol, 2012).

We sought to understand the nature and implications of prejudice toward people with
developmental disabilities, specifically autism and Down syndrome. We tested two different
theoretical accounts of prejudice toward people with developmental disabilities (Studies 1 and
2), and in so doing we developed and validated (Study 3) a theory-based multidimensional
measure of prejudice. We also investigated the relationship between dehumanization and
prejudice toward people with developmental disabilities, and the implications of prejudice for
support for social policies relevant to quality of life for people with developmental disabilities
(Studies 1, 2). Finally, Study 4 focused on strategies for reducing prejudice and thus increasing
support for social policies relevant to people with developmental disabilities.

*Prejudice toward People with Developmental Disabilities*

Although prejudice often involves antipathy toward outgroups (Allport, 1954), it can take
an ambivalent form for some groups (Fiske, Cuddy, Glick, & Xu, 2002; Fiske, Xu, Cuddy, &
Glick, 1999). For instance, the notion of ambivalent prejudice is central to contemporary theory
and research concerning sexism, such that women are regarded in both hostile (e.g., incompetent and inferior to men) and benevolent (e.g., to be cherished and protected) ways (Conner, Glick, & Fiske, 2017; Glick & Fiske, 1996). The benevolent aspect of sexism is seemingly favorable but is rooted in paternalistic, role-restrictive beliefs designed to keep women in their subordinate position in society. In this way, benevolent sexism “represents the ‘carrot’ dangled in front of women to motivate them to accept inequality, while hostile sexism represents the ‘stick’ that beats them when they do not” (Conner et al., 2017, p. 298). In fact, benevolent and hostile attitudes toward women are positively correlated, suggesting that these two sets of beliefs are rooted within the same sexist belief system based on gender roles and male dominance (Glick et al., 2000).

We considered whether prejudice toward people with autism and Down’s syndrome likewise may be ambivalent. “Disabled” and “retarded” (sic) people have been stereotyped as incompetent but warm (Fiske et al., 1999, 2002); these stereotypes may apply to people with autism and Down’s syndrome and contribute to an ambivalent form of prejudice.

Specifically, the hostile component of prejudice toward people with developmental disabilities is likely to be based on beliefs about their perceived non-normative, inferior characteristics. In particular, people with autism and Down syndrome may be viewed as dangerous and a threat to others due to often exaggerated beliefs about their distinctive physical activities (e.g., flapping) and social abilities. Furthermore, the history of institutionalization of people with developmental disorders in the United States reinforces the view that people with autism and Down syndrome are unpredictable, uncontrollable, and potentially threatening to others (Melton & Garrison, 1987). These considerations led us to conceptualize hostile prejudice
as beliefs that people with developmental disabilities are harmful and should be kept separate from others in social settings, schools, and residences.

On the benevolent side, because developmental disability is characterized by limitations in domains related to independent living, communication, and/or mobility (Developmental Disabilities Assistance and Bill of Rights Act, 2000), people with developmental disabilities often rely on others for assistance to accomplish their goals and to complete the basic tasks of daily life. Thus, paternalistic beliefs that people with developmental disabilities are childlike and need to be protected and cared for (e.g., Cohen & Streuning, 1962; Corrigan, Edwards, Green, Diwan, & Penn, 2001) may be manifested in subjectively positive dependence beliefs. In addition, idealization of people with developmental disabilities, such as beliefs that they are sweet and inspirational, are common. People with developmental disabilities are often stereotyped as heroes for overcoming the obstacles caused by their conditions and circumstances (e.g., see “Attitudinal barriers for people with disabilities,” 2015). Thus, benevolent beliefs that people with developmental disabilities are to be protected, cared for, and idealized at a distance may be maintained; when this arrangement becomes inconvenient (e.g., appearing to infringe on the dominant group resources or creating uncomfortable contact situations), the “stick” of hostile beliefs about harm and the need for separateness may be applied.

Although the ambivalent form of prejudice toward people with developmental disabilities seemed plausible, we also considered the possibility that prejudice toward people with developmental disabilities would take a purely hostile form. Rohmer and Louvet (2018) found that implicit stereotyping of people with disabilities (broadly construed) are not ambivalent, but more uniformly negative (i.e., reflecting low warmth/low competence). Furthermore, Glick and Fiske (1996) argued that mutual dependence between men and women is a driving factor in the
development and maintenance of ambivalent prejudice. Because men and women must rely on one another to meet key reproductive and interpersonal goals, pure antipathy toward women is unsustainable. However, people without developmental disabilities do not tend to have mutually dependent relationships with people with developmental disabilities. Long traditions of institutionalization and marginalization have historically set them apart from the rest of society, and barriers to broader inclusion persist. Simply put, people without disabilities do not need relationships with people with developmental disabilities to accomplish their goals, and so they may lack the motivational impetus to form benevolent attitudes.

In sum, there are reasons to expect that prejudice toward people with developmental disabilities may be either purely hostile (including harmful and separate beliefs) or may also include a benevolent component (including dependence and idealization beliefs). The present research will determine which of these characterizations best fits the nature of people’s attitudes.

**Dehumanization: A Root of Prejudice toward People with Developmental Disabilities?**

Regarding certain groups of people as less the fully human can undergird prejudiced attitudes, such as when perceptions of indigenous people as primitive and animalistic lead to disdain (Haslam & Loughnan, 2012). Dehumanization can be broadly understood as the denial of mind, complex internal life, and overall humanness to an individual or group (Haslam, 2006; Leyens et al., 2000). Dehumanization occurs across a wide variety of samples and outgroups and is associated with damaging attitudes and behaviors. For example, overt dehumanization of a low power social group, the Roma in Hungary, was associated with greater prejudice, greater support of institutionalized discrimination (e.g., blocking access to social housing), and decreased support for government financial assistance to integrate the Roma into broader society (Kteily, Bruneau, Waytz, & Cotterill, 2015). Because the very definition of a developmental disorder is
characterized in part by chronic mental impairments (Developmental Disabilities Assistance and Bill of Rights Act, 2000), and complex thought and the mind play an important role in conceptions of humanness, people may be especially likely to dehumanize people with developmental disabilities.

Dehumanization of people with developmental disabilities may be a more likely root if prejudice takes a hostile rather than ambivalent form. Researchers have found that targets of hostile prejudice appear to be dehumanized, eliciting brain activity mirroring patterns observed with the processing of objects rather than humans (Harris & Fiske, 2006). Other findings indicate that strong negative emotional reactions to outgroups (i.e., revulsion, disgust) are associated with dehumanization, moreover, mediational analyses suggested that dehumanization fed into prejudice attitudes (Hodson & Costello, 2007). Thus, we anticipated that prejudice toward people with developmental disabilities would be rooted in dehumanization, particularly if prejudice took a hostile rather than ambivalent form.

Potential Implications for Social Policy Beliefs

Social policies can help combat inequality, provide protection against discrimination, and provide important community resources for stigmatized groups. We reasoned that prejudice and dehumanization may undermine support for social policies that are important for the quality of life for people with developmental disabilities. These policies include support for funding for special education programs, financial assistance programs (e.g., social security benefits), minimum wage protections, and protections for individual liberties.

