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Toward a Behavior Analysis of Discrimination and Prejudice: Racism, Sexism, and the Stigmatization of Autism

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TOWARD A BEHAVIOR ANALYSIS OF DISCRIMINATION AND PREJUDICE: RACISM, SEXISM, AND THE STIGMATIZATION OF AUTISM

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By

Claire Marie Zuch

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TOWARD A BEHAVIOR ANALYSIS OF DISCRIMINATION AND PREJUDICE:

RACISM, SEXISM, AND THE STIGMATIZATION OF AUTISM

Psychology

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ABSTRACT

Behavior analysts are becoming increasingly aware of and involved in the study of issues related to sex, gender, disability, prejudice, and discrimination. This thesis integrates and discusses two collaborative manuscripts that revolve around the shared subject matter of multi-level research on systemic issues. In the first chapter, sexism and gender bias are conceptualized and informed by the framework of the nested sociobehavioral model of racism developed by Belisle et al. (2022), including implicit bias, selective gender norms, and systemic oppression, while integrating feminist and queer theories in the analysis. A model-dependent scoping review of research in major behavior analytic journals from 2000 to 2022 was conducted to locate research related to racism and sexism. Results were categorized using the nested model and the theory-to-impact framework developed by Dixon et al. (2018). Results showed that 7 of the included journals contained studies focusing on racism or sexism. Discrepancies were observed between conceptual studies that emphasized systemic oppression and experimental studies that focused on implicit bias and relational framing. Results indicate a clear need for more extensive research to guide the advancement and widespread use of practical technologies. To support emerging research in areas of stigmatization and discrimination, the second chapter summarizes a set of 2 experiments that evaluated negative stigmatization beliefs toward autistic individuals using an analytic framework rooted in Relational Density Theory (RDT; Belisle & Dixon, 2020). In the first experiment, the relational network was modeled using a multidimensional scale containing positive and negative stigmatic descriptors, and labels referring to autism. The results indicated the presence of negative stigmatic biases in all three samples, with the behavior analysts and technicians sample demonstrating the greatest overall biases. In the second experiment, a new sample was asked to report their preference among various individuals to complete tasks given the presence or absence of autism and stigmatizing descriptors. Participants showed a preference for the average person when in the presence of stigmatic descriptor words. Altogether, results show the interaction between complex relational behavior and stigmatization and speak to the potential interlocking behavior contingencies and metacontengencies that harm marginalized individuals.

Keywords: prejudice, discrimination, autism, stigmatization, Relational Density Theory, interlocking behavioral contingencies, metacontengencies

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OVERVIEW

This work integrates two collaborative papers, which have been submitted to prominent journals in the field of behavior analysis. The first manuscript of this thesis was submitted to Behavior and Social Issues (Zuch et al., 2023). Behavior and social issues primarily operate within the framework of the sub-discipline of cultural systems analysis of behavior analysis although does consider contrasting perspectives for contributions. This journal serves as an appropriate platform for those who aim to explore the role of a natural science of behavior to foster cultures of social justice human rights, and environmental sustainability. Behavior and Social Issues is a journal that tackles cultural systems analysis. The second manuscript of this thesis was submitted to The Journal of Contextual Behavioral Science (Zuch et al. 2023). The Journal of Contextual Behavioral Science approaches uses systematic and pragmatic approaches to comprehend behavior, address human issues, and foster human progress. They employ functional principals and theories to examine and adjust action within its historical and situational contexts with the aim to predict and influence behavior across behavioral domains and levels of analysis. Thus, advancing a more comprehensive and relevant response from behavioral science to the complexities of the human condition.

Minority groups face prejudice and discrimination at the hand of the majority, and these experiences are complex and diverse. Prejudice and discrimination are not limited to a single pattern, but rather encompass a range of behaviors. These behaviors can vary from indirect and subtle forms of discrimination to more overt acts of bias and prejudice. Described in terms of behavior, prejudice can be understood as the result of negative relations that are taught and derived, contingent upon social conditioning, and have a detrimental impact on marginalized

groups (Walther et al., 2005). Discrimination is defined as the negative behaviors carried out by privileged individuals that lead to disparities in the histories of reinforcement and punishment for marginalized racial groups, even when all other conditions remain the same. Internal thoughts and feelings as well as external actions contribute to systemic disadvantages based on factors such as race, gender, and disability (Al Ramiah et al., 2010). Discrimination and prejudice are not always experienced due to a single identity of a person as many people hold identities that intersect with one another (Combahee River Collective, 1978; Crenshaw, 1989).

Race, gender, and disability are examples of intersecting identities in which individuals are classified based on various physical and social attributes. The favorability of these attributes is often determined by the selection of cultural contingencies by the dominant group (Saini & Vance, 2021), which in the context of this paper is neurotypical white men. Behavior analysis must be a part of the conversation to being making changes in these cultural contingencies that maintain systemic issues. Methods developed in behavior analysis have the capacity to change contingencies which should be taken and applied to larger issues regarding race, gender, and disability. Calls for research centered around systemic topics have come from those inside the field to address the issues of racism (Gingles et al., 2022) and sexism (Baires & Koch, 2020) with a behavior-analytic approach.

The field of behavior analysis should conduct research at multiple levels of research that explore multiple levels of contextual control. Dixon et al. (2018), details a Theory-to-Impact model that adopts a reticulating framework to categorize research by assuming five different levels of research: theory, basic, translational, implementation, and impact. Theoretical work that is brought forth based on available evidence is categorized as theory. Research that evaluates these theories in a contrived setting is categorized as basic and often times includes translational

research efforts. Implementation research utilizes principles derived from basic and translational studies to tackle behavior that holds social significance within real-life environments. The broad-scale transformations in social experiences that occur when technologies are introduced are classified as impact research.

Research must also center on multiple levels of contextual control to evaluate behaviors that are harmful and socially significant to minority groups. To evaluate contextual control at multiple levels new models must be developed such as Belisle et al. (2023) which proposed the Nested Model of Racism. The nested model details the multiple interlocking behavioral contingencies and larger metacontengencies that underly racism through three contingency systems. The innermost level of implicit bias is explained as the verbal relations that form around the dimension of race. In the next layer, white privilege describes interlocking contingencies in which the differential punishment and reinforcement of behavior on the basis of race occurs. In the final layer, systemic racism is described as arising from metacontengencies that shape the creation of laws, policies, and regulations, resulting in unequal advantages for white individuals while people of color experience either neutral outcomes or harm. Taken together, the Theory-to-Impact model and the Nested Model of Racism are used to guide the development of the methodology for the first study and allow for the contextual analysis of the systemic issues of racism and sexism within multiple levels of research.

To be able to make a socially significant impact in these areas and address the relational complexity of these issues, the development of more advanced theories is necessary (Dixon et al., 2018). Theories such as Relational Frame Theory (RFT; Barnes-Holmes et al., 2001) along with Relational Density Theory (RDT; Belisle & Dixon 2020) provide a way to approach these topics. RFT provides a contemporary behavioral account of human language and cognition.

Extending from RFT, RDT attempts to model higher-order interactions of relational behavior through a quantitative account of relational behavior. RDT states that relations vary not only in their topography but also vary in the strength of the relations. Both of these theories have been utilized to study the relational frames that surround issues such as race (Belisle et al., 2023) and gender stereotyping (Sickman et al., 2023). Using these types of advanced theories allows for the analysis of complex relational frames as well as the changes of these frames as a result of a certain context. When considering systemic issues context is important as discrimination and prejudice are formed in interlocking contingency systems. By including frameworks like RDT the complexity of these issues in basic and translational research, behavior analysis has the ability to gain more knowledge about major systemic issues that we are dealing with today.

A MODEL DEPENDENT SCOPING REVIEW OF RESEARCH ON SEXISM AND RACISM IN MAJOR BEHAVIOR ANALYTIC JOURNALS

The current manuscript was initially submitted to Behavior and Social Issues by the contributing authors Jordan Belisle, Ashley Payne, Dana Paliliunas, Elana Sickman, and Breanna Lee. The contents of this manuscript and authorship may differ from the finalized version based on review and revision. Correspondence regarding the thesis should be directed to Claire Zuch (cmz12@live.missouristate.edu) and correspondence regarding the manuscript should be directed to Dr. Jordan Belisle at Missouri State University (jbelisle@missouristate.edu).

Minority racial and gender groups have experienced significant social disadvantages within Westernized countries (Simpson & Yinger, 1985). Dismantling oppressive systems is a multidisciplinary effort that could benefit from the inclusion of behavior analysts operating within a functional and contextual worldview. Functional contextualism emphasizes the ongoing interaction between behavior and an evolving context while adopting a pragmatic truth criterion that is deeply compatible with constructivist scientific approaches (Fox, 2006; Hayes & Hoffman, 2019). There are many behaviors (both private, as in thoughts and feelings, and public, as in overt action) that contribute to systemic disadvantages on the basis of one's race, gender, and intersectional identities, ranging from indirect and subtle to readily apparent acts of discrimination. For example, a woman of color may experience greater challenges in a predominantly white workplace when colleagues avoid social interactions, label assertive actions as "aggressive," or behave in ways that lack cultural awareness and humility. These actions can create barriers within the workplace and psychosocial harm in the form of stress and impacts that extend beyond the workplace (Feagin, 2005). Importantly, the experiences of colleagues as well

as the person harmed are rooted within longstanding and historical systemic contingencies that maintain privilege and perpetuate harm (Maass & Cadinu, 2003; Gingles, 2022).

An important element of functional contextualist thought is that perceived differences on the basis of race and gender are socially constructed. That is, people can be categorized along a multitude of physical and social dimensions, and the relative emphasis on these intersections is often selected by cultural contingencies within dominant cultures. For example, the concept of race is not grounded in meaningful biological differences between people but was a concept that emerged in the mid-17th century to justify social hierarchies that allowed for the enslavement of Africans in colonial America (Harvey, 2016). As noted by Haney López (1994), "like every other group now racially defined, White identity is a product of social history, not science or biology." Similarly, the concept of gender also differs from that of biological sex, where the former is socially constructed, and the latter is based on chromosomal and reproductive differences. Gender-based norms, roles, and behaviors differ across cultures, social groups, families, and between people in relationships; however, historically within Westernized cultures, gender roles have afforded less opportunity for people who identify as women compared to those who identify as men (Godsil et al., 2016), and for those whose identity differs from their gender assigned at birth (i.e., gender minority groups, Austin 2016). Voices of those from multiple intersectional minority identities can be left out and excluded (Crenshaw, 1991; Harnois, 2014), for example within earlier feminist movements that largely centered an exclusive narrative around the experiences of white, middle-class women (Jonsson, 2014).

A recent special issue on racism against Black communities and police brutality in *Behavior Analysis and Practice* led to several conceptual papers addressing racism and intersectional experiences at multiple levels of analysis, although the current state of the

behavioral literature on both racism and sexism has not yet been systematically analyzed. Scoping reviews are useful in identifying knowledge gaps and provide guidance and implications for future research (Tricco et al., 2016). The purposes of a scoping review include assessing the size, variety, and characteristics of evidence by employing a structured methodology to map out evidence related to a specific topic or question. Instead of addressing specific well-defined inquiries for a specified intervention or making comparisons in populations commonly addressed in systematic reviews; scoping reviews explore broader questions related to an intervention or the gaining of insights into existing knowledge on a particular topic. Scoping reviews of behavior analytic research have been conducted on topics like interventions in the classroom (Curiel et al., 2022), the underrepresentation of women in research (Lovelace et al., 2022), and the impact of ABA intervention for autistics (Gitimoghaddam et al., 2022). Scoping reviews extend from theoretical frameworks that allow for the categorization of the literature. Two models may provide a framework from which to begin to sort and categorize research related to racism and gender discrimination. First, Dixon et al. (2018) also proposed the theory-to-impact model as a way to evaluate emerging research on non-traditional topics in behavior analysis, suggesting that successful research emerges at multiple levels, including theoretical, basic, translational, implementation, and impact research. Second, Belisle et al. (2022) developed a nested sociobehavioral model of racism to inform research on police brutality as part of the special issue. Their model emphasized relational framing (bias), interlocking contingencies (privilege), and metacontingencies (systemic oppression), while borrowing heavily from Critical Race Theory (CRT; Delgado & Stefancic, 2017) to inform its development.

Synthesizing Theoretical Models to Inform the Review

Theory to Impact Model. According to Dixon et al. (2018), behavioral research which focuses on derived stimulus relations has led to advances in theoretical research and laboratory discoveries, but behavioral scientists have largely failed to translate this work to influence issues of immense social importance. The authors described a theory-to-impact model that may help to categorize research occurring at multiple levels that also adopts a reticulating framework. In theoretical research, authors propose ideas or reapproach existing ideas based on available evidence. Basic research evaluates the application of various theories under tightly controlled experimental conditions and can include translational research efforts. Implementation research applies established principles from basic and translational work to address socially meaningful behavior in real-world settings. Finally, impact research evaluates large-scale changes in social experiences when technologies are introduced. According to the authors, applied behavior analysts are primarily tasked with research at the translational and implementation layers of the nested model, and research must occur at all five levels to achieve social impact. This is consistent with Ruiz and Roche's (2007) call on behavior analysts to "serve the world" through bidirectional research efforts.

Nested Model of Racism. The nested sociobehavioral model was developed from core tenants in CRT to help gain a better understanding of the culture surrounding race and to influence how American societies function around race (Delgado & Stefancic, 2017; Ladson-Billings, 1998). CRT is based on five assumptions: (1) race has developed as a social construct and is not biologically rooted; (2), racism is normal and not aberrational; (3), attempts to address racism often benefit white people as a majority racial identity (i.e., interest convergence); (4), negative stereotypes that benefit white people often harm people of color; (5), people of color who experience racism in their everyday lives are the most qualified to speak of issues of racism

and its effects. The nested model (Belisle et al., 2022) explains these phenomena as occurring across three contingency systems and is shown in Figure 1. Implicit bias is described primarily in terms of Relational Frame Theory (RFT) and includes the verbal relations that develop along the dimension of race. White privilege describes the differential experiences of reinforcement and punishment based on race and occurs within interlocking contingencies. Finally, systemic racism emerges from within metacontingencies that inform laws, policies, and regulations that differentially confer advantages to white people and with neutral gain or harm to people of color. Behavioral researchers (B) may be more accustomed to taking a bottom-up approach, whereas sociological researchers (S) may be more likely to take a top-down approach, and the authors propose that a reticulating sociobehavioral approach may be most advantageous.

Nested Model of Sexism. CRT is one of several critical theories that challenge the workability of current social structures that have historically benefitted majority (defined here as those in positions of power) identities. Critical theories are inherently pragmatic theories (Spencer, 2019) because they propose that social systems evolved in a historical context, are not necessarily grounded in an ought reality. Feminist theories are also critical theories (Disch & Hawkesworth, 2015). The wave metaphor was developed to describe the evolution of the feminist movement and it is important to note that the wave metaphor may not account for the cultural experiences of non-Western groups, the multiplicity of the feminist movements, and limited political goals (Nicholson, 2010). In the late 1900s, the first wave of feminism took on the issue of women's voting rights, notably leaving out the intersections of race and other marginalized social identities whose voting remained restricted (Evans, 2016). The liberation wave, or second wave, occurred within civil rights, reproductive rights, and anti-war movements of the early 1960s, drawing from the experiences of Black and Brown women and focusing on

the intersections of gender, class, and race (Rampton, 2015). In the early 1990s, feminism shifted its focus to deconstructing cultural expectations surrounding womanhood, gender, femininity, and sexuality. The third wave of feminism was influenced by the postmodernist and postcolonial movements and aimed to use empowerment, agency, self-definition, and an emphasis on strength to approach patriarchal issues (Baumgardner & Richards, 2000). The fourth wave has shifted back into public discourse, and issues such as violence against women, unequal pay, and gender non-conformity are centered while acknowledging problems within patriarchal societies (Rampton, 2015).

It is important to note that there is no one "feminist theory," rather, feminist theory and the general term "feminism" refer to a collection of critical theories that tackle sexism and oppression in different ways. Specific to this thread of research are Black/intersectional feminist ideologies of intersectionality and interlocking systems of oppression (Combahee River Collective, 1978; Crenshaw, 1991). Interlocking systems of oppression, built from Black feminist organizing of the 1970s (Carastathis, 2016), notes the interlocking nature of of race, sex, and class as major systems of oppression that continue to impact the lives of marginalized populations, particularly Black women (Combahee River Collective, 1978). Collectively, they note:

> The most general statement of our politics at the present time would be that we are actively committed to struggling against racial, sexual, heterosexual, and class oppression, and see as our particular task the development of integrated analysis and practice based upon the fact that the major systems of oppression are interlocking. (p. 210)

While social movements have focused on singular modes of oppression, the CRC's focus on interlocking systems acknowledges that attention to one mode of oppression does not

consider the complexities of one's identity and experiences (Carastathis, 2016; Combahee River Collective, 1978). Building from the ideologies of the CRC, Crenshaw coined the term *intersectionality* as an analytical framework of racism and sexism in the workplace, and later as a framework to contend with multiple identities and identity politics (Cooper, 2016; Crenshaw, 1989; 1991). Crenshaw's theorizing of intersectionality represents a focus not only on multiple identities and lived experiences, but also the role of systemic and institutional practices that impact the development and meaning making of these identities and lived experiences (Cho, 2013).

Figure 2 provides an adaptation of Belisle et al.'s (2022) nested sociobehavioral model based around feminist theories. Implicit bias is again represented in the center of the nested model. In this case, biases exist based on gender and sexual identities that often confer advantages to cis-gendered men relative to women and gender non-conforming groups. For example, Paliliunas and Frizell (2021) evaluated how the way a person is dressed consistently with gendered expectations of modesty can influence the believability of sexual harassment claims. The second layer includes selective gender norms as stereotypical and rigid expectations around gendered behavior. Selective gender norms are learned behaviors that act as rules and are controlled by social contingencies (Levinson, 1997) that historically favor men or gender-conforming individuals. For example, raising one's voice during a meeting may be seen as effective leadership if the person identifies or presents as male, whereas this same action may be seen as emotional or ineffective when the person identifies or presents as female. Sickman et al. (2023) demonstrated that when participants were given scenarios of people with gender-neutral names, when gendered pronouns were used, pronouns he or his resulted in greater attributions of aggressive or coarse, whereas pronouns she or hers results in greater attributions of emotional or

prudish, even though the scenario content was held constant. Furthermore, selective gender roles have historically favored the allocation of capital and wealth to men over women (Ruel & Hauser, 2013) creating greater contingency control for men (i.e., patriarchal social construction; Connor et al., 2016). The outermost layer describes systemic effects that embed sexism within existing economic, political, and/or social structures resulting in omnipresent discrimination based on sex results in systemic effects. Ambivalent Sexism Theory (Baires & Koch, 2020) outlines the contingencies which help to sustain the unequal power structure between men and women. This theory discusses patriarchal societies, where men are more likely to be employed in positions of political, economic, and social power (Ruggles, 2015).

Again, the model assumes that behavioral researchers may be more likely to approach these challenges from a bottom-up approach, beginning with implicit biases and working outward to systemic effects and sociological researchers may be more likely to work inward from systemic effects to biases at the individual level. Again, a reticulating model is proposed that evaluates influence at all levels, as each level is maintained by events at inner and outer layers (i.e., influencing changes at one level will not necessarily encourage changes at other levels).

Visual Mapping of Results

A Matrix was developed to guide the current scoping review of research on racism and sexism that included the 3 nested sociobehavioral layers across these 2 intersectional areas, evaluated across the 5 theory-to-impact levels. category of descriptive studies are included that describe a phenomenon or social experience but do not necessarily offer theoretical extensions and are non-experimental (3 nested layers x 2 identities x 6 research layers). Therefore, the

research could fall into one or multiple of the 30 potential categories to assist in evaluating the current research. Thus, our scoping review is model dependent as viewing the literature in this way is only one of the potentially infinite ways to dissect the literature base. Finally, the following research objectives were adopted within our scoping review to inform the discussion:

1. Identify the challenges within behavior analytic research pertaining to issues of racism and sexism.
2. Evaluate the adequacy of current behavior analytic theories to address the identified challenges.
3. Evaluate the extent to which the basic behavior analytic research supports the developed theories.
4. Identify what behavior analytic technologies are being implemented.

Methods

Protocol. This scoping review was guided by the Preferred Reporting Items for Systemic Reviews and Meta-Analyses extension for scoping review (PRISMA-ScR) checklist (Tricco et al., 2018). The checklist consists of 20 essential items for scoping reviews displayed in Table 1. Two optional items are also provided in the checklist to provide a critical appraisal of individual sources of evidence. In data extraction, the methodological quality of the article was not evaluated. The goal of a critical appraisal in a scoping review is to assess the quality of the tools, processes, etc. Appraising the specific methodology was not relevant for the present review's objectives as the level of research of each article was of main interest. Therefore, the traditional critical appraisals were not conducted instead, the Theory-to-Impact Model (Dixon et al., 2018) was used to establish the level of behavior research that was conducted.

Eligibility Criteria. To provide an overarching review of the literature addressing racial and gender discrimination within the 10 selected behavior analytic journals. Journals that were chosen for review included 6 journals published by the Association for Behavior Analysis

International, 2 behavior analytic flagship journals, 1 journal published by Association for Contextual Behavioral Science, and 1 journal relating to Organizational Behavior Management. The search terms and the names of the behavior analytic journals, “Behavior Analysis in Practice” (BAP), “Behavior and Social Issues” (BSI), “The Analysis of Verbal Behavior” (TAVB), “The Psychological Record” (TPR), “Perspectives on Behavior Science” (PBS), “Education and Treatment of Children” (ETC), “Journal of Applied Behavior Analysis” (JABA), “Journal of the Experimental Analysis of Behavior” (JEAB), “Journal of Contextual Behavior Analysis” (JCBS), and “Journal of Organizational Behavior Management” (JOBM), were entered into Academic Search Elite, MEDLINE, PsycArticles, and PsycINFO. A total of 150 searches were conducted pairing each search term pertaining to race and gender with the selected journals with a restriction from January 2000 to December 2022. Table 2 provides operational definitions generated for each of the key terms utilized in the search. Definition of ‘racism’ adapted from Delgado & Stefancic (2017) & Al Ramiah et al. (2010). The Definition of ‘racial’ adapted from Braun et al. (2007). The definition of ‘sexism’ was adapted from Baires and Koch (2020). Definition of ‘gender’ adapted from World Health Organization [WHO], (n.d.) Definition of ‘prejudice’ adapted from Walther et al. (2005). The definition of ‘racial bias’ was adapted from Denson (2009) and the definition of ‘gender bias’ was adapted from Cudé and Winfrey (2007). Definitions for ‘racial discrimination’ and ‘gender discrimination’ adapted from Al Ramiah et al. (2010). Definitions related to stereotyping ‘racial stereotype,’ ‘racial stereotyping,’ ‘gender stereotype,’ and ‘gender stereotyping’ adapted from Maass & Cadinu (2003) & Schaff (1984). Articles that included the search terms within the text and the content discussed racial or gender discrimination were retained. If an article included the search terms in the text but the article was

not inherently about racial or gender discrimination it was not retained. If the search terms were found in the references of articles and not the body of the text they were not retained.

Selection of Sources of Evidence. Of the 13 search terms, 3 terms racial, gender, and prejudice were considered overarching terms while the other. 10 terms were designed to fit within each level of the nested model, terms “racial bias” and “gender bias” fit into the implicit bias level, terms “racial stereotype,” “racial stereotyping,” “gender stereotype,” and “gender stereotyping” are situated in the differential reinforcement of behaviors of minority groups and finally, racism and sexism fit within the systemic effects level of the nested models. Every article that was retained for the initial search was analyzed through the levels of the sociobehavioral nested models and was assigned to either the level of implicit bias, privilege / norms, systemic, or not relevant. If an article included information related to biased relational frames or behavior towards people based on race when other stimulus events are held constant, the article was coded as addressing implicit racial bias. An article was coded as addressing white privilege if a differential probability of obtaining reinforcement or punishment for similar or identical behaviors based solely on one’s race was the primary outcome variable. Systemic racism articles directly addressed the development of laws or policies, either explicit or derived, that differentially conferred advantage or power based on one’s race. An article was coded as related to implicit gender bias if it included information related to biased relational frames or behavior towards people based on gender or sex when other stimulus events were held constant. Articles addressing selective gender norms evaluated the differential probability of obtaining reinforcement or punishment for similar or identical behaviors based solely on one’s gender. Finally, articles describing systemic effects evaluated laws or policies that either explicitly or derived differentially conferred advantage or power based on one’s gender or sex.

The retained articles were also coded either as theory, basic, translational, implementation, or impact based on the theory-to-impact model. For articles that did not propose a theory but instead provided a discussion on topics relevant to this review, descriptive studies were placed in a separate category. Articles that proposed a theory and set the conditions for it to be evaluated, but did not themselves evaluate the theory, were coded as theory articles. Articles were coded as basic research if they evaluated theoretical assumptions using behavior measures that are indirectly related to real-world variables (e.g., response latency in a computerized task). Translational research articles consisted of tightly controlled experimental research that included social important behavior as dependent variables but was implemented either in a laboratory setting or by the researchers (e.g., measuring microaggressions in a joint task following an intervention by the research team). Articles were coded as implementation research when an intervention occurred in a natural setting and was conducted by members outside of the research team that operate in the community (e.g., a behavioral anti-racism training conducted by caregivers, parents, teachers, or staff). Finally, changes in societal variables as an effect of treatment were coded as impact research (e.g., reduction in statewide disciplinary referrals for harassment of minority groups following the introduction of a behavioral technology).

Data Extraction and Interobserver Agreement. Covidence (2022), a management system for systematic reviews, was utilized for the current scoping review. During each stage of the review, the first author acted as the primary reviewer. The fifth and sixth authors each reviewed one-half of the articles at each stage of the review. When discrepancies occurred, the primary reviewer resolved each conflict. The PRISMA Flow Chart (Figure 3) displays the data charting process. A total of 173 studies were imported into Covidence as part of the initial search. 3 studies were removed by the review system automatically when duplicates were detected. The

titles and abstracts of 170 articles were screened and 75 publications were classified as irrelevant. An article was deemed irrelevant if the search terms appeared only in reference to the demographics of the participants, the levels of the nested models were not discussed, or the article related to culture but did not explicitly evaluate gender or race. Articles where the full text was unable to be acquired were not retained.

Interobserver agreement was calculated through Covidence at 80% for the retention of 100% of titles and abstracts screened. Once irrelevant publications were removed, eligibility for 90 full-text articles was assessed and 25 were excluded from data extraction. These articles included content that was not relevant to the nested model or search terms in the full text that referred only to participant demographics. Interobserver agreement for full-text article screening was 82% for 100% of articles screened. A total of 68 articles met the requirements for inclusion in the current review to undergo data extraction.

Results

Characteristics of Sources of Evidence. All articles retained for data extraction were published between the years 2000 – 2022 (Figure 4). Less than 6 studies were retained from each year before the year 2020. In the year 2020, articles retained increased by 9 to display the highest number of retained articles in a year (n = 24). A significant decrease in retained articles is observed in 2022 from 24 in the year 2021 to 5. It should be noted that this search was conducted in July and future studies related to the nested models may be published in the remainder of the year 2022. Of the 8 behavior analytic journal included in the search, 7 journals had published articles that are relevant to the nested models (Figure 5). The highest number of reported publications in a journal was 33 and were published in BAP. Articles published in TPR and JCBS

totaled 16 and 10, respectively. The journals JOBM, JEAB, and JABA each had 1 article retained and 0 articles were retained in TAVB.

Results of Sources of Evidence. Table 3 summarizes the total count within each category. Publications pertaining to race comprised 54% (n = 37) of articles and publications relating to gender are 38% (n = 26) or all retained articles. When publications contained information related to both race and gender they were categorized as cross-listed. Cross-listed articles are 14% of (n = 5) the total articles retained. Of the 40% of race-related articles, 37% (n = 10) were coded under implicit bias, 22% (n = 6) as white privilege, and 57% (n = 21) as systemic racism. For publications pertaining to gender, 46% (n = 12) were coded as implicit bias, 39% (n = 10) as selective gender norms, and 15%. (n = 4) as system effects. Descriptive studies constituted 54% (n = 34) of all retained articles. Articles that proposed theoretical advanced totaled 6% (n = 4) of retained publications. Basic and translational articles made up 30% (n = 19) and 5% (n = 3) of retained articles, respectively. Only 5% (n = 3) of articles consisted of implementation in a naturalistic setting conducted by members of the community and no articles (n = 0) were coded as occurring at the impact level.

This scoping review began interested in answering 4 main objectives (see introduction). Below are some considerations for each question based on the research evaluated within the scoping review.

Challenges Identified within Behavior Analytic Research. Descriptive accounts have established that the field of behavior analysis is not immune to issues of sexism and racism. Sylvian et al. (2022) reported that members of the Black behavior analytic communities have observed an increase in performative allyship within behavior analysis that has not led to meaningful changes within the field. White behavior analysts should be cautious of interest

divergence motivating allyship. Interest divergence is a concept of CRT suggesting that white people may lack of motivation (i.e., available reinforcement) for dismantling prejudiced systems because those same systems provide access to differential reinforcement for the dominant culture that controls many of the cultural contingencies, and would therefore be disadvantageous (Gillborn, 2013). Issues of discrimination against women persist in various circles of behavior analysis despite the field being comprised of mostly women. Women appointed to editorial review boards make up only 43.8% of board members in 8 major behavior analytic journals (Rotta et al., 2021). The authors also noted that in 16 universities accredited by the *Association for Behavior Analysis International*, there was an average 11.3% wage gap across all levels of professorship. Researchers in Brazil, who are seeking to study issues related to gender inequality, also face language barriers when trying to access literature and publish their work and many receive threats when advocating fighting for women's rights (Mizael et al., 2021a). Despite these barriers, Brazilian behavior analysts have been able to develop critical research in the areas of women's empowerment and understanding rape culture, demonstrating the importance of lived experience when evaluating intersectional experiences of race, gender, and cultural norms.