There is no shortage of prior research linking hostile prejudice to negative social policy beliefs. For example, anti-Black prejudice is associated with greater opposition to affirmative action and school integration (e.g., Sidanius, Devereux, & Pratto, 1992, Sears & Henry, 2005),
and anti-gay attitudes predict lower levels of support for marriage equality (Rowatt, LaBouff, Johnson, Froese, & Tsang, 2009). The benevolent component of ambivalent prejudice also predicts social policy beliefs, particularly in ways that maintain the current social order and prevent empowerment. For instance, stronger endorsement of benevolently sexist beliefs is associated with lower support for women’s reproductive rights (Huang, Osborne, Sibley, & Davies, 2014).

Similarly, dehumanization drives negative social policy beliefs. Dehumanization fosters support for and use of punitive punishment toward outgroup members (Bandura, Underwood, & Fromson, 1975; Goff, Eberhardt, Williams & Jackson, 2008), and thus can translate into support for aggressive retaliatory policies (Maoz & McCauley, 2008). Dehumanization is associated with reduced feelings of guilt over past egregious actions by one’s ingroup toward an outgroup, which in turn decreases support for reparative policies (Zebel, Zimmermann, Viki, & Doosje, 2008). Finally, recent research examining blatant dehumanization finds that it predicts support for social policies that preserve social distance between groups, and disenfranchise and neglect the welfare of outgroups (Kteily et al., 2015).

Altogether, these past findings led us to expect that greater prejudice (whether ambivalent or hostile) toward people with developmental disabilities would be associated with less support for social policies that enhance their quality of life. We also expected that, to the extent that individuals dehumanize people with developmental disabilities, they would be less supportive of beneficial social policies. Finally, if prejudice against people with developmental disabilities takes a hostile rather than ambivalent form that is rooted in dehumanization, we may also find evidence supporting a mediation model. Dehumanization may be positively associated with prejudice, which in turn may undermine support for social policies that improve the quality of
life for people with developmental disabilities, with prejudice playing a significant mediating role. These results would suggest that humanization of people with developmental disabilities is critical for reducing prejudice and increasing beneficial social policy beliefs, an idea that we also investigate in the present research.

**Goals of the Present Research**

We examined two alternative theoretical models concerning the nature of prejudice toward people with developmental disabilities. Specifically, we developed and validated a novel, multidimensional scale assessing prejudice toward people with one of two common, but distinct developmental disabilities: autism and Down Syndrome. Using confirmatory factor analysis, both purely hostile and ambivalent models of prejudice were examined in Studies 1 and 2 to determine which model provided the best fit to the data. In addition, these studies examined the relationship between prejudice toward people with autism and Down syndrome and dehumanization and social policy beliefs. We were particularly interested in testing whether the effect of dehumanization on support for social policies benefitting people with developmental disabilities is mediated by prejudice. Study 3 tested the construct validity of the prejudice measure resulting from Studies 1 and 2. Finally, Study 4 focused on reducing prejudice toward people with developmental disabilities by investigating the effects of humanizing tactics on dehumanization, prejudice, and social policy beliefs.

**Studies 1 and 2**

**Method**

**Power Analyses**

Power analyses were performed with a series of simulations (Lane & Hennes, 2018) using the Montecarlo function of MPlus 6 (Muthén & Muthén, 1998-2010). We assumed
moderate factor loadings (.40) of indicators onto latent factors, large positive correlations (.70) between the two factors tapping into hostile prejudice, and large positive correlations between the two factors tapping into benevolent prejudice. Finally, we assumed moderate positive correlations (.40) between hostile and benevolent factors (Glick & Fiske, 1996). Results suggested that a sample of 195 would have greater than 95% power to estimate factor loadings and 77%-99% power to estimate the relationships between latent factors.

**Participants**

**Study 1.** Participants were 196 Introduction to Psychology students (38% women; \(M_{\text{age}} = 19.81\) years, \(SD_{\text{age}} = 1.37\); 67% White, 20% Asian, 5% Black, 5% Hispanic, 3% other) who completed the study online for research credit. In this and all subsequently reported studies, two percent or fewer participants reported having a person with autism or Down syndrome as an immediate family member or close friend. We retained these participants (in all studies) as results did not differ if they were excluded.

**Study 2.** To obtain a sample with greater variability in age and other characteristics, Amazon Mechanical Turk participants completed Study 2 online. After removing data for six participants who failed to follow directions, 296 participants remained (58% women; \(M_{\text{age}} = 37.53\) years old, \(SD_{\text{age}} = 13.93\); 80% White, 8% Black, 6% Asian, 4% Hispanic, 2% other).

**Procedure**

After providing research consent, participants were randomly assigned to respond to items concerning either autism or Down syndrome throughout the study. Definitions of these conditions were not provided for participants; rather, we allowed participants’ own beliefs and attitudes to shape how they responded to the study measures. Participants completed the dehumanization measure first, then prejudice and finally social policy beliefs were assessed.
**Dehumanization.** Participants rated the extent to which they believed 10 Human Uniqueness (e.g., irrational [reverse-scored] and moral) and 10 Human Nature (e.g., warm [reverse scored] and superficial) traits were characteristic of “the typical person with” either autism or Down syndrome (Haslam, 2006). Scale endpoints were 1 (not at all) and 7 (very much), and items were averaged to form a single index after reverse-scoring when needed so that higher scores reflect greater dehumanization.

**Prejudice.** We created a multidimensional measure of prejudice toward people with autism and Down syndrome designed to tap into four constructs. Harm (e.g., “When people with [autism/Down syndrome] are in public settings, there is always the risk that they will harm others”) and Separate (e.g., “People with [autism/Down syndrome] should spend time together rather than in settings with non-disabled people”) items were designed to tap into the proposed hostile component of prejudice. Dependence (e.g., “People with [autism/Down syndrome] need to be protected by others”) and Idealization (e.g., “People with [autism/Down syndrome] are inspirational”) were designed to tap into the proposed benevolent component of prejudice. Items were very similar across the two studies (see Table 4), with some minor improvements (e.g., adding reverse-scored items) in Study 2. Participants indicated their agreement with each item on a scale ranging from 1 (strongly disagree) to 7 (strongly agree).

**Social Policy Attitudes.** This 6-item measure assessed support for social policies concerning special education funding (“Funding for special education programs for people with [autism/Down syndrome] should not be a priority” and “Special education funding is an important investment”), financial assistance programs (“Resources that go to people with [autism/Down syndrome] are likely to take away from the resources of others.”), equal pay for work (“It is OK to pay people with [autism/Down syndrome] less than the minimum wage for...
their work”), and individual liberties (“Businesses and organizations should not deny services to people with [autism/Down syndrome] based on disability”; “People with [autism/Down syndrome should be able to marry”). Ratings were made on a scale ranging from 1 (strongly disagree) to 7 (strongly agree) and were averaged after reverse-scoring where necessary so that higher scores reflect greater support for beneficial social policies.

Results and Discussion

Confirmatory Factor Analysis

Our first goal was to test various theoretical models of prejudice toward people with developmental disabilities using confirmatory factor analyses (CFA) to determine which best represented the data. Initially, means, standard deviations, skewness values, kurtosis values, and intercorrelations for individual prejudice items were examined and were found to be acceptable. Then CFA were performed using Mplus (Version 7.0, Muthén & Muthén, 2008-2015). All items were normally distributed, so maximum likelihood estimation was used. Few participants were missing responses for individual scale indicators (Study 1 mean per item = 0.09%, range = 0% - .3%; Study 2 mean per item < 0.7%, range = 0.67% - 1.01%). Due to a programming error in Study 2 only, one prejudice item was missing completely at random (i.e., a different item for different participants) for all participants. Because these data were missing completely at random, they were modeled using full information maximum likelihood (FIML) (see Brown, 2015).