Several tools of self-assessment and recommendations have also been described that can be utilized by practitioners and educators with the potential to influence behavior. It must be emphasized that research is needed to test the efficacy of any technologies, including proposed protocols, so this work should be interpreted with caution and should inform future empirical investigation, especially given the lack of translational or implementation research broadly in these areas. Blair et al. (2020) stressed the importance of awareness of different gender/sex phenotypes of autism in practitioners to avoid making harmful presumptions of an individual's behavior based on prior understandings of autism phenotypes in males when generalized to

females or gender diverse individuals. A self-assessment tool was developed by Leland et al. (2019) to promote transgender and gender-affirming practices at an organizational level. Recommendations were also provided by Hugh-Pennie et al., (2022) may aid in the development of culturally responsive pedagogy and ameliorate challenges experienced by people of color in schools. Machalicek (2022) also provided a framework for individualized self-management systems that supports values-based actions to promote individual behavior change to support critical social movements.

Correlational research related to prejudice has also supported a relationship between psychological flexibility as a behavioral construct and prejudiced behavior. Psychological flexibility describes one's ability to remain in the present moment and persist in the presence of challenging circumstances in support of chosen values (Dixon et al., 2023). Florez et al. (2019) reported that white individuals who displayed greater levels of psychological flexibility and perceived meaning of life demonstrated less prejudiced attitudes than those with lower psychological flexibility scores. When evaluating a student of color's academic success and engagement, Arauz et al. (2017) observed that contextual factors, such as experiencing microaggressions, may influence these variables more than psychological flexibility. Based on these correlated findings, interventions designed to promote psychological flexibility and address context issues directly, such as ACTraining, may be effective as proposed by Matsuda et al. (2020) in describing existing theories.

Addressing verbal behavior and symbolic interactions rooted in RFT is at the center of discussions of systemic discrimination, where the greatest discourse appears to be occurring. Baires et al. (2022), discussed the harmful effects of white individuals not playing the role of the listener appropriately during intercultural verbal exchanges with BIPOC. To promote effective

intercultural communication, the authors recommend that non-BIPOC provide precise reinforcement while actively engaging with the verbal stimuli produces by BIPOC speakers. Li (2021) also suggested focusing on increasing the frequency of reinforcement for BIPOC individuals and groups using cooperative actions such as direct reciprocity, indirect reciprocity, and network selection group selection. Effecting systemic change through verbal behavior is not exclusive to the level of the individual and can include changes in verbal behavior within organizations (Esquierdo-Leal et al., 2021). Organizational leadership that prioritizes community solidarity, inclusivity, and shared values of their employees can foster values-driven contexts that select prosocial and diversity-affirming behavior.

Those interested in affecting antiracist behavior change in the United States must also evaluate the contingencies maintaining dangerous and racist behavior in the policing and incarceration systems (Rose et al., 2022). Recidivism rates for incarceration are currently at 83% in 9 years. These data suggest that incarceration systems in the US are ineffective interventions and may benefit from additional behavioral analytic technological development and research. Morris and Hollins (2021) even further approached the intersection of race and disability by describing the variables that interact with the systemic contingencies that maintain the mistreatment of disabled individuals receiving direct support services. This interaction was highlighted in a scoping review conducted by Lovelace et al. (2022) on the intersectionality of race, gender, and disability status in Black autistic women. There has been a lack of research including Black, Autistic Women and Girls (BAWG) in autism-related research and no research addressing this intersectional identity. The authors discussed how the missing narrative of intersectionality in research may lead to harmful overgeneralization in the description of the behavior of BWAG. To promote the future study of intersectionality, DeFelice and Diller (2019)

discussed the common interests between intersectional feminism and behavior analysis. Important advancements in social justice research are possible benefits of collaboration from interdisciplinary research teams and behavior analysts need contributions from relevant subfields to help solve these challenges (Akpapunaa et al., 2020).

Many professional fields are rooted in ethnocentric and patriarchal values and lack diversity, equity, and inclusion; and the field of behavior analysis is no exception. Levy et al. (2022) suggested that behavior analysts should take the time to evaluate and reflect on where they can influence change within the field before attempting to influence changes that exist beyond the field. Baires and Koch (2020) provided suggestions that included emphasizing cultural metacontingencies surrounding gender and emphasizes the importance of a feminist approach, which is also consistent with the nested sociocultural models of sexism proposed in the current paper. In particular, the liberation of sexual and gender minorities (SGM) is an area of research that Capriotti and Donaldson (2022) suggested required further analysis to address the systemic effects of sexism. A lot of the descriptive discourse has focused on unitary identities, where only 3 explicitly addressed the intersection of race and gender. Cirincione-Ulezi (2020) discussed issues of prejudice and discrimination experienced by Black women in the field, where there has been an increase in Black women in behavior analysis, yet no change has occurred in the number of Black women in leadership roles affecting representation in decision making. Pritchett et al. (2021) suggested that a paradigm shift is necessary to account for power imbalances within the field and Szabo (2020) noted the importance of underlying theory and behavioral principles in addressing these challenges.

Adequacy of Behavior Analytic Theories to Address the Identified Challenges. In the present review, descriptive and correlational research represented most research within major

behavior analytic journals. A greater understanding of implicit bias, privilege, and systemic effects can be gained by applying these existing theories to the present challenges. First, the field must understand the problem to progress to developing solutions and technologies to address it, so descriptive and correlational research plays an important role in an emerging area when it produces research at other layers.

In discussing implicit bias, Matsuda et al. (2020) provided a conceptual breakdown of implicit bias and prejudice emphasizing operant and respondent-type conditioning and verbal relations rooted in RFT. Their RFT account closely aligns with the implicit bias layer of the nested model proposed by Belisle et al. (2022). In addition, the authors suggest that if implicit bias is a relational phenomenon, then interventions that target relational learning like Acceptance and Commitment Training (ACTraining) could influence implicit bias and discrimination. Mizael et al. (2016) further summarized diverging accounts of racial biases in the literature. The first account described racial attitudes from within a Skinnerian verbal operant framework (Skinner, 1953) as tacts, intraverbals, mands, and autoclitics on the basis of race. The second account of racial prejudice is through the study of stimulus equivalence (Sidman, 1994; Sidman & Tailby, 1982) and describes the untrained emergence of biased beliefs through equivalence classes. The third account again extends from RFT and emphasizes untrained entailed relations and the differential treatment of people on the basis of race through transformations of stimulus function. These theoretical descriptions were provided to inform the development of new theories and conducting of experimental research to address implicit bias through language interventions.

An assumption of the theory-to-impact (Dixon et al., 2018) model is that theories must be adequate to address the challenge at hand. In the present review, only 4 proposed theoretical extensions exist to guide the development of behavior analytic technologies to achieve impactful

changes. Challenges have been identified in descriptive research on the use of excessive force, stop and frisk, and implicit racial biases within law enforcement (Ghezzi et al., 2021; Parks & Kirby, 2021; Rose et al., 2022). To address the issues related to police brutality, Ghezzi et al. (2021) applied the prosocial model to law enforcement agencies. Descriptive research on the use of excessive police force has demonstrated the necessity for behavior-analytic intervention. Proposed interventions seek to effect change at both the individual and the group level to increase psychological flexibility in a less stigmatizing way compared to training as usual. Ostrom's Core design principles may guide the development of a Prosocial group intervention (Ostrom, 2015; as cited by Ghezzi et al. 2021) with members of law enforcement. This article provides both a theory and recommendations to test the theory at multiple levels, including within translational, implementation, and impact research.

Similarly, Gingles (2022) developed an integrative behavioral model that incorporated Black Psychology, ACTraining, and cultural healing processes to promote values of Black liberation. Internalized racism and anti-Blackness can occur in Black individuals when they have a history of aversive social-mediated learning. The author offers suggestions and considerations for behavior analysts who may be working with Black learners who display internalized racism. Practitioners working with Black individuals may become aware of the importance of understanding both collective and racial trauma and its impact on the psychological health of individuals by addressing rule-governed behavior and racial categorization. Once again, approaches from an ACTraining framework were proposed that may allow practitioners to individualize client sessions around values of Black liberation and the potential to apply this approach at multiple levels of analysis is described.

Two papers describe the importance of attending to metacontingencies when addressing systematic challenges. Saini and Vance (2021) suggested that metacontingencies may provide a unit of analysis for assessing and influencing cultural phenomena. Metacontingencies exist within low levels of interlocking behavioral contingencies (IBC), the products of IBCs, and cultural consequences mediated by the social environment. The selection of cultural practices occurs through the consequences of social reinforcement resulting from multiple individual interactions. Utilizing metacontingencies as a unit of analysis may allow for a broader analysis of cultural trends. Belisle et al. (2022) also discussed the continuous interaction of metacontingencies and relational framing that result in racism at levels of bias, privilege, and systems. Furthermore, influencing change at only one level may not be effective as each level provides context to events occurring at other levels that may make systems highly resistant to change. For this reason, reticulating research at multiple levels is needed and available avenues for future research are described in the article.

Support of Basic Behavior Analytic Research of the Developed Theories. Basic research focusing on race and gender is prevalent within the behavior analytic literature analyzed in the current review. Many of these articles focused on implicit biases and utilized validated measures such as the implicit association test (IAT) (Farrell et al., 2015), implicit relational assessment procedure (IRAP) (Barnes-Holmes et al., 2010; Cartwright et al., 2016a; Drake et al., 2015; Errasti et al., 2018; Farrell et al., 2015; Farrell & McHugh, 2017; Fleming et al., 2020; Moreira et al., 2021; Power et al., 2017a; Power et al., 2017b) and function acquisition speed test (FAST) (Cartwright et al., 2016b). Several basic research studies have evaluated implicit racial biases using these frameworks (de Carvalho et al., 2014; Mizael et al., 2021b, Mizael et al., 2021c). Drake et al. (2015) explored the degree to which the IRAP measures racial relational repertoires

and supports the reliability and validity of the measure. Data gathered from the IRAP showed a greater ability to detect racial bias than the IAT. In Ireland, the IRAP method demonstrated racial biases (Barnes-Holmes et al., 2010, Power et al., 2017a).

Stimulus equivalence (SE) has been evaluated in the context of implicit racial biases and attitudes in 3 studies identified from the present review. The formation of prejudiced racial attitudes has previously been assessed through SE and researchers have been able to reduce these biases by creating new equivalence classes through a match-to-sample training procedures (Mizael et al., 2016). Furthermore, Mizael et al. (2021c) evaluated an intervention utilizing equivalence-based instruction to reduce racial biases in a selection task. Gender biases have also been studied in relation to implicit stereotypes (Cartwright et al., 2016b, Drake et al., 2010), the influence of social context on gender stereotypes (Errasti et al., 2018), and gender stereotypes in children (Erwin, 2006, Rabelo et al., 2014).

A well-studied body of research focuses on the presence of gender roles and gender discrimination in workplace settings (Cartwright et al., 2016a, Moreira et al., 2021). For example, 3 studies have evaluated gender bias in science, technology, engineering, and mathematics (STEM fields; Farrell & McHugh, 2020, Farrell & McHugh, 2017, Fleming et al., 2020). These studies report a weaker relation between women as a constructed group and the STEM fields when compared to men, perpetuating gender norms. Gender norms have also been assessed in 2 additional translational studies (i.e., evaluating socially important behavior in a contrived setting). Oda et al. (2022) assessed self-editing of verbal behavior in a virtual chat and found that the speaker's behavior can come under stimulus control by the perceived gender of the listener. The results did not find consistent gender-biased behavior between participants and procedures were described to inform future research. Borhart and Terrell (2014) looked at the

differences in perceptions of aggressive behavior based on gender. While participants did not differentially evaluate aggressive behavior on the basis of gender, descriptions of aggressive behavior varied, such as women being referred to as “bitchy” or “bossy” when in a male-dominated role. In both translational studies, results failed to directly support the underlying theory or challenges reported in the descriptive research but provided suggestions to inform future research.

Behavior Analytic Technologies Implemented in Non-Contrived Settings. Two translational studies utilized an ACTraining framework as an intervention to influence to mediate the effects of systemic racism on experiences of people of color. Banks et al. (2021) evaluated community-based program to support Black women. Techniques of cognitive defusion and self-compassion were incorporated into the intervention. Researchers evaluated changes in psychological flexibility but did not report significant changes following intervention. Changes were however observed in internalized oppression, stigma, and other negative effects of systemic discrimination. West et al. (2013) focused on reducing the amount of perceived racism that Black Americans experience through a values clarification. Black students were given a subjective unit of distress scale, a vividness of imagery scale, and a positive and negative affect scale prior attended a scheduled event. During this event, students were provided with information on racism that was ambiguous in nature before completing the values clarification-based writing intervention. Results demonstrated the utility of the values clarification task as a buffer for perceived levels of racial distress. This intervention did not focus on actual experiences of racism instead only involved the perception of racist experiences. Thus, both translational studies focused on reducing the harm experienced by marginalized groups, rather than addressing harmful actions experienced by marginalized groups, and mixed outcomes were reported.

Within the present review, only 2 articles met criteria for implementation research (occurring in a natural setting and implemented by members of the community). Williams et al. (2020) sought to reduce microaggressions that lead to racial conflict and increase interracial connectedness within a university setting. A two-part workshop based on Functional Analytic Psychotherapy (FAP) and ACTraining was designed to promote racial harmony in a brief session while still creating changes in racially biased behavior. Following the workshop, white participants displayed a reduction in microaggressions and an increase in positive feelings toward Black people. For Black participants, a decrease in intergroup anxiety and avoidance was not displayed and overall feelings toward white participants did not change after participating in the workshop. Singh et al. (2020) conducted a pilot study assessing the application of several ACTraining related activities on outcome measures such as experiential avoidance, mindfulness, quality of life, burnout, and coping for sexual minorities. No significant changes within these outcome measures occurred as a result of the intervention except for experiences of burnout reported by participants. Qualitative responses on social validity tests were collected post-intervention. Participants expressed mostly positive responses regarding the intervention, stating that they found it useful. A common thread within both studies is that, although interventions may result in a change in behavior and experiences for majority groups, positive changes in experiences for minority groups may not be readily apparent.

Synthesis of Results. Three theoretical frameworks, the Nested Model of Racism, the Nested Model of Sexism, and the Theory to Impact model were used to guide the selection of the search terms and criteria for retention criteria of this review. The use of these models is continued in the synthesis of results. All articles were coded with at least 2 out of the 3 frameworks. This includes the Theory to Impact and one or both Nested Models depending on

the content of the article. Visual mapping has shown its utility as a part of the narrative synthesis in previous scoping reviews (Kirk & Ferguson, 2022). Appendix A displays a flow chart of how each retained article was coded along their applicable theoretical frameworks. Numbers that are inside parentheses are articles whose content was relevant to the reduction of both racism and sexism. These articles were not counted in the individual model level of the results, instead the overlapping articles were added to the overall total. Each overlapping article was assigned a code for both nested model dimension. The flow chart (Appendix A) begins with the sum of the total articles coded at each level of the theory to impact model. Due to the similarities between the nested model, articles were then categorized based on implicit biases, differential reinforcement of minority groups when all variables are constant, and systemic effects resulting from explicit or derived laws and policies. The visual mapping of the results illustrates areas that have yet to receive attention in behavioral research and should be areas of focus to achieve reticulation and impact. A Flow Diagram of the number of articles per Nested Model level by Theory to Impact Model level is available in Appendix A.

Discussion

Descriptive and correlational research is increasingly occurring within behavioral analytic journals. This work has largely focused on understanding various systemic challenges related to racism and sexism, both within the field and beyond the field, as well as the potential role of behavior analysis in addressing these challenges. It appears as though large-scale changes and reform are needed to address these systemic issues, and until these issues are addressed, biases and privileges will persist. Several technologies have also been developed and described, although empirical testing of these technologies ranges from minimal to non-existent. This is

problematic within an empirical science as we do not know if these technologies work, or at the very least, that these technologies do no harm to the communities served. Therefore, researchers should take a next step to evaluate these technologies that appear to be conceptually systematic, consistent with basic behavior principles, and are described technologically, but may not actually be effective in producing intended influence over behavior. For example, it appears that psychological flexibility is related to issues of bias, prejudice, and discrimination, but that alone is not sufficient to support the use of ACTraining or other approaches to address psychological flexibility in changing these occurrences. Moreover, correlational research suffers from both directionality and third variables problems (i.e., we do not know if psychological inflexibility causes these challenges, is caused by these challenges, or both psychological inflexibility and these challenges are caused by extraneous variables). Interestingly, much of the conceptual and descriptive work in the field has focused on the outermost layer of the nested model; however, as can be seen in the results of this review, most experimental research has taken place at the inner layers of implicit bias. On the one hand, moving outward is consistent with a behavioral approach and scoped behavior analytic journals; however, as noted within these descriptive studies, addressing implicit bias alone is unlikely to successfully resolve challenges of sexism and racism that are more historically and systemically rooted. Thus, there is a number of challenges at hand in need of behavioral solutions and discourse is occurring in the field to orient this work.

Whereas conceptual descriptions of the challenges at hand are increasingly occurring in the field and technologies are being proposed for future evaluation, there are limited conceptualizations from which to draw. Primarily, conceptualizations that have been proposed largely emphasize RFT as a model of language learning and symbolic transfer, and

metacontingencies as the cumulative product of interlocking contingencies between groups of people. These two theoretical areas are robust and require additional detailed examination applied to the challenges of racism and sexism. For example, Belisle et al. (2022) broadly describe how policies are developed from interlocking contingencies that differentially confer advantages for white people, such as redlining; however, the specific interlocking contingencies and metacontingencies are not described. In discussing RFT, one may assume that racist and sexist beliefs are both learned explicitly and derived; however, it is unlikely the case that small relational classes of only a few members support the rigidity and veracity of prejudiced beliefs. Theoretical extensions such as Relational Density Theory (RDT; Belisle & Dixon, 2020) and the Hyperdimensional and Multilevel Model (HDML; Barnes-Holmes et al., 2018) may be needed to move beyond individual relations to relational fields. Moreover, the specific interplay between interlocking contingencies and metacontingencies that support relational framing patterns must still be examined. Thus, there is a clear starting point for this theoretical development and avenues for future research and empirical testing have been described within the existing theoretical work.

There is considerable evidence emerging supporting RFT and SE in the development of implicit bias of both race and gender. In contrast to the conceptual and correlational research that has emphasized contextual influences at the systemic and privilege layers of the nested models, basic research has almost exclusively focused on events at the implicit bias layer. Our understanding of challenges through descriptive and correlational research covers areas beyond implicit bias and these challenges have not yet been addressed in basic or translational efforts. In the 2 translational studies, results did not uniformly support the underlying theories and both suggested refinement of procedures to better inform behavioral conceptualizations of bias and

privilege. It is for this reason that research at these levels is so important, because without actually testing concepts discussed theoretically or descriptively, there is no way for knowledge to build empirically from existing knowledge. Rather, scientific positions are informed exclusively through rationalization and discussion, and not through actual data supporting any underlying theory or approach. Moreover, as noted by Barnes-Holmes et al. (2022), a number of problems persist in the interpretation of IRAP results when void of context, and like much of the RFT research, direct translation to issues of social importance has not yet been realized (McLoughlin et al., 2022). At the outer layers, metacontingencies models may provide a unit of analysis to address systemic challenges (Saini & Vance, 2021; Belisle et al., 2022), but this too has not been tested in tightly controlled experimental arrangements, and so should be treated as a working hypothesis rather than an established behavioral principle in this context.

There is a clear lack of translational and implementation research addressing racism and sexism within behavior analytic research. ACTraining is at the core of currently developed and tested interventions in applied setting, with mixed results, and benefits largely experienced by the majority groups with little to no positive impact reported for minority groups. Put simply, descriptions of problematic phenomenon and theoretical discourse have not resulted the development of effective technologies at any noteworthy scale. If behavior analysts are to serve the world better, we must do so by developing *and evaluating* technologies at multiple levels of analysis. Together with translational research, we have some early evidence that implicit bias and the broad construct of psychological flexibility can be addressed through a limited number of behavioral interventions that are largely rooted in ACTraining. What we do not yet know is whether these interventions actually impact behavior that matters, especially to the communities harmed by oppressive systems. The effectiveness of these interventions must be measured

empirically. There is a lot of discussion occurring, but not a lot of action, at least not in the empirical spaces largely occupied by behavior analysts. Solutions have also rarely addressed contingencies, including localized contingencies, interlocking contingencies, or metacontingencies, that maintain racist and sexist behavior, showing an even further disconnect between theory and empirically supported practice. Discussion is important, but discussion without action will not influence positive social change.

There are a number of limitations in this scoping review that should be addressed in future analyses of the existing literature. The topics of interest in this scoping review are racism and sexism that are both vast and complex social issues. One limitation of this review is that this review undertook 2 societal issues simultaneously. Focusing on only one societal issue may increase the feasibility of the review but may miss intersectional experiences and research in these areas. Operational definitions were provided to all reviewers as well as detailed outlines of the model levels and a flow chart for theory to impact coding and article retention. IOA was still 80% for titles and abstracts and 82% for full text, which may be due to the abstract nature of many of the definitions. Additional training using the sorting features may have also improved IOA and best-training practices in conducting these reviews in another ready avenue for behavior analytic research. Another limitation is that other intersectional experiences, such as sexual orientation, disability status, or religion, although disability status and sexual orientation were not included and were topics of discussion within some of the scoped studies.

Within and outside of behavioral analytic research there are many issues of discrimination on the basis of gender and race that have been addressed through descriptive and conceptual work. If behavior analysis as a field wishes to create a lasting impact on society in areas of racism and sexism, research progress beyond the conceptual stage and occur in applied

settings. The descriptive work makes clear that there are challenges within and beyond the field that need to be addressed, and the theoretical work provides some working solutions largely rooted in RFT and metacontingencies. Some basic research supports RFT conceptualizations, largely by measuring implicit bias using latency-based tools like the IRAP. Yet, these same approaches have not yet led to consistent and replicable findings in translational research when addressing actual behaviors of interest. ACTraining provides a framework that extends from RFT and appreciates the influence of contextual contingencies, and some application of ACTraining technologies has occurred. Yet, changes in real-world behavior have not been reliably reported and the changes that have been evaluated may not be the challenges described in the much larger descriptive papers calling for applied technologies.

In summary, it is the hope that the current review helps to orient readers to these emerging areas of discourse and research and encourages readers to proceed to develop technologies capable of influencing changes in racism and sexism within and beyond behavior analysis. Practicing behavior analysts have the opportunity to develop technologies within their agencies to support clients and employees, and it encourages the active publication of these findings. Behavioral training programs may also actualize movements supporting diversity, equity, and inclusion initiatives to develop research lines that address behavior in educational settings. To start, in the active training of behavior analysts, then progressing to influence change in broader systems. Through active training, behavior analysts may start to develop a culture within the field that orients towards making systemic change. These are complex issues of our time and will require robust, reticulating solutions. Yet, these were always the issues behavior analysis was intended to solve (Skinner, 1953).

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Tables

Table 1. Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) Checklist

PRISMA-ScR Checklist Item	Item Number
Title	1
Structured Summary	2
Rationale	3
Objectives	4
Protocol and registration	5
Eligibility criteria	6
Information sources	7
Search	8
Selection of sources of evidence	9
Data charting process	10
Data items	11
Critical appraisal of individual sources of evidence	12
Synthesis of results	13
Selection of sources of evidence	14
Characteristics of sources of evidence	15
Critical appraisal within sources of evidence	16
Results of individual sources of evidence	17
Synthesis of results	18
Summary of evidence	19
Limitations	20
Conclusions	21
Funding	22

Table 2. Terms and Definitions Used in the Scoping Review

Term	Definition
Racism	An "individuals' attitudes, beliefs, and behaviors and organizational, institutional, and cultural practices that either reflect negative evaluations of individuals based on their race or support unequal status of a group based on that group's ethnic background they are inferior to the majority population, wherein American society is white.
Racial	Socially constructed language which is commonly used to describe and categorize individuals of a group based on shared ancestry, physical characteristics, and cultural practices that may be associated with a group.
Racial Bias	Implicitly influenced group-based behavior that functions as a cue to signal the race of an individual.
Racial Stereotype	Network of generalized socially constructed ideas about race which may negatively affect an individual's belonging to a marginalized race
Racial Stereotyping	The action of using a network of generalized socially constructed ideas when referring to members of a marginalized race may have negative effects.
Racial Discrimination	Negative actions committed by a privileged that create differences in histories of reinforcement and punishment towards a marginalized race when all conditions are constant.
Sexism	An individual's relational responding, beliefs, and behaviors correspond to organizational, institutional, and cultural practices that reflect negative evaluations of individuals based on their gender or support unequal status in the context of their gender.
Gender	Socially constructed language categorizing individuals based on characteristics related to masculinity and femininity or the divergence of traditional ideas of sex characteristics.
Gender Bias	Implicitly influenced group-based behavior that functions as a cue to signal the gender of an individual.

Table 2 Continued. Terms and Definitions Used in the Scoping Review

Term	Definition
Gender Stereotype	Network of generalized socially constructed ideas about a group that may negatively affect an individual's belonging to a marginalized gender identity
Gender Stereotyping	The action of using a network of generalized socially constructed ideas when referring to members of a marginalized gender identity may have negative effects.
Gender Stereotyping	The action of using a network of generalized socially constructed ideas when referring to members of a marginalized gender identity may have negative effects.
Gender Discrimination	Negative actions committed by a privileged individual or group create differences in histories of reinforcement and punishment towards a marginalized gender identity when all conditions are constant.
Prejudice	Taught and derived negative relations which are contingent on socially conditioned and negatively affect a group

Table 3. Count of each article coded within each of the categories within the 3x2x6 matrix

Nested Model Level	Theory to Impact Model Level						
	Descriptive Studies	Theory	Basic	Translational	Implementation	Impact	Total
Implicit Racial Bias	2	0	6 (1)	1	1	0	10
White Privilege	5	0	0	1	0	0	6
Systemic Racism	17 (4)	4	0	0	0	0	21
Implicit Gender Bias	0	0	10 (1)	1	1	0	12
Selective Gender Norms	7	0	3	0	0	0	10
Systemic Effects of Sexism	3 (4)	0	0	0	1	0	4
Total	34	4	19	3	3	0	63 (5)

Figures

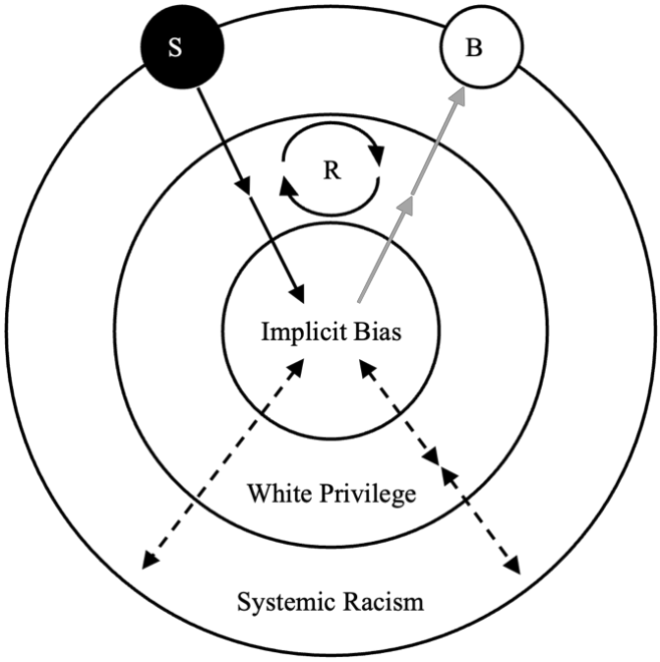

Figure 1. Nested Model of Racism as described by Belisle, Payne, and Paliliunas (2022)

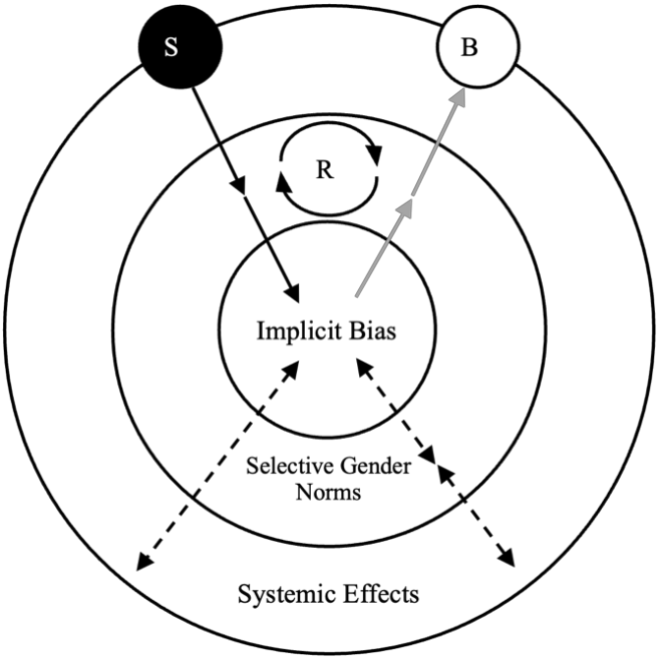

Figure 2. The proposed Nested Model of Sexism based on the sociobehavioral framework guided by Belisle, Payne, and Paliliunas (2022)