Goodness of fit was evaluated with the chi-square test, comparative fit index (CFI), Tucker-Lewis index (TLI), root-mean-square error of approximation (RMSEA), and the standard root mean square residual (SRMR). Hu and Bentler (1999) recommend that good fit is indicated by a non-significant chi-square test, CFI value close to .95, TLI close to .95, RMSEA close to
.06, and a SRMR value close to .08. However, the chi-square test for model fit often is significant, so models with smaller chi-square values are considered better. In addition, the Akaike Information Criterion (AIC) was examined when comparing models, with a smaller AIC value suggesting a better fit to the data.

Tables 1 and 2 present descriptive statistics and correlations from Studies 1 and 2 (see supplemental materials for item-level correlations). Correlations between the prejudice subscales suggested that the ambivalent model of prejudice would not be a good fit to the data. Instead of the anticipated strong positive correlation between dependence and idealization, these variables were unrelated in Study 1 and negatively correlated in Study 2. Furthermore, dependence showed a moderate, positive correlation with harm and separation, the theoretically hostile prejudice subscales. Taken together, these patterns suggest that participants had hostile rather than benevolent beliefs about dependence. Across both samples, harm, separate, and dependence showed moderate to strong positive correlations with dehumanization and negative correlations with social policy support. However, idealization showed the opposite pattern of results. Overall, the patterns of correlations suggest that a hostile model of prejudice may provide a better fit to the data than an ambivalent model.

**Model 1: Ambivalent Prejudice.** We turn first to performance of the ambivalent prejudice model. In this theoretical conceptualization of prejudice, harm and separation should reflect hostile prejudice, and should be positively correlated with one another. Similarly, dependence and idealization should reflect benevolent prejudice, and should be positively correlated with one another. Importantly, despite the positive tone of dependence and idealization items, hostile and benevolent prejudice should be positively correlated (Glick & Fiske, 1996). Therefore, a model (Figure 1) composed of four correlated factors was examined.
As shown in Table 3, the model fit statistics suggested an adequate fit to the data. Table 4 shows that all indicators in Study 1 had respectable factor loadings on their subfactors. However, idealization was negatively correlated with harm, separate, and dependence (Table 5). If prejudice toward people with autism and Down syndrome is ambivalent, dependence and idealization should be strongly, positively correlated with one another. Furthermore, these two factors of benevolent prejudice should be moderately and positively correlated with the two factors of hostile prejudice. The factor correlations in Study 1 clearly do not support an ambivalent model of prejudice.

Analyses of data from Study 2 confirmed that the ambivalent model of prejudice did not fit the data well. Although all items had respectable loadings onto their respective factors (Table 4), the fit statistics suggested a poor fit for the data (see Table 3). As in Study 1, Idealization was negatively correlated with Dependent (Table 5).

In sum, our findings did not support the idea that prejudice toward people with developmental disabilities takes an ambivalent form. The four-factor model that received some support in Study 1 was not supported in Study 2. Idealization and dependence were not positively related, as would be expected for benevolent attitudes. Furthermore, dependence was positively related to harm and separate, suggesting that participants evaluated the dependence of people with developmental disabilities negatively, so that dependent-related beliefs may actually contribute to hostile prejudice.

**Model 2: Hostile Prejudice.** Next, we consider performance of the hostile prejudice model shown in Figure 2. This model conceptualizes harm, separate, and dependence as negative beliefs feeding into hostile prejudice.

The hostile model provided an excellent fit in Study 1 (see Table 3), and a significantly
better fit than the ambivalent model, $\Delta \chi^2(55) = 80.76, p < .02$. We also found that all Study 1 indicators had respectable factor loadings onto their subfactors (see Table 4), and the correlations between the harm, separate, and dependent factors were all positive and significant (see Table 5).

Despite large and significant factor loadings (Table 4), poor model fit was observed in Study 2 (see Table 3). Modification indices for Study 2 suggested that the model fit would be considerably improved if two pairs of item disturbances were allowed to covary (“People with [autism/Down syndrome] need others to care for them” with “People with [autism/Down syndrome] need to be cared for because they are childlike and innocent,” and “I feel uncomfortable around people with [autism/Down syndrome]” with “People with [autism/Down syndrome] should spend time together rather than in settings with non-disabled people”). When correlations between the disturbances for these items were added to the model, the fit improved significantly, $\Delta \chi^2(2) = 94.13, p < .001$, and the overall fit to the data was adequate (see Table 3). As in Study 1 data, factor correlations between harm, separate, and dependent were positive and significant.

Furthermore, the hypothesized three-factor model of hostile prejudice provided a significantly better fit to the data than a simpler single-factor model of hostile prejudice or a two-factor model of hostile prejudice in both Studies 1 and 2.

**Measurement Invariance**

Our second goal was to examine whether the final APDD scale assessed the same constructs for both groups. Measurement invariance analyses (MI) are essential for determining whether a measure is appropriate for use in different groups (Brown, 2015). The developmental disabilities of autism and Down syndrome have distinct characteristics and differ in key ways (e.g., physical characteristics), which could potentially affect the nature of prejudice toward these
groups. For this reason, we assessed three levels of MI on the three-factor model of hostile prejudice from least to most restrictive: configural, metric, and scalar (Brown, 2015). Furthermore, MI analyses allowed us to compare latent means on the prejudice latent variables across groups. We assessed MI based on change in $\chi^2$ and overall model fit. Fit statistics for the invariance models are presented in Table 6. We found support for scalar invariance between groups in Study 1, allowing for comparison of latent factor means in the scalar model. The latent mean for dependent was significantly higher for Down syndrome than autism: $\kappa_{\text{Down syndrome}} = .52$, $SE = .16$, $z = 3.19$, $p < .001$. However, the two groups did not differ on the latent means for the harm or separate factors ($ps > .35$).

Examining the data from Study 2, we found support for partial scalar invariance (Table 6) by freeing two indicator intercepts that differed between groups (“When people with [austism/Down syndrome] are in public settings, there is always the risk that they will harm others” and “Children with [austism/Down syndrome] should be in the same classroom as non-disabled children”) allowing us to examine latent mean differences between groups. As in Study 1, people with autism were rated as less dependent than people with Down syndrome, $\kappa_{\text{Down syndrome}} = .26$, $SE = .13$, $z = 2.01$, $p < .05$. In addition, people with autism were rated as more harmful than people with Down syndrome, $\kappa_{\text{Down syndrome}} = -.84$, $SE = .15$, $z = 5.52$, $p < .001$.

These analyses suggest that the APDD equivalently assesses prejudice toward people with autism and Down Syndrome. Furthermore, they suggest that people tend to view people with Down syndrome as more dependent on others than people with Autism.

**Attitudes toward People with Developmental Disabilities (APDD) Scale**

The final 14-item prejudice measure (see Appendix A), the Attitudes toward People with Developmental Disabilities (APDD) scale, was formed by averaging ratings for the harm,
Dehumanization, Prejudice, and Social Policy Beliefs

A primary goal of Studies 1 and 2 was to examine the relationship between prejudice, dehumanization and social policy support. As expected, greater dehumanization was associated with higher APDD scores in Study 1, \( r(195) = .53, p < .001 \), and Study 2 \( r(290) = .61, p < .001 \). Furthermore, greater dehumanization was associated with reduced support for beneficial social policies in Study 1, \( r(195) = -.35, p < .001 \), and Study 2, \( r(290) = -.25, p < .001 \). Higher scores on the APDD were also associated with reduced support for social policies in both Study 1, \( r(195) = -.34, p <.001 \), and Study 2, \( r(290) = -.47, p <.001 \).