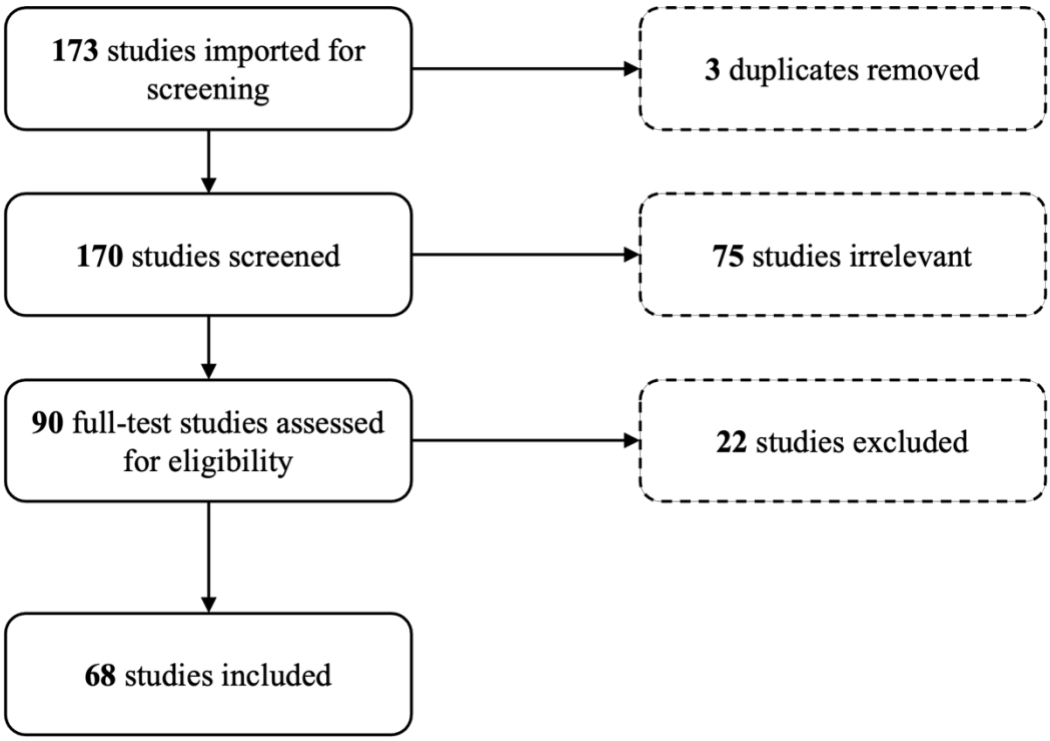

Figure 3. PRISMA Flow Chart

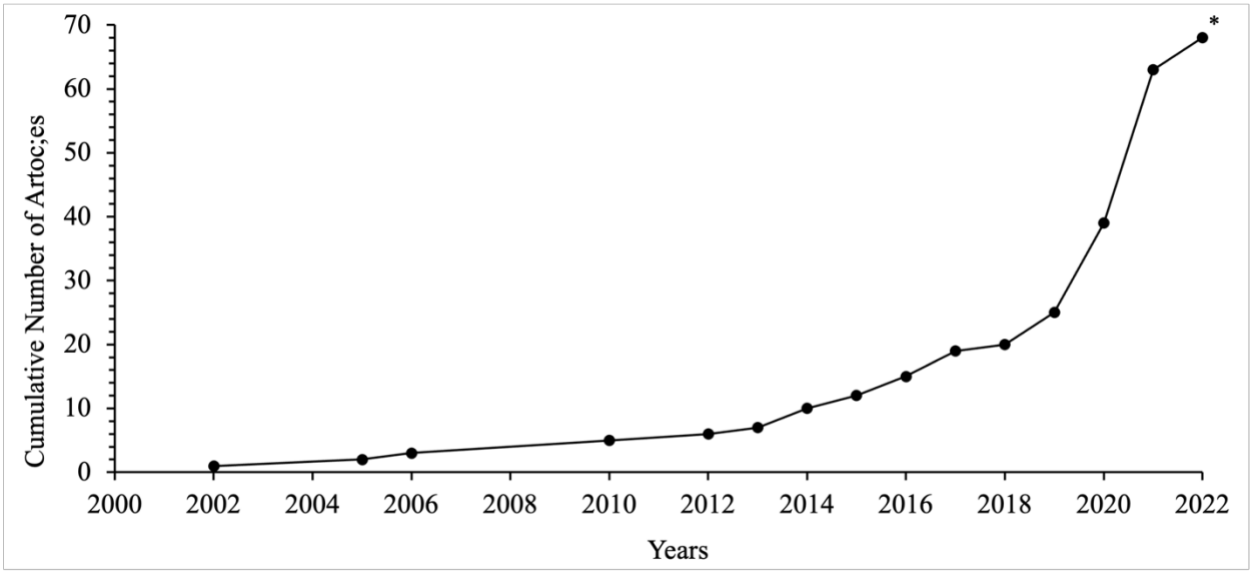

Figure 4. Cumulative graph of the number of retained articles published from January 2000 to July 2022.

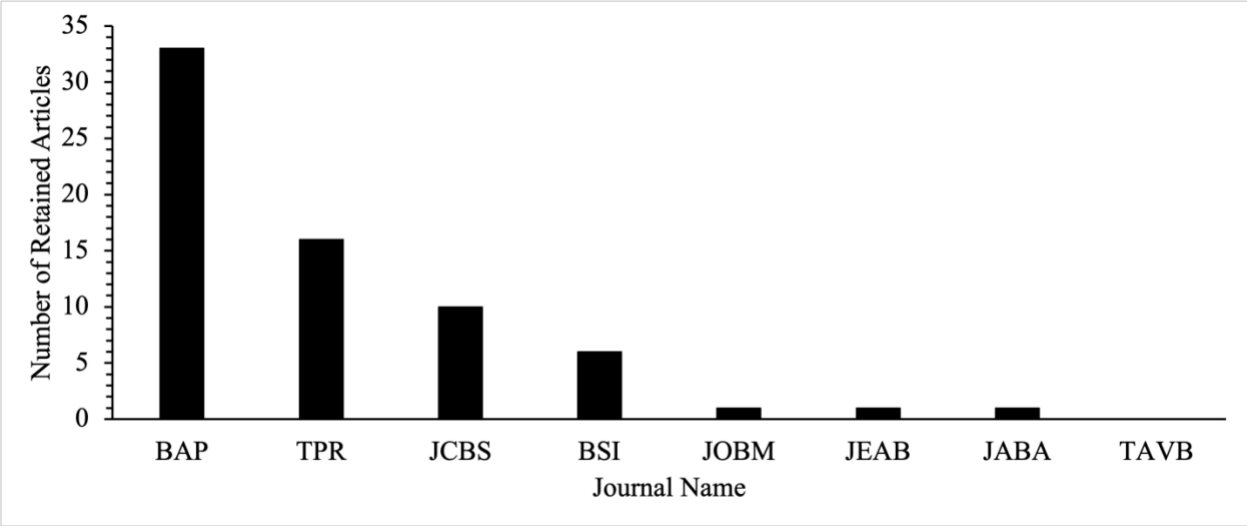

Figure 5. Bar graph of the number of retained articles by journal.

RELATIONAL FRAMING AND AUTISM STIGMA: UTILIZING A RELATIONAL DENSITY THEORETICAL FRAMEWORK

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Autism is characterized by patterns of behavior that deviate from the social norms and expectations of others (McDonald, 2020). Attributes commonly associated with autism, such as social interaction and communication, have been found to be viewed negatively by neurotypical individuals (Dickter et al., 2020). According to a study by Cage et al. (2018), 48% of autistic people report feeling unaccepted in society when they express their autistic traits. Kitchin and Karlin (2022) demonstrated that education about autism may be related to attitudes towards autistic individuals, where less knowledge about the etiology and the treatment of autism predicted negative attitudes. Negative attitudes based on preconceived ideas and information held by neurotypical individuals towards the out-group of autistic individuals can be referred to as stigma (John et al., 2018). Link and Phelan (2001), established stigma as the convergence of interrelated components of the labeling of differences, Differences can be linked to negative stereotypes, classifying people who possess these differences as separate from the classifier (“us” versus “them”). Once classified it can result in status loss and discrimination for those who are

stigmatized. Stigma can have negative impacts on the well-being and quality of life of autistic individuals (Turnock et al., 2022). For example, autistic traits that suggest indifference to social interaction can lead to reduced social opportunities with neurotypical peers as demonstrated in John et al., (2018). Mazurek et al., (2014) also found for many autistic individuals, the absence of social connectedness and feelings of loneliness can increase the risk for depression, anxiety, and poor self-esteem. As an adaptation, autistic individuals may choose to engage in masking behavior or limiting their expression of autistic traits in social settings with neurotypical individuals to avoid stigmatization and out of a fear of rejection and bullying from peers (Hull, 2017; Cage & Troxell-Whitman, 2019; Turnock et al., 2022).

Turnock et. al., (2022) presented a model of autism stigma that can be applied to further understanding the barriers experienced because of stigma. Stigma is broken down into three types, which all demonstrate different effects that could be harmful that can occur to autistic people's well-being (Hurley-Hanson et al., 2020). Stigma itself does not imply that a person's behavior will turn negative toward an individual and include behaviors such as exclusion, rejection, or devaluation, but when it does, it is referred to as discrimination (Abbey et al., 2011). Critical disability theory (CDT) considers disability a social construct involving the interaction of the social environment, impairment, and response to impairment (Hall, 2019). A key contextual factor of interest for CDT researchers is the language that surrounds disability and its influence on the perception of disabled peoples. According to CDT, labels that are given to a disability are related negatively as society rates the disability itself to be negative. How society defines and talks about disability impacts how society will interact with disabled people (Goodley al., 2019). The effects of negative relations on social interactions are important as this

is where autistic individuals have the opportunity to experience discrimination (Botha et al., 2022).

Human language and cognition from a behavioral lens are contemporarily accounted for in Relational Frame Theory (RFT; Barnes-Holmes et al., 2001) and can be applied to understanding autism stigma. Visible attributes of autism may be arbitrarily related to descriptions that have been assigned a neurotype. For example, a person who is engaging in stereotypy, or stimming (e.g., making a repetitive noise while flapping their hands), while waiting in line (A1) may be categorized as "autistic" (B1) (A1=B1) and someone who is quietly standing still in line (A2) may be categorized as "neurotypical," "normal," or "average" (B2) (A2=B2). Because of a shared cultural history around disability and capability, a person may have learned that "autistic" (B1) people are not capable (C) (B1≠C) while "neurotypical" (B2) people are more likely to be capable (C) (B2 = C). Therefore, through combinatorial entailment, several derived relations are possible. First, that the autistic person (A1) is not capable (C) (A1≠C) even though their abilities in performing any given task have not been observed directly. Second, that the apparently neurotypical person (A2) must be capable (C) (A2=C) and may be more likely to be selected to perform necessary social tasks or engagement. And finally, if being capable is a positively valanced trait (i.e., capable is better than incapable), then A2 is "better" than A1 and A1 is worse than A2. Thus, through transformation of stimulus function, at least two outcomes may be likely to occur. First, the autistic person (A1) may be less likely to be approached in the social setting and may be afforded fewer opportunities across multiple life domains (e.g., vocation, family planning, romantic engagement). Second, given a history of this, the autistic person may engage in alternative behaviors that mask their autistic traits (B1) in order to appear more neurotypical to avoid social exclusion and limiting of opportunities.

Kelly and Barnes-Holmes (2013), evaluated implicit attitudes towards autistic individuals using a developed IRAP. In their study, 16 ABA tutors and 16 teachers completed an IRAP designed to evaluate the implicit attitudes held towards autistic individuals. Several explicit measures were completed including 3 related to attitudes towards autism and 4 measures not related to attitudes. The IRAP include 4 types of trials, Autism-Negative, Autism-Positive, Normally-Developing-Negative, Normally-Developing-Positive. Participants were asked to identify if certain attribute words (i.e., Good, Bad, Sad, Happy) are similar or opposite with the labels "Autism-Spectrum-Disorder" and "Normally Developing." Throughout the IRAP procedure it was required that participants complete two opposing pattern blocks of questions that was either consistent or inconsistent with autism-negative/normally-developing-positive. Results from this study indicated higher rates of negative implicit bias towards autistic children than those identified as typically developing.

These results of negative implicit attitudes are consistent with research by Dickter et al. (2020), that utilizes their developed IAT in two studies to evaluate attitudes toward autistic individuals. In the first experiment, these words were gathered from the 94 neurotypical participants in a free response task to describe both neurotypical and autistic adults. The IAT measured RT of the categorization of words associated with autism into either a "good" or "bad" categories to evaluate implicit biases. Measures of explicit attitudes that reflect wide-spread attitudes and knowledge of autism and participants identification with autistic behaviors. In a second conducted experiment, 127 neurotypical participants completed the same explicit measures and implicit measure, however in the IAT descriptive words for neurotypical and autistic adults were chosen by researchers rather than stereotypical words. Explicit attitudes of neurotypical participants towards autistic adults were found to be positive however, negative

implicit attitudes were held against autistic adults. The consistent inconsistency between implicit and explicit attitudes towards autism demonstrates how the stimuli encompassing autism create an incredibly complex relational network. Instead of using response time, a less implicit task to measure relational behavior such as asking the direct relations should be evaluated for its accuracy in detecting autism stigma within relational patterns. The implicit tests described above all attempt to describe broader patterns in the strength of associations or relations that may indicate bias or stigma.

The concept of relational strength, or differential relatedness, is also central to Relational Density Theory (RDT; Belisle & Dixon, 2020). RDT provides a quantitative account of relational behavior that extends from RFT and attempts to model the higher-order interactions of relational behavior. Interactions or relations differ not only in their topography (C-rel) but differ in the strengths of the relatedness between items (relational density) (Belisle & Dixon, 2020). Newtonian classical mechanics provides a metaphor to describe at-least two potential higher-order interactions: Relational resistance and relational gravity or coherence. Relational classes that contain stronger relations within the class (relational density, Rρ) and a greater number of relations in the class (relational volume, Rv) may exhibit greater resistance to change (relational mass, Rm). This can be expressed in the standard equation:

(1)

$$\Delta R = \frac{-x}{(R\rho * Rv)}$$

Where ΔR represents a change in relational behavior and -x is counterforce applied against the network, such as competing information or a shift in contingencies. In this case, if relations

underlying autism stigma are strong and there are several negatively valanced relations within the network, then stigma may be resistant to educational efforts to reduce stigmatic beliefs or reinforcement that is available for engaging socially with and providing opportunities to autistic individuals. Entering the field of applied behavior analysis (ABA) may represent a form of -x as new information is added to the autism network from formal training on behavior management procedures and clinical work with autistic individuals. However, if relational mass (density and volume) is already established prior to entering the field, then this relational pattern may be highly resistant. Relational resistance has been documented in several empirical studies but has not yet been applied to challenges of autism stigma (Pilgrim & Galizio, 1995; Saunders et al., 1988).

The concept of relational gravity, or relational coherence (Belisle & Clayton, 2021), suggests that relational classes that are similar may be more likely to merge to produce new relations. More colloquially, new information may organize around existing beliefs. This can be expressed in the standard equation:

(2)

$$F = \frac{Rm_1 * Rm_2}{Rdistance^2}$$

Where two classes may be more attracted (F; i.e., likely to merge) when both classes are of higher mass (Rm1 and Rm2; i.e., density and volume) and operate at a low distance from one another. Conversely, two classes may be less attracted when either of the classes are of lower mass and / or the classes operate at a greater distance from one another. Belisle and Clayton (2021) demonstrated this phenomenon by constructing a complex network comprising 4

coordinated classes, each consisting of 4 members comprised of the words King, Queen, Salt, or Pepper. The coherence group involved the pairing of a member from the King and Queen classes with another member from the Salt and Pepper classes to establish coherent class mergers. Conversely, the incoherence group targeted opposite relationships. To perform multidimensional scaling (MDS), participants were asked to rate how related the pairwise relations are on a scale ranging from 1 (not related) to 10 (strongly related). By utilizing the data from any set of three rated pairs of relata, the MDS algorithm triangulated the coordinates in a geometric space to find the best-fit solution for the distance between each pair. The findings provide evidence in favor of the effective merger of the merged coherent classes while indicating that the merger of the non-coherent classes was not successful. In the present context, if a negative autism stigmatic network (Rm 1) is of a greater mass than a positive autism stigmatic network, then environmental events that could be interpreted ambiguously (Rm2; i.e., through either network) may be more likely to be interpreted through the negative network than the positive network. Moreover, if observations are more coherent (i.e., less distant) with other elements of the negative network, for example observing stereotypy as “abnormal” or “weird” and already relating these as more negative than positive, then this further increases the probability that the observation will add to the negative stigmatic network. In the context of individuals entering the field of behavior analysis, if students and practitioners have a high coherence between autism and the negative network, they may make observations of the behavior of autistic individuals that are receiving services and evaluate them through the negative stigmatic network. Coherence may increase through continued contact with the field as an increase of relating behaviors of autistic individuals with the negative network.

Knowledge of the number and strength of relations allows for the assumption that everything is related in some way. The degree of relatedness can be quantitively measured through the calculation of distance between data points to model the larger relational networks of stimuli, first demonstrated in Clayton and Hayes (2004). Visual analysis of relational networks has shown its utility in previous RDT research involving race (Belisle et al., 2023) and gender (Sickman et al., 2023) through a Multidimensional Scaling Procedure (MDS) (Belisle & Clayton, 2021). Belisle et al., 2023, sought to establish consistency between MDS procedures and IRAP and IAT methods to model biased relational responding. Stimuli were selected from existing implicit relational tasks towards images and words related to individuals of different races, specifically white and Black. Participants completed the MDS by rating the degree of relatedness of pairwise relations on a scale from 1 (not related) to 10 (strongly related). The MDS is a statistical analysis that uses these ratings to calculate the distances to triangulate a best-fit solution in a low-dimensional geometric space (Borg & Groenen, 2005) and allows for the creation of a two-dimensional visual representation of the participants' relational behavior (Clayton and Hayes 2004). The findings revealed clear clustering along the primary dimension, based on race, where white images and Black images formed distinct clusters (Belisle et al., 2023). Additionally, along the secondary dimension, the patterns were related on the tendencies to approach and avoid. The clustering of relational networks is supported by the measuring of the strength and coherence of verbal relations inside relational networks through the MDS (Belisle & Clayton, 2021). The methodology of the MDS is further supported by Sickman et al. (2023) to construct a preliminary analysis of gender through relational framing along a gender binary. In this study, the MDS is used to assess relational framing based on gender and the transformation of stimulus function of gendered relational frames when the context of gender-consistent and

inconsistent scenarios is introduced. Findings supported the use of the MDS to measure stereotyping of adjectives along a gender binary.

RDT can be utilized to assess the relatedness of these labels to stigmatic descriptor words to assess their level of bias that is present based on the underlying relational networks. Existing verbal relations can be modeled by the MDS in terms of relational density and relational volume, possibly relating along the dimension of autism diagnosis. The purpose of experiment 1 was to examine whether autism stigma could be identified through the use of the MDS procedure, which can align with previous IAT and IRAP research indicating the existence of stigma towards autistic individuals. Another aim of experiment 1 was to conduct an exploratory pilot analysis to investigate the persistence of stigmatic frames surrounding autism as individuals engage in the field of ABA. To assist with socially valid results regarding autism terminology, research must move beyond the selection of terms to evaluate the effects that labels can have on an individual. Experiment 2 aimed to assess the impact of frames related to autism stigma on individuals' real-life decision-making and determine whether such frames could have adverse effects on autistic individuals.

Experiment 1

Methods.

Participants. Participants for the present study included 31 undergraduate students recruited from a psychology class at a Midwestern University, 8 graduate students from an ABA course at a Midwestern University, and 7 practitioners with various roles (i.e., Board Certified Behavior Analyst (BCBA), Registered Behavior Technician (RBT), and Behavior Technician (BT)) were recruited from an ABA clinic. IRB approval for the use of human participants was

gained on 1/31/2022. Verification of approval is noted for IRB-FY2022-425 in Appendix B. Of the undergraduate student participants, 27 identified as female, 5 identified as male, and 1 identified as non-binary. All 6 participants in the graduate student sample and 7 of the ABA practitioners identified as women. In the undergraduate student sample, 26 identified their race as white, 3 identified their race as African American/Black, 3 identified their race as Latino/Hispanic, and 1 identified their race as Asian/Asian American. All participants (7) in the graduate student sample identified as white. Of the ABA practitioners, 6 identified their race as white and 1 identified their race as black. Participants in the undergraduate student sample ages ranged from 23-19 with a mean age of 20.76 years. The ages of participants in the graduate student sample ranged from 24-21 with a mean age of 22.17 years. The ages of the ABA practitioner sample ranged from 41-20 with a mean of 25.75 years.

Disability status was self-identified by participants from each sample. Of the undergraduate student sample, 4 identified as having a learning disability, 2 identified as having a visual impairment, 2 identified as having a chronic health condition, and 1 identified as having a mental disability. None of the 6 participants from the graduate student sample identified as having a disability. In the sample of ABA practitioners, 1 identified as having a learning disability, 1 identified as having a physical disability, 1 identified as having a mental disability and anxiety, and 1 participant did not wish to disclose their disability status. Participants from the 3 sample groups were asked to report if they currently work at an ABA company and the duration of their time working at that company. Responses indicated that participants from both groups currently work for an ABA company, but the title of position differed between groups. Of the graduate student participants, 4 reported that they currently work as an RBT at an ABA company for their practicum placement, 1 reported that they currently work only as an RBT, and

1 reported that they are currently in a practicum placement at an ABA company. Participants from the ABA practitioner sample

Setting and Materials. The survey from the present study was administered through Qualtrics (Qualtrics, Provo, UT), a secured online survey platform. After reading the recruitment form the participants were able to provide their consent or non-consent to participate in the study. Participants that were recruited from undergraduate and graduate courses received the link to the online survey platform and were allotted class time to complete the survey. Upon completion of the survey, students were provided compensation in the form of extra credit. Those recruited from an ABA company were given access to a QR code that directed them to the online survey platform where they were then able to complete the survey at their discretion. ABA practitioners were not provided compensation for their participation in the present study.

A multidimensional framing scaling procedure (MDS) of autism stigma was accessed through the same link or QR code. The autism stigma MDS consisted of 14 pairwise combinations of stereotypically aversive or appetitive adjectives, language referring to autism, and the label "*average person*" for 102 total combinations. Stereotypically aversive adjectives *unhealthy, deficient,* and *outcast,* and stereotypically appetitive adjectives used were *healthy, capable,* and *integrated*. Language referring to autism included person-first labels "*person with autism*", identity-first language "*autistic person*", functioning labels *high-functioning autistic person and low-functioning autistic person,* and the DSM-V support label *requires support*, *requires substantial support*, *requires very substantial support*. Stigmatic descriptor words and language referring to autism were ranked on the relatedness of the words where a ranking of 1 indicated the words were not at all related and a ranking of 10 indicated the words were the same. Due to experimenter error, three relations (high-functioning – healthy, low-functioning –

healthy, autistic person – requiring very substantial support) were not included in the MDS. As modeled in Belisle and Clayton (2021), data gathered from the MDS was analyzed utilizing TIBICO Statistica software (TIBCO Statistica, 2022).

Participants completed the Symbolic Ableism Scale displayed in Table 4 (SAS; Friedman & Awsumb, 2019) included in the survey. The 13-item SAS assesses the subtle discrimination towards disabled individuals in 4 components: individualism (1), recognition of continued discrimination (2), empathy for disabled people (3), and excessive demands (4). All items were scored on a 7-point Likert scale ranging from strongly disagree to strongly agree.

Procedure. After reading the participant recruitment form, participants indicated their consent to participate in the study. All participants completed a short demographic survey which included the identification of age, gender, race, disability status, and status of employment at an ABA company. Participants in both graduate ABA students and ABA practitioners indicated that they currently work and have exposure to the field of ABA. These participants work with individuals with various diagnoses and disabilities. The identification of disability status allows for further analysis of results among those who self-identified as having a disability.

Participants then completed the 102-question autism stigma MDS and ranked the relatedness of words on a sliding scale of 1-10 to capture relational frames surrounding autism. The MDS is used to create a two-dimensional visual representation of the compilation of an individual's relational frames to demonstrate the relational frames of that group. The MDS takes the ranking of relatedness for the pairwise stimuli to create the geometric space. Pairwise stimuli include language surrounding autism, "*person with autism*", "*autistic person*", *high-functioning autistic person, and low-functioning autistic person, requires support*, *requires substantial support*, *requires very substantial support*, and positive *healthy, capable, integrated,* and

negative descriptor words *unhealthy, deficient, outcast*. Positive and negative words were included due to their stigmatic nature (Annamma et al., 2013) to assess interactions of similarity and dissimilarity between different labels of autism. Labels that relate to negative descriptors are more coherent to negative stigma than labels that have a higher level of coherence to positive descriptors. Instructions for participants included:

> *Using the sliding scale, you will rate how closely the two items are related. 1 indicates the words/stimuli are not at all related. 10 indicates the words/stimuli are the same. You will rate the relatedness of all pairs presented on the screen before progressing to the next screen.*

Following the presentation of the MDS, participants were then administered the 13-item SAS to assess for subtle prejudice towards disabled individuals. Participants ranked their agreement with 13 different statements that highlight four key themes that exist within prejudice against disabled individuals. The themes of the SAS measured attitudes towards the perceived levels of ability to achieve goals, recognition of continued discrimination, understanding of issues, and societal demands towards disabled individuals. Higher scores on the SAS indicate elevated levels of prejudice related to disability. In the present study, scores were used as a corollary measure to determine prejudice towards autistic individuals as a part of the broader label of disability. Instructions for participants included:

> *Indicate on the scale below how much you agree or disagree with each statement.*

Results and Discussion. The results for the present experiment were analyzed and graphed geometrically utilizing multidimensional scaling procedures (MDS) outlined in Belisle

and Clayton (2021). Using the Guttman-Lingoes coefficient of alienation, items plotted in geometric space are graphed along two iterated dimensions. These iterations of the MDS put data points in a best-fit model based on the dimensions determined for the scaled items and allow for analysis of the distance between each point. For all participant groups, the MDS dimension 1 demonstrates two clear relational classes, positive (e.g., integrated, capable, healthy) and negative (e.g., outcast, deficient, unhealthy) on the right and left sides of the space respectively. Dimension 2 has an imprecise organization of C-rels and may be a result of a collective function of multiple concurrent relations. Most labels referring to autism are clustered opposite of the label average person in all geometric spaces. Items clustered on opposite sides of the geometric space display the incoherence of those items while those that cluster together have similar functions and demonstrate higher degrees of coherence explaining the formation of relational classes. Stress levels are critical values for MDS procedures as they indicate the validity of the results. A model is consistent if it has a stress value less than .13 and those higher indicate that the model is inconsistent and likely due to chance. Findings show that the stress index for the undergraduate student models stress index was 0.087, the graduate aba student stress index was 0.060, and the ABA practitioner stress index was 0.079. The low-stress levels of these models indicate consistency within the distances of that participant group responses. The scores from participants are visually depicted on the geometric spaces in Figure 6-8 and are representative models.

The distance between each descriptor and label was calculated to determine the best-fit cluster for each data point. Each distance was determined using the Distance Matrix function of statistical software, Statistica, during the analysis of multidimensional scaling results. Clusters of Autistic Positive, Autistic Negative, Average Person Positive, and Average Person Negative are

shown in Tables 5-7. Two clusters, positive and negative, were hypothesized for this analysis of the multidimensional scaling procedure. The distance is visually modeled for the undergraduate sample in Figure 6. Each mean distance between a point and its respective best-fit cluster for the Undergraduate Sample is displayed in Table 5. The mean distance for undergraduate students on the label Average Person from the positive cluster is 0.20-dimensional units whereas the distance from the labels Person with Autism and Autistic person were 0.65 and 0 .95 dimensional units away from the positive cluster respectively. The label of High-Functioning Autistic Person within the undergraduate sample had a shorter mean distance (0.68-dimensional units) to the positive cluster. These four labels of Autism were found to be the most related with to the positive descriptor words Integrate, Capable, and Healthy. The label of Low-functioning Autistic Person related more (0.88-dimensional units) to the negative cluster. Each of the three labels of support from the DSM-V was clustered negatively more with all terms having a distance of less than 0.52 dimensional units away from the negative cluster. The DSM-V support labels and the label of Low-Functioning Autistic Person were related by undergraduate participants closer to the cluster of negative descriptor words, Outcast, Deficient, and Unhealthy.

Visual representation from the geometric space is displayed in Figure 7 for the graduate ABA student sample. Results of best-fit clusters from mean distance that were gathered from the Graduate student group remained consistent with the Undergraduate group except for the label of Autistic Person. In this sample, Autistic Person was found to be slightly closer to the negative cluster with a distance of 0.80 dimensional units while the label Person with Autism was still related closer to the positive cluster descriptors. Positive descriptor words were closely related to the labels of High-Functioning Autistic Person, Average Person, and Person with Autism. Graduate Students then related negative descriptor words closely with all support labels, Low-

Functioning Autistic Person, and Autistic Person. All distance points for the Graduate Student group are represented in Table 6.

Table 7 displays all distances for the group of ABA practitioners. For those in this group, High-Functioning Autistic Person and Average Person were clustered tightly together. These two labels are closely related to the positive descriptor words, Integrated, Capable, and Healthy. The practitioner's results showed that all other terms used to refer to autism were related to Outcast, Deficient, Unhealthy, and the negative descriptors. The labels of Autistic Person and Peron with Autism are closer to the support labels than the negative descriptor words but the best-fit cluster for these labels is in the negative cluster. Figure 8 shows the visual representation of the calculated distances in a geometric space for the ABA practitioners.

For the SAS, the scores were categorized into different percentiles to determine the level of symbolic ableism. Scores equal to or below .12 (25th percentile) were considered to indicate little to no symbolic ableism. Scores ranging from .12 to .29 (up to the 50th percentile) were categorized as slight symbolic ableism, while scores between .29 and .81 (up to the 75th percentile) indicated moderate symbolic ableism. Scores .81 and above were classified as strong symbolic ableism. Descriptive data for the SAS across the participants can be found in Table 8. Regarding the first component, which includes items 8, 9, 10, 12, and 13, the mean score suggests that participants displayed a moderate level of symbolic ableism towards disabled individuals in terms of individualism ($M = .45$, $SD = .05$). In the second component (items 1, 2, 3, 7, and 11), that centered around the belief that discrimination against disabled people persists in society, scores indicated moderate levels of symbolic ableism ($M = .32$, $SD = .04$). The third component (items 5 and 6), focused on empathy, revealed that participants reported relatively moderate levels of symbolic ableism towards disabled individuals ($M = .64$, $SD = .06$). Lastly, in

component 4 (item 4), which assesses excessive demands, participants' responses indicated a moderate level of symbolic ableism towards disabled individuals (M = .76, SD = .10).