Next, we examined dehumanization, prejudice, and social policy beliefs in a mediation model using Hayes’s (2013) PROCESS macro (Model 4) with 5000 bootstrapped samples. As shown in Figure 3, the indirect effect was significant in Study 1, 95% CI [-.31, -.04], and in Study 2, 95% CI [-.55, -.22]. This suggests that dehumanization of people with developmental disabilities decreases support for social policies benefiting this target group through hostile prejudiced attitudes. These findings also suggest that interventions aimed at reducing dehumanization should likewise reduce prejudice and increase support for social policies benefitting people with developmental disabilities.¹²

We also examined a moderated mediation model to assess whether any of the paths in the dehumanization\(\rightarrow\)prejudice\(\rightarrow\)social policy model were moderated by autism or Down syndrome condition (PROCESS model 59, Hayes, 2013). We did not find evidence of significant moderated mediation in either Study 1, 95% CI [-.19, .41], or Study 2, CI [-.37, .25]. Thus, prejudice mediated the effects of dehumanization on social policy support similarly for both people with autism and people with Down syndrome.
Study 3

Thus far, our research has established that prejudice toward people with developmental disabilities takes a hostile rather than benevolent form. Support was found for a multidimensional measure of hostile prejudice including harm, separate, and dependence subfactors, with this structure holding across both autism and Down syndrome. Next, we set out to test the construct validity of this measure of prejudice by examining its relation to other measures. First, we examined relations with other attitudinal measures for tapping into prejudice toward people with developmental disabilities, and we predicted positive but non-redundant relations. Second, we tested for a positive relation between the APDD and Social Dominance Orientation, one of the most powerful individual difference predictors of intergroup attitudes and behavior (Ho et al., 2015). Third, consistent with the conceptualization of the APDD as a hostile measure of prejudice, we expected it to be more strongly related to hostile than benevolent attitudes toward women as assessed with the Ambivalent Sexism Inventory (ASI; Glick & Fiske, 1996). Finally, we also examined the relation between APDD and inclinations toward social desirable responding. Given explicit measures of prejudice tap into socially sensitive attitudes, we expected the APDD to show some relation with social desirability (as Glick & Fiske, 1996, found for ambivalent sexism). However, we did not expect a strong relation, and the relation should be no stronger than the relations between social desirability and other indicators of prejudice toward people with developmental disabilities.

Method

Participants

Participants were 151 MTurk workers (56.3% women; $M_{age} = 40.82$, $SD_{age} = 13.29$; 84% White, 3% Asian, 7% Black, 5% Hispanic, 1% other).
Procedure

After providing online consent, participants were randomly assigned to complete the APDD scale with respect to people with either autism or Down syndrome. Participants then completed the other measures, with order randomized across participants. These measures included 1) semantic differential items (e.g., good—bad; ugly—beautiful; 1-7 ratings); 2) a feeling thermometer measure concerning the target group (0 = cold/unfavorable; 10 = warm/favorable; reverse-scored); 3) the 8-item SDO7 scale (Ho et al., 2015) (e.g., “An ideal society requires some groups to be on top and others to be on the bottom”; 1 to 7 ratings); 4) the ASI (Glick & Fiske, 1996), including the 11 hostile (“Most women interpret innocent remarks or acts as being sexist”) and 11 benevolent (“A good woman should be set on a pedestal by her man”) items (0 – 5 ratings); and 5) the 20-item Impression Management (e.g., “I never swear”) and 20-item Self-Deception (“e.g., “I never regret my decisions”) subscales of Paulhus’s (1991) Balanced Inventory of Desirable Responding (BIDR; 1-7 scales). Composites were formed following Paulhus’s (1991) scoring instructions.

Results

Descriptive statistics are shown in Table 7. Skewness and kurtosis values for all variables fell within acceptable ranges. The APDD was related to other measures in ways that support its construct validity. First, as shown in Table 7, moderate correlations were observed between the APDD the semantic differential and feeling thermometer measures. As expected, APDD scores were moderately and positively related to scores on the SDO7 scale. Supporting our contention that attitudes toward people with developmental disabilities takes a hostile form, APDD scores were moderately related to the hostile sexism subscale of the Ambivalent Sexism Inventory, and tended to be more weakly related to the benevolent sexism subscale, $Z = 1.48$, $p = .07$ (one-
Study 4

The main purpose of Study 4 was to examine the effectiveness of two potential strategies for reducing prejudice toward people with autism and Down syndrome. If this prejudice is rooted in dehumanization, then an intervention designed to humanize people with developmental disabilities should result in a significant reduction of dehumanization and prejudice, and increased support for beneficial social policies. Furthermore, increased support for social policies due to the intervention should be mediated by respective decreases in dehumanization and overall prejudice.

In addition, we investigated whether encouraging participants to individuate people with developmental disabilities would have similar positive consequences. Focusing on the individual and his/her personal characteristics, as opposed to the disability, has long been championed in fields that serve people with disabilities. Person-centered language is viewed as a method for reducing the casual depersonalization of disability-focused language. Furthermore, individuation appears to be a potent method for reducing prejudice toward outgroups (Brewer & Miller, 1988; Cooley, Payne, Cipolli, Cameron, Berger, & Gray, 2017; Fiske & Neuberg, 1990). Thus, Study 4 examined whether individuation is sufficient to reduce dehumanization and overall prejudice, and to boost support for beneficial social policies.

Method

Power Analyses

We conducted power analysis in G*Power (version 3.1.7, Faul, Erdfelder, Lang, & Buchner, 2007). We found moderate (individuation vs control: $d = .56$) to large (humanization vs control: $d = .98$) effect sizes in a pilot study testing the manipulation. Accordingly, we assumed
medium (d = .50) effect sizes in our power analysis, (d = .50), which showed we needed 155 participants to detect the effects of interest with 80% power.

**Participants**

Participants were 156 Introductory Psychology students (90 men, 66 women, $M_{age} = 19.79$ years old, $SD_{age} = 1.49$ years).

**Design**

A 2 (Autism vs. Down syndrome) x 3 (Description: Control, Individuated, Humanized) between-participants design was used.

**Procedure**

Up to seven participants completed the in-laboratory study at a time. Participants were randomly assigned to conditions. After providing consent, the experimenter explained that the study investigated attitudes toward groups. Then, through instructions provided via computers, participants either learned that they would answer questions about their thoughts and feelings toward people with autism or toward people with Down syndrome. Participants read a description of a male target with either autism or Down syndrome, ostensibly written by his mother (see Appendix B). This target was presented as a “typical” person with his developmental disability because information about typical group members is more likely to be generalized to the entire group (Rothbart & Lewis, 1988). The humanizing condition description included target information supplemented with details theoretically linked to humanization, including the target’s experience of secondary emotions (Leyens et al., 2000), his personal goals and motivation (Haslam, 2006), and his role as an active social agent involved in mutual reciprocal relations with others (Haslam, 2006). The individuation condition description included the same target information, which served to individuate him, but with non-humanizing details (e.g., the
experience of primary emotions). Participants in the control condition read a description with only minimal and general target information that neither served to humanize nor individuate him.