The findings of the current study suggest that utilizing MDS as an analytical approach is beneficial for assessing the relative strength of verbal associations involved in the stigmatization directed toward the Autistic community. These results display similar patterns of relational responding as found in previously published IAT and IRAP research (Kelly & Barnes-Holmes, 2013; Power et al., 2009). Apart from the label "high functioning autistic person," all labels referring to autism displayed coherence closer to the negative network. While the "average person" consistently cohered within the positive network within each of the sample groups. The density of these relational patterns differs along the construct of contact with the subfield of ABA. A phenomenon of labels referring to autism and their coherence to the negative network increases the more contact a person has with the subfield of ABA is observed when comparing all three samples. Due nature of the experiment as this is a preliminary analysis further exploration into the phenomenon is needed to determine the persistence across the field as this could provide negative impacts on the majority of clients who utilize ABA services. These results have implications beyond the field of ABA as the coherence of frames around autism largely coheres with the negative network. Entailed relations can be observed in the results with the negative descriptors along with certain labels referring to autism (i.e. low-functioning, and support levels) which could evoke stigmatic behavior when these labels are used to refer to an autistic person. Possible consequences to these entailed relations should be investigated as they may negatively impact the behavior of neurotypical individuals as they interact with autistic individuals.

Experiment 2

Methods.

Participants. 31 undergraduate psychology students were recruited from a midwestern university to complete the biased response preference task. Permission for the use of human participants was gained on 1/31/2022 for IRB number IRB-FY2022-425. Verification of IRB approval is noted in Appendix B. The ages of participants ranged from 19-years-old to 24-years-old. In the present study, 25 participants identified themselves as white, 2 identified as African American/Black, 2 identified as Latino/Hispanic, 1 identified as Asian/Asian American, and 1 identified as themselves as both white and Hawaiian. Of the 31 total participants, 27 indicated that they identified as female, and 4 participants identified as male. Within the demographics survey participants were asked if they identified as having a disability. Most participants (n=23) indicated that they did not have a disability. Of the 8 participants that identified as having a disability, 3 indicated having a learning disability, 2 as having a mental disability, 1 as having a visual disability, 1 as having a physical disability, and 1 participant identified with having both a learning and a visual disability. Participants' ages ranged from 19 – 24 years old with a mean of 20.93 years of age.

Settings and Materials. Participants were able to access the survey through a link to Qualtrics (Qualtrics, Provo, UT) that was provided in class to be completed during class time. All participants completed the survey on their personal devices (e.g., computers, phones) and upon completion received extra credit for their participation. Included in the link was a 4-question demographics survey, where participants identified their age, gender, race, and disability status and a biased preference task, that assessed the choice of an autistic person and an average person in 3 tasks of vocation, social leisure, and childcare. Before completing the autism

language-biased preference task, 3 control questions were displayed. These questions included "*Who would you rather play on your _____ (e.g., football, basketball, sports) team?"* Participants indicated their preference between two high-achieving football and basketball players on a sliding scale. Control questions were used as a benchmark for participants' responses for inclusion as they demonstrated an understanding of the task involved in this experiment.

Upon completion of the control questions, participants were presented with the biased preference response task which included negative stigmatic descriptor words and different labels around autism. Participants were asked to record their preference for completing a task between two people. The two people varied along the first dimension in terms of their diagnostic status and the language used to describe their diagnosis. The phrase "*average person*" was used to indicate a person without a disability. Labels surrounding autism in the present experiment included, "*autistic person*," "*person with autism*," "*autistic person requiring support*," "*autistic person requiring very substantial support*," "*high-functioning autistic person*," and "*low-functioning autistic person.*" Three key areas are encompassed by these labels which are, person first and identity-first language, DSM-V diagnostic support level language, and functioning labels. Participants ranked their preference of task completion between all 6 included labels of autism when placed on the other side of the visual sliding from the label of "*average person."*

The two people also differed on a second dimension that provided negative words to be associated with one of the presented individuals. Preference ranking differing on the first dimension of diagnostic status occurred alone as well as in tandem with the second dimension which included the stigmatic descriptors paired with either the labels for an autistic person or the average person. Stigmatic descriptor words were condensed from the previous experiment to

include only those with a negative connotation, *unhealthy, deficient,* and *outcast*. The prior experiment demonstrated the attachment of negative stigma that comes with each descriptor word in relation to the language used to discuss autistic individuals.

Procedure. Undergraduate psychology students were given the opportunity to earn points in their course for their participation in research. While in class, students were able to access the survey through a link that directed them to the recruitment form for the study. Participants were able to indicate their consent before completing a short demographics survey that had participants identify their age, gender, race, and disability status. Next, a series of concurrent choices were presented to participants who were instructed to choose a person that they preferred to perform tasks related to social leisure (go on a date with), childcare (care for your child), and vocation (prepare a sandwich). Participants were asked to slide an indicator toward one of the two people to indicate their degree of preference. The closer the slider was to the person, the more preferred that person was for the task. A total of 117 preference response questions were randomized and given to the participants. Questions presented two people described as an "*average person,*" and with labels referring to autism, "*autistic person*," *"person with autism," "autistic person requiring support," "autistic person requiring very substantial support," "high-functioning autistic person," and "low-functioning person with autism."* Participants ranked their preferences for each of these labels for the autistic person, they then ranked "*average person"* with one of the negative descriptor words, *unhealthy, deficient, outcast* paired with each of the labels referring to autism respectively. The inverse was also asked to be ranked by the participants where the negative descriptor words were attached to the "average person." For questions of the preference response task, both people presented were labeled "average person" with one being ascribed to each negative stigmatic descriptor word. The final screen

appeared after participants completed the survey which provided them with a code to redeem for class credit.

Results and Discussion. Data are graphed in a way to detail where a negative response shows a bias toward the disabled person and a positive response shows a bias toward the average person or biased response allocation. In the figure, the black bar indicates that the stigmatic descriptor was paired with the disabled person and the grey bar indicates that the stigmatic descriptor was paired with the average person. Results indicate that the participants had a slight preference for autistic individuals to perform a task in areas of relationships (-0.33) and childcare (-0.34) and strongly preferred the average person for the vocational task with a derivation of 1.29. In addition, Figure 9 shows a comparison with no descriptors between the different autism labels and an "average person."

Table 9 displays the mean results of the questions in the biased response task where negative descriptors are added to both the label of 'autistic person' and 'average person.' Displayed in Figure 10 are the differentiated mean for vocational, romantic relationship, and childcare tasks of the biased response task. For the vocational task, the average person is highly preferred with a mean preference deviation of 2.42 over the autistic person whose preference deviation was at -.053. These results display that when the stigmatic descriptors were added to the autistic person they were chosen less than when the stigmatic descriptor was placed on the average person. In the results of the task of romantic relationships, participants demonstrated a high preference for the average person over the autistic person. The mean derivation for the average person when a negative descriptor is present was 2.78 while the mean derivation for the autistic person was -.41. These results demonstrate a high preference for the average person over the autistic person when a negative descriptor is present. There is a high preference for the

average person (3.02) over the autistic person (0.0) in the task of childcare. Within the presence of a negative descriptor, the autistic person was rarely chosen and the average person was highly preferred even with the addition of a negative stigmatic descriptor.

A paired sample t-test was conducted to assess the significance of the difference in means. Mean data were calculated for all 5 labels referring to autism when the negative descriptor words were paired with the average person or with an autistic person. This data was gathered for each preference task given to the participants. Results from the t-test include determined mean values and p-values are shown in Table 10. In the three preference tasks, the p-values less than .05 indicate their significance. When the negative descriptor was coupled with average person participants were still likely to be chosen for the task over an autistic person without any adjective. When the same descriptor preceded an autistic person, participants were highly likely to choose the average person without a negative descriptor. For example, when asked who they would prefer to make them a sandwich if an average individual is described as an outcast, they would still receive a score of 2.48. Replacing an average person with a label indicating they are an autistic person indicated that their score would be -.49. This biased preference is displayed in all three of the tasks but is most evident in the realm of childcare.

Despite the labels indicating that the average person may be deficient, unhealthy, or an outcast, average individuals are preferred to an autistic persons without a stigmatizing label. The difference in this data is significant as the average person was preferred in most cases. Instances in which this assumption consistently deviates across all three tasks is when there is a negative descriptor on the label average person and the label of autism includes the term high functioning. When the context of the individual and task is held constant between individuals, the average person receives a higher rate of reinforcement of their behavior. These results demonstrate the

differential rate of reinforcement that neurotypical individuals receive when compared to autistic individuals. Frames of stigmatization against autistic individuals are observed to have effects on participants' choice in the performance of a specified task, these results have implications in all three domains of tasks identified in the present study. Employers who possess stigmatized relational frames against autistic individuals that are looking to hire for a position that involves the making of food may be more likely to choose an "average person" over an autistic person for the job as they have the entailed relations of *deficient, unhealthy,* and *outcast*. Effects of negative entailed relations are seen in childcare, as the presence of the identified traits may create an unsafe situation for children to be in and may influence a caregiver's choice to place their child in the responsibility of a person whom they relational frame with those traits. Within the context of personal relationships, autistic individuals may be less likely to be chosen as a romantic partner when related to the negative descriptor words. The relational frames surrounding autism display influence over participants' choice in all three contexts negative influence of these frames is demonstrated as a preference for the average person is displayed.

General Discussion

The stigmatization of autism and its traits have negative impacts on individuals in the autistic community. Being on the receiving end of prejudiced behavior creates effects that are felt by members of the autistic community in all areas of their lives (Turnock et al., 2022). The language used to refer to autistic individuals can perpetuate stigma and subsequently cause harm to the members of the autistic community (Chapple & Worsley, 2021). The first aim of experiment 1 was to investigate the possibility of detecting stigma associated with autism by implementing the MDS procedure first utilized in Belisle and Clayton (2021). For all three

groups, largely the words related to autism clustered with the negative terms along a negative and positive dimension with fractionation occurring between the clusters. In terms of density, both the negative and positive clusters display less distances in the geometric space between relations than between clusters. This is consistent with previous accounts of RDT related to gender and race presented in Sickman et al., (2023) and Belisle et al., (2023). These results align with prior research involving IAT and IRAP by Dickter et al. (2020), which has indicated the presence of stigma toward individuals with autism. The findings of experiment 1 demonstrate the utility of the MDS in measuring autism stigma. Results are also consistent with the Beyond the measurement of stigma, the consistency of clustering of terms between experimental groups and the low stress of each of the geometric models may allow for the future analysis of the relation's resistance to change.

Another aim of experiment 1 was to conduct an exploratory pilot analysis to investigate the persistence of stigmatic frames surrounding autism as individuals engage in the field of ABA. The density of relations in the negative network was observed to be variable across samples. For both samples with a beginning learning history established in the field of ABA, graduate ABA students, relations pulled in toward the negative cluster further than in the undergraduate sample. The clustering of relations with the negative network was observed to advance in the ABA practitioner sample. These results may have significant implications for the field of ABA as the population that practitioners interact with are autistic individuals. High coherence to the negative network of relational frames within the graduate ABA students and the ABA practitioners could indicate that behavioral observations of autistic individuals receiving services are being evaluated through preexisting relational frames surrounding autism. The counterforce of the information gained through exposure to the field of ABA may possibly not be enough to reverse

stigmatic frames. This may mean that training programs involved in ABA such as undergraduate degrees, graduate degrees, and online training within our current sample may further reinforce the idea that autistic individuals are “deficient” due to the focus on interventions that are designed to encourage an autistic person's behavior to not deviate from that of behavior neurotypical peers.

The findings of Experiments 1 and 2 are convergent and can be conceptualized as Experiment 1 as the types of relations that pertain to autism stigma (C-rels) and Experiment 2 as the function of that behavior (C-fun). Experiment 1 establishes negative relational frames toward autism within the present sample and the transfer of these negative functions is seen in Experiment 2 within a new sample. In Experiment 2, without any stigmatic descriptor, the participants slightly preferred the average person over the autistic person. This preference occurred at higher rates when a stigmatic descriptor is attached to the autistic person. However, when the stigmatic descriptor is attached to the average person the participant’s preference for the autistic individual occurs at a lower rate. External contingency systems likely influence relational frames due to the development of these frames occurring with interaction with external forces. The external context that may disrupt the network is represented as $-x$ in Equation 1. Ultimately, the C-funcs have a negative impact, but the C-funcs do not operate as they do without the C-rels. When negative relations around autism are established, these relations may then transfer to perceived capability in a task. However, relations may not just affect the specific tasks identified in Experiment 2 as these relations may transfer from the autistic label to the person themselves thus presenting social disadvantages and a lack of access.

The disadvantages and experiences resulting from the negative stigmatic frames of autism may be an outcome of Interlocking Behavioral Contingencies (IBC). An IBC occurs when

two or more individuals engage in topographically different behavior which leads to a similar outcome, where the outcome of that behavior reinforces the shared interlocking behavior (Glenn, 2004). At the conclusion of the interlocking interactions, reinforcement must be obtained as a result of the shared interaction, therefore, maintaining the IBC. In the context of autism stigma, may look like when a behavior observed (a meltdown) by a contingency controller (teacher) occurs may then be evaluated through relational contextual variables neurotypical or autistic. The teacher is more likely to ignore or redirect this behavior in neurotypical children but if the child is autistic this behavior is more likely to be punished with reprimands or time-outs. It is assumed that the child complies with the redirection and therefore receives reinforcement such as "You're doing a great job keeping a calm body." This results in an improved relationship between the teacher and the neurotypical student while the punishment of the autistic child's behavior may have the opposite result. A verbal reprimand or a physical prompt by a teacher may justifiably further escalate the child's behavior and be a source of negative reinforcement that worsens the child's relationship with that teacher. This is just one example of the way that IBC occurs around autism but, IBCs can combine to create larger metacontengencies. The sum of interactions of multiple IBCs produces metacontengencies, where the aggregate outcome reinforces the lower-level IBCs which is a result of the product produced (Glenn, 2010). Metacontengencies matter as their products include policies laws and regulations that all have negative impacts on autistic individuals.

Additionally, the findings of the present study converge with previous research conducted outside of behavior analysis in the field of disability studies and within the autism community. The distance between relations gathered from the MDS procedure may be useful in determining the level of stigmatization of terms referring to autism in relation to the others included in the

analysis. For the present sample, there are minimal differences in the distance towards the negative network between person-first language and identity-first language across samples. The result's main implication is that the preference of individuals should be honored as differences in stigmatization are minimal in order to respect a person's choice in how they would like to be identified as an autistic individual. Functioning labels displayed consistent coherence to opposite networks throughout the sample with low-functioning cohering to the negative network and high-functioning cohering to the positive network. The stigmatization of functioning labels is noted by Chapple and Worsley (2021) who noted concerns about the negative linguistic framing of these labels. This concern is also raised by the Autistic community which stresses the abolishment the use of functioning labels (The Autistic Advocate, 2017). In the present context, the negative autism stigmatic network is of a greater mass than a positive autism stigmatic network, then environmental events that could be interpreted ambiguously may be more likely to be interpreted through the negative network than the positive network.

There are limitations to the present studies, 1 limitation seen in both experiments is the non-representative convenience sample. In experiment one, participants were primarily female with a total sample age average of 22 years old which largely identified as white. This is echoed in experiment 2 as the sample is predominantly female averaging an age of 20 years that is majority white. The group's size, in experiment 1 is not held constant between groups, with 2 out of the 3 groups having fewer than 9 participants. Future research should look to further into a more representative participant sample. A sample such as this may also allow for a deeper analysis of relational frames as they exist outside of the represented demographic groups. Widening the sample could also provide more information on relational behavior that influences autism stigma as well as predictors of relational patterns of this behavior. Another area of future

research could expand is by including participants from multiple ABA companies. Including participants from different companies may provide insight into a larger concept of autism stigma within the field of ABA.