Then participants completed the measures of dehumanization, prejudice (i.e., the APDD), and social policy beliefs used in Study 2. In addition, participants completed the measure of social dominance orientation used in Study 3.

Next the experimenter feigned that the experiment was over but that participants could consider a petition that was unrelated to the study if chose to do so. Participants were directed to a link and the experimenter stepped left the room. All participants followed the link to a petition supposedly posted by the American Association of People with Disabilities for minimum wage protection for people with developmental disabilities, which participants could “sign.” Below the petition, participants were asked to rate (1 = not at all; 7 = very) “How favorable do you feel toward this petition?” “How interested are you in being contacted by this organization in the coming months about opportunities to get involved in similar causes?” and “How willing would you be to volunteer time in a local chapter office of the American Association of People with Disabilities over the next three months?” The “favorability” item did not correlate highly with the other items (rs < .20). The remaining two items were averaged to form a social action index (r = .74, p < .001).

The experimenter returned and fully debriefed and dismissed participants.

**Results and Discussion**

Descriptive statistics are provided in Table 9. Skewness and kurtosis values for all variables fell within acceptable ranges. The patterns of relations among dehumanization, prejudice, and social policy attitudes replicate Studies 1 and 2.

Each dependent variable was submitted to a 2 (group: autism vs. Down syndrome) X 3
(description: control, individuated, or humanized) ANOVA.

**Dehumanization**

The description manipulation significantly affected dehumanization, $F(2, 150) = 7.43, p < .001$ $\eta^2_p = .09$, 95% CI [.02, .18]. Participants were less likely to dehumanize Tim in the humanized ($M = 3.38$, $SD = .58$) and individuated ($M = 3.50$, $SD = .62$) conditions than in the control condition ($M = 3.82$, $SD = .65$), $t(150) = 3.72, p < .001$, $d = .71$, 95% CI [.34, 1.13] and $t(150) = 2.71, p = .007$, $d = .50$, 95% CI [.14, .92], respectively. The humanized and individuated conditions did not differ significantly, $p = .29$. These findings support our expectation that both individuation and humanization can reduce dehumanization.

**Prejudice (APDD)**

As expected, there was a main effect of description on prejudice, $F(2, 150) = 6.48, p = .002$, $\eta^2_p = .08$, 95% CI [.01, .16]. Participants in the humanized ($M = 3.28$, $SD = .64$) and individuated ($M = 3.09$, $SD = .78$) conditions reported less prejudice control condition participants ($M = 3.60$, $SD = .76$), $t(150) = 2.29, p = .034$, $d = .46$, 95% CI [.06, .84] and $t(150) = 3.66, p < .001$, $d = .66$, 95% CI [.32, 1.11], respectively. The humanized and individuated conditions did not differ, $p = .18$. In sum, both individuation and humanization were successful strategies for reducing prejudice toward people with developmental disabilities.

**Social Policies**

The main effect of description condition on social policy beliefs was not significant, $F(2, 150) = 1.05, p = .353$, $\eta^2_p = .01$, 95% CI [.00, .06]. On average, participants reported similar support for social policies benefitting people with autism and Down syndrome regardless of their experimental condition.

**Mediation Analysis**
We conducted a multiple serial mediation analysis to examine the effect of the description manipulation (0 = control, 1 = humanized and individuated conditions) on social policy through dehumanization and prejudice (PROCESS model 6, 5000 bootstraps, Hayes, 2013). As shown in Figure 4, participants exposed to the humanized/individuated description reported less dehumanization than participants in the control condition, less dehumanization was associated with less prejudice, and less prejudice was associated with greater social policy support. Most importantly, the full model indirect effects test (i.e., \( X \rightarrow M_1 \rightarrow M_2 \rightarrow Y \)) was significant, 95% CI [.01, .15]. This suggests that the humanized and individuated descriptions increased participants’ support for social policies by reducing dehumanization of and prejudice toward people with developmental disabilities.

However, we also found support for an alternative model in which the humanized/individuated description of the target predicted less prejudice, which in turn predicted less dehumanization, and less dehumanization was associated with greater endorsement of supportive social policy beliefs, 95% CI [.02, .12]. This finding stands in contrast to the results from Studies 1 and 2, which provided stronger support for dehumanization as an antecedent rather than outcome of prejudice. This finding may have emerged because the humanized and individuated depictions had proximal effects on both dehumanization and prejudice, a point we return to in the General Discussion.

**Petition Favorability, Petition Signatures, and Social Action**

The description of the target did not predict petition signatures, \( \chi^2 (2) = 1.01, p = .603 \), favorability toward the petition \( (p = .717) \), or the social action index \( (p = .539) \). These null findings may have been due to ceiling (121 of 155 participants signed the petition effects, as petition favorability was very high \( (M = 78\%) \) of participants signed the petition; favorability
toward the petition was $M = 5.97$ on the 7-point scale) or floor social action index $M = 5.97$. In contrast, the mean for the social action index was quite low, and fell close to the bottom of the response scale ($M = 2.87$, $SD = 1.68$, 95% CI [2.60, 3.14]). Most (78%) participants signed the petition and felt very favorable toward it ($M = 5.97$, $SD = 1.50$) but were generally unwilling to engage in social action ($M = 2.87$, $SD = 1.68$).

**General Discussion**

The four reported studies provided strong support for a hostile model of prejudice toward people with autism and Down syndrome and for the convergent, discriminant, and predictive validity of the Attitudes toward People with Developmental Disabilities (APDD) scale. Across Studies 1 and 2, support was found for a hostile model of prejudice with three correlated subfactors: harm, separation, and dependence. We did not find support for an ambivalent model of prejudice in which hostile attitudes correlated positively with more benevolent attitudes. In addition, we found that the APDD was measuring the same construct (i.e., was measurement invariant) across people with autism and Down syndrome. Study 3 supported the construct validity of the resulting APDD scale, and predictive validity was established with the scale’s consistent association with social policy beliefs across Studies 1, 2 and 4.

We had reasoned that, if prejudice toward people with developmental disabilities took a hostile form, it may be rooted in the tendency to regard this target group as innately less than fully human. Indeed, Studies 1 and 2 revealed that the more exaggerated people’s tendency to dehumanize people with developmental disabilities, the greater their prejudice. Study 4 further supported dehumanization as a root of prejudice by manipulating this variable. Participants who were encouraged either to humanize or to individuate people with developmental disabilities subsequently reported less dehumanization and prejudice, relative to a control condition. These
findings suggest concrete strategies that can be used to combat prejudice toward people with developmental disabilities.

Finally, results from Studies 1, 2, and 4 addressed the important implications of dehumanization and prejudice concerning people with developmental disabilities for social policy beliefs. Prior research has shown that dehumanization prompts cruel, degrading and violent behavior toward targets (Goff et al., 2008). The relevance of this work to well-known cases involving the aggressive mistreatment of people with developmental disabilities is obvious, such when Ethan Saylor died by asphyxiation in 2013 at the hands of police (James, 2013). The present research establishes the important implications of dehumanization, through its encouragement of prejudiced attitudes, for social policies that affect everyday access to resources and the protections of rights and individual liberties.

**Theoretical Contributions**

Beyond developing a multidimensional measure of prejudice toward people with developmental disabilities and the more applied implications of the present work (i.e., strategies for reducing prejudice and increasing social policy support), the present research makes several important theoretical contributions to the existing literature. The present work is, to our knowledge, the first attempt to test the relevance of Glick and Fiske’s widely supported theory of ambivalent prejudice as involving correlated hostile and benevolent components (Glick & Fiske, 1999; Glick et al., 2000) beyond gender-related prejudice. Despite a conceptual basis for expecting positively correlated hostile and benevolent components of attitudes toward people with disabilities, the results clearly supported only the hostile component.

The special type of attitudinal ambivalence that has been observed in relation to gender may apply only to certain groups. In fact, in their seminal chapter on attitudes toward women,
Fiske and Stevens (1993) argued that ambivalent sexism arises due to the unique relations between men and women. Specifically, high levels of contact between men and women and their mutually beneficial dyadic relationships (e.g., romantic relationships, division of labor) may require benevolent attitudes as a counterpart to hostile prejudice (Glick & Fiske, 1996). These special characteristics, present in gender relations but lacking in relations between people with and without developmental disabilities, may account for the non-ambivalent attitudes we observed. However, perhaps attitudes toward people with developmental disabilities are ambivalent in some circumstances (e.g., among parents, siblings, and care assistants who experience mutual dependence and warmth with targets).

The current work also contributes to a better theoretical understanding of the relation between dehumanization and prejudice, and their implications for social policy beliefs. As far as we are aware, this is the first set of studies to examine prejudice as a mediator of dehumanization’s effects on support for social policies affecting an outgroup. Researchers have found direct effects of blatant dehumanization (e.g., Kteily et al., 2015), subtle dehumanization (Leyens et al., 2000), and implicit dehumanization (e.g., Goff, Jackson, Di Leone, Culotta, & DiTomasso, 2014) on social policy beliefs, often while controlling for prejudice. This focus on the unique effects of dehumanization fits within a broader tradition of conceptualizing dehumanization and prejudice as distinct intergroup processes with unique outcomes. For example, Goff and colleagues (2014) found that prejudice toward Blacks predicted more negative evaluations of a child’s class performance, but dehumanization predicted perceiving a Black child as less innocent and child-like, and ultimately as more culpable for his or her actions.

However, Studies 1 and 2 provided support for a mediation model wherein greater dehumanization predicted stronger endorsement of beliefs that people with developmental
disabilities were harmful and aggressive, lacked agency and independence, and should be segregated from the rest of society. These prejudiced beliefs, in turn, predicted decreased support for key social policies that would provide people with developmental disabilities with greater access to schools and other community resources and basic supports for living independent lives, and also protections for basic liberties. Therefore, beyond its direct effects on social policy, dehumanization may exacerbate prejudice toward people with developmental disabilities, thereby further undermining social policy support.

Dehumanization and hostile prejudice toward people with developmental disabilities may have broader implications for their treatment in integrated settings. For example, arguments that people with developmental disabilities are aggressive and dangerous are raised by opponents of including children with disabilities in mainstream public-school classrooms (Tompkins & Deloney, 1995). Dehumanization and hostile prejudice may also lead police officers to perceive people with autism and Down syndrome as a threat, and to justify the use of force. Recent reports suggest that people with disabilities are involved in up to 50% of all use of force incidents with police in the United States (Perry & Carter-Long, 2016).

Limitations and Future Research

Although our results suggested that humanization and individuation are promising avenues for combatting prejudice and its negative consequences for people with developmental disabilities, additional research is needed to better understand the potential effects of presenting target information. For instance, our individuating condition may have humanized Tim to some extent (e.g., “Tim plays a part in our family”). Also, the control condition was brief in an effort to exclude any individuating information, but it may have seemed like a curt description coming from a family member. In addition, the target in these vignettes was always presented as male.
Thus, additional research is needed to examine possible effects of target information further. Research should also examine how potentially fleeting these effects are and implications for behavioral outcomes.

Additional research is also needed to better understand the relation between dehumanization and prejudice. Although Studies 1 and 2 supported a model in which dehumanization leads to prejudice, we suspect that the relation between these variables is often reciprocal and mutually reinforcing. Also, our Study 4 results supported models in which dehumanization both predicted and was predicted by prejudice. We suspect this may have occurred because presenting a target in either humanizing or individuating ways can alter both beliefs about humanness and evaluative prejudice. Future studies that manipulate dehumanization but do not directly implicate prejudice, and that manipulate prejudice but do not directly implicate dehumanization, will provide relevant insight. In addition, future research using a cross-lagged panel design will be useful for understanding whether particular causal relations exist or dehumanization and prejudice have mutually reinforcing effects.

Finally, because the present research only focused on two common forms of developmental disability (i.e., autism and Down syndrome), additional research is needed to examine physical forms of disability.

**Conclusion**

During the darkest periods of mistreatment and devaluation, people with developmental disabilities were routinely institutionalized, sterilized, and even euthanized. Progress with respect to integration, inclusive environments, and disability rights has been made. However, as the present research illustrates, prejudice takes a hostile form that is linked with dehumanization, and that perpetuates opposition to social policies that seek to protect the human rights and livelihood
of people with developmental disabilities. We hope that this initial investigation of the roots and consequences of this type of prejudice, along with potential avenues for prejudice reduction, will be instrumental in fostering future efforts to understand how further progress can be made.
References


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https://doi.org/10.1037/xge0000293


https://doi.org/10.1037/a0014989

https://doi.org/10.1016/S0065-2601(05)37002-X


Footnotes

1. In Studies 1, 2, and 4, participants also rated how severe they had assumed the disability to be while completing the study measures (1 = not at all; 7 = very). This was a single-item in Study 1. Three items (severe, debilitating, limiting) were rated in Studies 2 and 4 ($\alpha$s $\geq .73$). We wished to establish that dehumanization of people with developmental disabilities, and in turn prejudiced attitudes and social policy beliefs, were not driven by participants’ assumptions about the severity of the disability. In all studies, the predicted indirect effect of dehumanization on social policy support through prejudice held when controlling for severity beliefs, Study 1: CI [-.31, -.05]; Study 2: CI [-.46, -.20]; Study 4: CI [.01, .13].

2. We also tested two alternative mediation models with the data from Studies 1 and 2. First, although we theorized that dehumanization would be a root of hostile prejudice toward people with autism and Down syndrome, we examined whether dehumanization might mediate the relationship between prejudice and support for social policies. In Study 1, we found a significant indirect effect when examining this model, 95% CI [-.25, -.04]. However, this alternative model was not significant in Study 2, 95% CI [-.06, .13]. Thus, given support for the dehumanization $\rightarrow$ prejudice $\rightarrow$ social policy model in both studies, the results more strongly favor this conceptualization.
Table 1
Descriptive Statistics for Measures, Studies 1 and 2

<table>
<thead>
<tr>
<th></th>
<th>Study 1</th>
<th>Study 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Autism</td>
<td>Down syndrome</td>
</tr>
<tr>
<td>Dehumanization</td>
<td>( .80 )</td>
<td>3.82 (.61)</td>
</tr>
<tr>
<td>Harm</td>
<td>( .84 )</td>
<td>3.68 (1.20)</td>
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<tr>
<td>Separate</td>
<td>( .62 )</td>
<td>3.70 (.90)</td>
</tr>
<tr>
<td>Dependence</td>
<td>( .84 )</td>
<td>4.54 (1.09)</td>
</tr>
<tr>
<td>Idealization</td>
<td>( .70 )</td>
<td>4.46 (.96)</td>
</tr>
<tr>
<td>Social Policy</td>
<td>( .80 )</td>
<td>5.62 (.91)</td>
</tr>
</tbody>
</table>

*Note.* For each study, means within rows that are bolded differ significantly from each other, \( p \leq .05 \).
Table 2  
*Correlations between Measures, Studies 1 and 2*

<table>
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<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
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<td>1. Harm</td>
<td></td>
<td>.56(.65</td>
<td>.57(.42</td>
<td>-.29(___.37</td>
<td>.61(___.62</td>
<td>-.42(___.39</td>
</tr>
<tr>
<td>2. Separation</td>
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<td>.52(___.53</td>
<td>-.34(___.38</td>
<td>.48(___.58</td>
<td>-.45(___.53</td>
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<td>3. Dependence</td>
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<td>.60(___.30</td>
<td></td>
<td>-.14(___.17</td>
<td>.41(___.36</td>
<td>-.30(___.27</td>
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<td>4. Idealization</td>
<td>-.02(___.26</td>
<td>-.04(___.06</td>
<td>.01(___.28</td>
<td></td>
<td>-.51(___.53</td>
<td>.20(___.29</td>
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<td>5. Dehumanization</td>
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<td>.22(___.12</td>
<td>.54(___.55</td>
<td>-.26(___.50</td>
<td></td>
<td>-.23(___.38</td>
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<tr>
<td>6. Social Policy</td>
<td>-.33(___.27</td>
<td>-.30(___.14</td>
<td>-.40(___.23</td>
<td>.43(___.39</td>
<td>-.41(___.33</td>
<td></td>
</tr>
</tbody>
</table>

*Note.* Correlations below the diagonal are for Study 1, in which $r_s \geq .20$ are significant, $p_s \leq .05$. Correlations above the diagonal are for Study 2, in which $r_s \geq .16$ are significant, $p_s \leq .05$. For both studies, correlations before the \ are for the autism condition, and correlations after the \ are for the Down syndrome condition.
### Table 3

**Model Fit Statistics, Studies 1 and 2**

<table>
<thead>
<tr>
<th>Model</th>
<th>Model Fit Statistics</th>
<th>df</th>
<th>CFI</th>
<th>TLI</th>
<th>RMSEA</th>
<th>SRMR</th>
<th>AIC</th>
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<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Single Factor</td>
<td>Study 1</td>
<td>377.57*</td>
<td>135</td>
<td>.81</td>
<td>.79</td>
<td>.10</td>
<td>.09</td>
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<tr>
<td></td>
<td>Study 2</td>
<td>926.38*</td>
<td>135</td>
<td>.60</td>
<td>.55</td>
<td>.14</td>
<td>.11</td>
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<tr>
<td>Two Correlated Factors</td>
<td>Study 1</td>
<td>373.02*</td>
<td>134</td>
<td>.81</td>
<td>.79</td>
<td>.10</td>
<td>.09</td>
</tr>
<tr>
<td></td>
<td>Study 2</td>
<td>869.71</td>
<td>134</td>
<td>.63</td>
<td>.58</td>
<td>.14</td>
<td>.11</td>
</tr>
<tr>
<td>Four Correlated Factors</td>
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<td>197.79*</td>
<td>129</td>
<td>.95</td>
<td>.94</td>
<td>.05</td>
<td>.06</td>
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<tr>
<td></td>
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<td>481.23*</td>
<td>129</td>
<td>.82</td>
<td>.79</td>
<td>.10</td>
<td>.09</td>
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<td><strong>Hostile Model</strong></td>
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<td></td>
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<td></td>
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<tr>
<td>Single Factor</td>
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<td>.95</td>
<td>.95</td>
<td>.06</td>
<td>.05</td>
</tr>
<tr>
<td></td>
<td>Study 2</td>
<td>474.52*</td>
<td>77</td>
<td>.72</td>
<td>.67</td>
<td>.13</td>
<td>.08</td>
</tr>
<tr>
<td>Two Correlated Factors</td>
<td>Study 1</td>
<td>123.64*</td>
<td>76</td>
<td>.96</td>
<td>.95</td>
<td>.06</td>
<td>.05</td>
</tr>
<tr>
<td></td>
<td>Study 2</td>
<td>355.92*</td>
<td>76</td>
<td>.81</td>
<td>.77</td>
<td>.11</td>
<td>.07</td>
</tr>
<tr>
<td>Three Correlated Factors</td>
<td>Study 1</td>
<td>117.03*</td>
<td>74</td>
<td>.96</td>
<td>.95</td>
<td>.06</td>
<td>.04</td>
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<tr>
<td></td>
<td>Study 2</td>
<td>279.59*</td>
<td>74</td>
<td>.86</td>
<td>.82</td>
<td>.10</td>
<td>.07</td>
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<tr>
<td></td>
<td>Study 2, model B</td>
<td>185.46*</td>
<td>72</td>
<td>.92</td>
<td>.90</td>
<td>.07</td>
<td>.05</td>
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</tbody>
</table>

*Notes:* Study 2, model B includes correlated disturbances. *p < .01.*
Table 4  
*Standardized Factor Loadings for Prejudice Items*

<table>
<thead>
<tr>
<th>Scale</th>
<th>Ambivalent Study 1</th>
<th>Ambivalent Study 2</th>
<th>Hostile Study 1</th>
<th>Hostile Study 2</th>
<th>Hostile Study 2 with correlated dist.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Harm</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| When people with [A/DS] are in public settings, there is always the risk that they will harm others.  
Many people with [A/DS] become angry and aggressive without warning.  
People with [A/DS] are impulsive and unpredictable.  
Because they lack moral control of their own behavior, people with [A/DS] require constant supervision.  
People with [A/DS] behave appropriately when in public.  
People with [A/DS] are harmless.  
People with [A/DS] can live independent, fulfilling lives.  
People with [A/DS] need others to care for them.  
People with [A/DS] need to be cared for because they are childlike and innocent.  
People with [A/DS] need to be protected by others.  | .84  | .71  | .84  | .71  | .72  |
|               |                    |                    |                 |                 |                                      |
| **Separate**  |                    |                    |                 |                 |                                      |
| Children with [A/DS] should be in the same classrooms as non-disabled children.  
I feel uncomfortable around people who have [A/DS].  
There ought to be special housing developments just for people with [A/DS].  
People with [A/DS] should spend time together rather than in settings with non-disabled people.  
I prefer not to interact with people who have [A/DS].  | .54  | .43  | .54  | .42  | .46  |
|               |                    |                    |                 |                 |                                      |
| **Dependence**|                    |                    |                 |                 |                                      |
| People with [A/DS] can live independent, fulfilling lives.  
People with [A/DS] need others to care for them.  
People with [A/DS] need to be cared for because they are childlike and innocent.  
People with [A/DS] need to be protected by others.  | .71  | .72  | .71  | .72  | .75  |
People with [A/DS] should always be accompanied in public. .76 -- .76 -- --
People with [A/DS] are unable to care for themselves. .73 -- .73 -- --
People with [A/DS] need others to make their decisions, rather than being able to make decisions themselves. -- .80 -- .80 .79

**Idealization**

People with [A/DS] are inspirational. .81 .95 -- -- --
Individuals with [A/DS] are heroes. a .73 .76 -- -- --
People with [A/DS] are sweeter and happier than people without disabilities. a .43 .48 -- -- --
People without a disability should make sacrifices for people with [A/DS]. .47 -- -- -- --
Individuals with [A/DS] overcome many hardships. -- .41 -- -- --

a indicates items were reworded in minor ways between studies; Study 2 wording shown here.
-- indicates item was not included in study
Table 5

*Factor Correlations, Studies 1 and 2*

<table>
<thead>
<tr>
<th></th>
<th>Harm</th>
<th>Separate</th>
<th>Dependent</th>
<th>Idealization</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Harm</strong></td>
<td></td>
<td>.69**</td>
<td>.95**</td>
<td>-.20*</td>
</tr>
<tr>
<td><strong>Separate</strong></td>
<td>.72**</td>
<td></td>
<td>.77**</td>
<td>-.58**</td>
</tr>
<tr>
<td><strong>Dependent</strong></td>
<td>.57**</td>
<td>.65**</td>
<td></td>
<td>-.27**</td>
</tr>
<tr>
<td><strong>Idealization</strong></td>
<td>-.33**</td>
<td>-.52**</td>
<td>-.27**</td>
<td></td>
</tr>
</tbody>
</table>

*Note:* Correlations for Study 1 are above the diagonal. Correlations from Study 2 are below the diagonal. * *p < .05  ** *p < .01*
Table 6  
Measurement Invariance Test Fit Statistics, Studies 1 and 2

<table>
<thead>
<tr>
<th>Model</th>
<th>$\chi^2$</th>
<th>df</th>
<th>p</th>
<th>CFI</th>
<th>TLI</th>
<th>RMSEA</th>
<th>SRMR</th>
<th>AIC</th>
<th>Model Comparison</th>
<th>$\Delta\chi^2$</th>
<th>df</th>
<th>p</th>
<th>$\DeltaCFI$</th>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<td>1. Configural</td>
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<td>148</td>
<td>.003</td>
<td>.950</td>
<td>.939</td>
<td>.06</td>
<td>.06</td>
<td>8437.08</td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<td>2. Metric</td>
<td>210.98</td>
<td>160</td>
<td>.004</td>
<td>.950</td>
<td>.943</td>
<td>.06</td>
<td>.07</td>
<td>8426.03</td>
<td>2 to 1</td>
<td>10.97</td>
<td>11</td>
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<td>.08</td>
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Table 7

*Relation between APDD and Other Measures, Study 3*

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<td>5. Hostile Sexism</td>
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<td>-.28**</td>
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<td>8. Self-Deception</td>
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*Note:* Ns range from 145 to 151, varying due to missing data points. Reliabilities (alpha) are on the diagonal. APDD = Attitudes toward People with Developmental Disabilities; SDO = Social Dominance Orientation.

* *p* ≤ .01, ** *p* < .001.
Table 8

Relation between APDD and Other Measures, Controlling for Impression Management and Self-Deception, Study 3

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<td>SDO</td>
<td>.33*</td>
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<td>Hostile Sexism</td>
<td>.38*</td>
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<tr>
<td>Benevolent Sexism</td>
<td>.31*</td>
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</table>

Note: Ns range from 141 to 146, varying due to missing data points. APDD = Attitudes toward People with Developmental Disabilities; SDO = Social Dominance Orientation.  
* p < .001
Table 9
*Descriptive Statistics, Reliabilities, and Correlations for all Measures, Study 4*

<table>
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<td>.28**</td>
<td>.18*</td>
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<td>4. Petition Favorability</td>
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*Note. N =156. Values on the diagonal represent scale reliabilities (αs).*
* p < .05, ** p < .001
Figure 1. Correlated Ambivalent Model of Prejudice, Studies 1 and 2.
Figure 2. Correlated Hostile Model of Prejudice, Studies 1 and 2.
Study 1

![Diagram for Study 1]

- Dehumanization $\rightarrow$ Prejudice $\rightarrow$ Social Policy Beliefs
- $B = 0.35, p = 0.002$
- $B = 0.74, p < 0.001$
- $B = 0.22, p = 0.007$

*Indirect Effect* = 0.16, 95% CI [-0.31, -0.04]

Study 2

![Diagram for Study 2]

- Dehumanization $\rightarrow$ Prejudice $\rightarrow$ Social Policy Beliefs
- $B = 0.06, p = 0.477$
- $B = 0.70, p < 0.001$
- $B = 0.54, p < 0.001$

*Indirect Effect* = 0.39, 95% CI [-0.55, -0.25]

*Figure 3.* The effect of dehumanization on support for beneficial social policies mediated by prejudice, Studies 1 and 2. Path values are unstandardized coefficients.
Indirect Effect = .06, 95% CI [.01, .15]

Figure 4. The effect of condition on support for beneficial social policies mediated by dehumanization and prejudice, Study 4.
Appendix A

Ratings recorded on 1 (strongly disagree) to 7 (strongly agree) scales.

Harm
1. When people with [autism/Down syndrome] are in public settings, there is always the risk that they will harm others.
4. People with [autism/Down syndrome] are harmless. (reverse-scored)

Separate
6. Children with [autism/Down syndrome] should be in the same classroom as non-disabled children. (reverse-scored)
7. There ought to be special housing developments just for people with [autism/Down syndrome].
9. I prefer not to interact with people who had [autism/Down syndrome].
10. I feel uncomfortable around people who have [autism/Down syndrome].

Dependent
13. People with [autism/Down syndrome] need to be protected by others.
14. People with [autism/Down syndrome] need others to make their decisions, rather than being able to make decisions themselves.
Appendix B

Description of Tim, Study 3

Initial instructions:

The study that you will complete today is investigating viewpoints about people with (Autism/Down syndrome). Because many people may not be familiar with people with (Autism/Down syndrome), you will have the opportunity to read a description of a typical person with (Autism/Down syndrome). Please take this time to look over the description of Tim that has been written by his mother.

1) Humanization condition:

Despite his developmental disability, Tim is a regular guy in many ways. He is 18 years old. He loves watching football each weekend, listening to his favorite songs on the radio, and spending time with his friends and family. Tim plays an important role in our family. He is our resident comedian, playing pranks and working to keep everyone laughing. Tim’s also really close to his older brother. Although Tim would get jealous of him when they were much younger, Tim really looks forward to talking to his brother now that they live in different states. They don’t get the chance to speak very often, but when they do it cheers them both up immensely.

Tim is still in High School, but when he is done he wants to get a job. He’s not sure what he’d like to do yet, but his goal is very important to him. Tim enjoys working with food in the kitchen. He just needs to find the best way to achieve his goals.

2) Individuation Condition

Despite his developmental disability, Tim does many regular things. He is 18 years old. He watches football each weekend, listens to music on the radio, and is around family and friends. Tim plays a part in our family. Tim’s silly behavior often makes us laugh. Tim’s really close in age to his older brother. Although Tim would get angry around him when they were much younger, Tim still hears from his brother even though they live in different states. They don’t get a chance to speak very often, but when they do his brother keeps the conversation going.

Tim is still in High School, but when he is done he may get a job. I’m not sure what he’d do yet. Tim spends time working with food in the kitchen each week. We just need to find the best way to apply his skills.

3) Control Condition

Tim does many things each week. He is 18 years old. Tim is one of two boys in our family. He is really close in age to his older brother. Even though they live in different states, they still get to see each other every now and then. Tim is still in High School, but when he is done he may get a job.