Another limitation of the first experiment occurred due to the experimenter's error 3 relations, high-functioning/healthy, low-functioning/healthy, and autistic person/requiring very substantial support were left out of the survey during data collection. One advantage of the MDS procedure is its ability to handle empty or missing values. In such cases when missing data occurs, the "location" of the missing data can be inferred based on the surrounding relationships between other stimuli by the model (Borg & Groenen, 2005). The presentation of relations in the real world also operates in such a manner as direct relations are not always available. Future research should look to take advantage of the convivence of this procedure to help model complex relations' influence on a single relation in the network. The triangulation of missing data may help to facilitate future research as the MDS may be streamlined with the purposeful inclusion of missing relations. A limitation of the MDS procedure is the time it takes to complete and by presenting subsets of relations it may decrease the total time of completion for the participants. A reduction in the time of procedure could possibly help lessen the fatigue that participants may experience from the multiple presentations of direct relations.

The final noted limitation for both experiments in this study is that the labels referring to autism assume a known diagnosis of an autistic person. When interacting with or observing an autistic person the diagnosis of that person is not disclosed. The behavior of autistic individuals is interpreted through relational networks of individuals more often than diagnosis. People observe the behavior of an individual and conclude that it deviates from the socially expected behavior of a situation. Labeling may then occur if the person is knowledgeable of autistic

behavior and can result in separation from the categorization of neurotypical. In the present study, the relations asked to involve the disclosure of an autism diagnosis which may not represent the making of relations that are made in the real world. Instead of focusing on diagnostic labels, future research should look to include the behaviors commonly associated with autism as relata as this may be what is evaluated during interactions when a diagnosis is not disclosed.

In summary, RDT provides a theoretical framework for the representation of the complex patterns of relational frames surrounding autism. This provides a preliminary analysis of the MDS in detecting stigmatic frames of autism showing negative networks clustering around autism as a whole while also worsening when the learning history of ABA is added to the network. The effects of the function of these negative stigmatic frames on preference for autistic individuals are displayed as the average person preferred highly, especially in the presence of stigmatic descriptors. These results suggest there are existing IBC and larger metacontengencies around autism that can impact autistic individuals. With the presence of IBCs and metacontengencies surrounding this topic, it is essential that future research is conducted in this area to find interventions that can begin to dismantle negative relational frames surrounding autism. This article seeks to encourage readers to help find behavior-analytic ways to solve issues such as autism stigma to help decrease the harm that occurs towards autistic individuals.

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Tables

Table 4. The Symbolic Ableism Scale (SAS) by each component. Questions, where an (R) is present, were reverse-keyed for analysis.

	Item	Question
Component 1		
	8	Even if disabled people try hard they often cannot reach their goals (R)
	9	Even if disabled people are ambitious they often cannot succeed (R)
	10	If disabled people work hard they almost always get what they want
	12	Hard work offers little guarantee of success for disabled people (R)
	13	Any disabled person who is willing to work hard has a good chance of succeeding
Component 2		
	1	Discrimination against disabled people is no longer a problem in the United States
	2	If disabled people would just try harder they would be as well off as nondisabled people
	3	Disabled people are demanding too much from the rest of society
	7	Disabled people should stay hidden
	11	Most disabled people who don't get ahead should not blame the system; they really have only themselves to blame
Component 3		
	5	Over the past few years disabled people have gotten less than they deserve (R)
	6	It is easy to understand the anger of disabled people in America (R)
Component 4		
	4	Disabled people do not complain as much as they should about their situation in society (R)

Table 5. Mean distance in dimensional units of each stimulus to items in Autistic Positive (Au+), Autistic Negative (Au-), Average Positive (Av+), Average Negative (Av-), Combined Positive (Pos), and Combined Negative (Neg) classes for the Undergraduate Group.

	Undergraduates					
	Au +	Au -	Av +	Av-	Pos	Neg
Integrated	0.97	1.69	0.10	1.88	0.05	2.43
Capable	0.91	1.57	0.10	1.75	0.10	2.30
Healthy	0.99	1.71	0.11	1.90	0.06	2.45
High-Functioning	0.92	1.61	0.10	1.81	0.08	2.36
Average Person	0.89	1.48	0.15	1.65	0.20	2.19
Person with Autism	0.79	1.11	0.61	1.41	0.66	1.73
Autistic Person	0.79	0.96	0.87	1.28	0.92	1.47
Outcast	1.13	0.65	1.94	0.75	1.99	0.40
Deficient	1.55	0.88	2.44	0.75	2.49	0.24
Unhealthy	1.77	1.05	2.65	0.86	2.70	0.31
Low-Functioning	0.91	0.72	1.47	0.99	1.52	0.88
Requiring Support	1.05	0.65	1.82	0.81	1.87	0.52
Requiring Substantial Support	1.17	0.66	2.02	0.75	2.07	0.37
Requiring Very Substantial Support	1.31	0.73	2.19	0.75	2.24	0.32

Table 6. Mean distance in dimensional units of each stimulus to items in Autistic Positive (Au+), Autistic Negative (Au-), Average Positive (Av+), Average Negative (Av-), Combined Positive (Pos), and Combined Negative (Neg) classes for the Graduate Group.

	Graduates					
	Au +	Au -	Av +	Av-	Pos	Neg
Integrated	1.15	1.79	0.26	1.87	0.08	2.24
Capable	1.12	1.76	0.21	1.81	0.07	2.21
Healthy	1.11	1.75	0.21	1.81	0.05	2.19
High-Functioning	1.16	1.73	0.31	1.74	0.26	2.18
Average Person	1.31	1.72	0.52	1.54	0.69	2.05
Person with Autism	0.88	0.9	1.12	1.17	1.1	1.17
Autistic Person	0.9	0.8	1.27	1.02	1.29	0.97
Outcast	1.32	0.87	1.97	0.83	2.04	0.53
Deficient	1.24	0.68	2.25	0.83	2.26	0.37
Unhealthy	1.3	0.69	2.3	0.79	2.33	0.32
Low-Functioning	1.17	0.84	1.98	1.16	1.95	0.85
Requiring Support	1.11	0.59	2.07	0.78	2.1	0.37
Requiring Substantial Support	1.12	0.59	2.11	0.78	2.13	0.36
Requiring Very Substantial Support	1.17	0.62	2.18	0.79	2.2	0.35

Table 7. Mean distance in dimensional units of each stimulus to items in Autistic Positive (Au+), Autistic Negative (Au-), Average Positive (Av+), Average Negative (Av-), Combined Positive (Pos), and Combined Negative (Neg) classes for the Practitioner Group.

	Practitioners					
	Au +	Au -	Av +	Av-	Pos	Neg
Integrated	1.44	1.35	1.17	0.94	1.35	1.05
Capable	1.5	1.42	1.16	0.98	1.35	1.1
Healthy	1.33	1.29	1.01	0.92	1.14	1.02
High-Functioning	1.06	1.49	0.44	1.51	0.4	1.82
Average Person	1.34	1.77	0.3	1.39	0.39	1.85
Person with Autism	0.89	0.82	1.69	1.5	1.66	1.41
Autistic Person	0.94	0.89	1.72	1.59	1.69	1.52
Outcast	1.48	0.98	1.95	0.71	1.99	0.35
Deficient	1.31	0.82	2.18	0.94	2.2	0.55
Unhealthy	1.63	1.23	1.79	0.77	1.85	0.5
Low-Functioning	0.89	0.68	1.66	1.12	1.66	0.94
Requiring Support	0.96	0.75	1.94	1.43	1.92	1.24
Requiring Substantial Support	1.21	0.81	2.29	1.3	2.29	0.97
Requiring Very Substantial Support	1.1	0.71	2.09	1.13	2.09	0.81

Table 8. Symbolic Ableism Scale results All items were scaled from 0 to 1. Higher scores reflect greater symbolic ableism towards disabled people.

Participant Group	Component 1		Component 2		Component 3		Component 4	
	M	SD	M	SD	M	SD	M	SD
Combined	0.45	0.05	0.32	0.04	0.64	0.06	0.76	0.10
Undergraduate Students	0.47	0.15	0.33	0.18	0.63	0.19	0.73	0.19
Graduate ABA Students	0.41	0.04	0.33	0.13	0.70	0.12	0.68	0.28
ABA Practitioners	0.47	0.1	0.30	0.17	0.59	0.11	0.87	0.14

Table 9. Table of differentiated mean results from the Biased Response task. Shaded numbers indicate preference for the "average person" while unshaded number indicate preference for the autistic person.

Vocation

	None	Deficient		Unhealthy		Outcast	
		Average	Autistic	Average	Autistic	Average	Autistic
Autistic Person	1.10	-0.85	2.49	-1.40	2.95	-0.12	2.14
Person with Autism	1.08	-0.87	2.48	-1.36	2.81	-0.71	1.98
Requiring Support	1.94	0.32	2.80	-0.15	2.78	0.70	2.36
Low-Functioning	0.38	0.54	2.05	-0.02	2.46	0.84	1.29
High-Functioning	1.95	-1.60	2.58	-2.11	2.63	-1.21	2.43
Average Person		2.23		3.14		3.14	

Romantic Relationship

	None	Deficient		Unhealthy		Outcast	
		Average	Autistic	Average	Autistic	Average	Autistic
Autistic Person	-0.82	-0.85	2.89	-0.65	2.75	-0.54	2.30
Person with Autism	-0.82	-0.91	2.89	-1.06	2.87	-0.75	2.42
Requiring Support	0.69	0.86	3.26	0.37	3.04	0.40	2.87
Low-Functioning	-1.51	0.90	2.45	0.76	2.53	0.68	2.27
High-Functioning	0.80	-1.43	3.25	-2.07	2.82	-1.79	3.04
Average Person		2.73		3.33		3.33	

Childcare

	None	Deficient		Unhealthy		Outcast	
		Average	Autistic	Average	Autistic	Average	Autistic
Autistic Person	-0.71	-0.23	2.93	-0.33	3.00	-0.20	2.96
Person with Autism	-0.57	-0.23	3.00	-0.76	2.97	-0.66	3.01
Requiring Support	0.71	1.03	3.17	1.24	3.19	1.34	3.39
Low-Functioning	-2.09	1.29	2.74	1.10	2.74	1.29	2.61
High-Functioning	0.94	-1.83	3.26	-1.51	3.13	-1.56	3.27
Average Person		3.14		3.41		3.41	

Table 10. Comparison of means and p-values between the labels Average Person and Autistic Person for each negative descriptor. "*" indicates a significant variable.

Vocational

	Mean Score for Average Person	Mean Score for Autistic Person	p-value
Outcast	2.48	-0.49	0.00*
Deficient	2.73	-1.01	0.00*
Unhealthy	2.04	-0.10	0.02*

Relationships

	Mean Score for Average Person	Mean Score for Autistic Person	p-value
Outcast	2.95	-0.29	0.00*
Deficient	2.80	-0.53	0.00*
Unhealthy	2.58	-0.40	0.01*

Childcare

	Mean Score for Average Person	Mean Score for Autistic Person	p-value
Outcast	3.02	0.01	0.01*
Deficient	3.01	-0.05	0.01*
Unhealthy	2.58	-0.10	0.01*

Figures

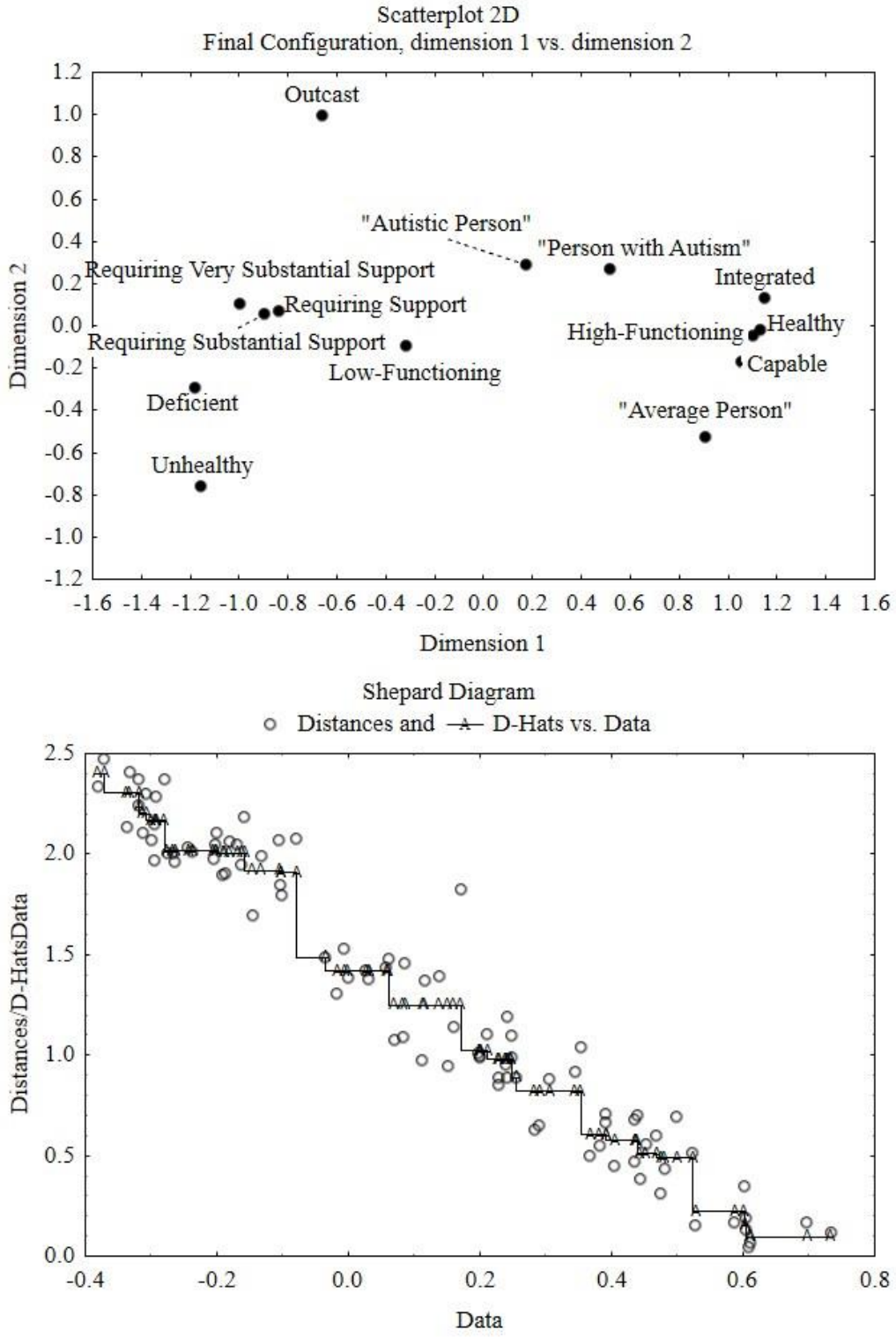

Figure 6. Multidimensional scaling results for Undergraduate Students with Shepard diagram of the multidimensional scaling output.

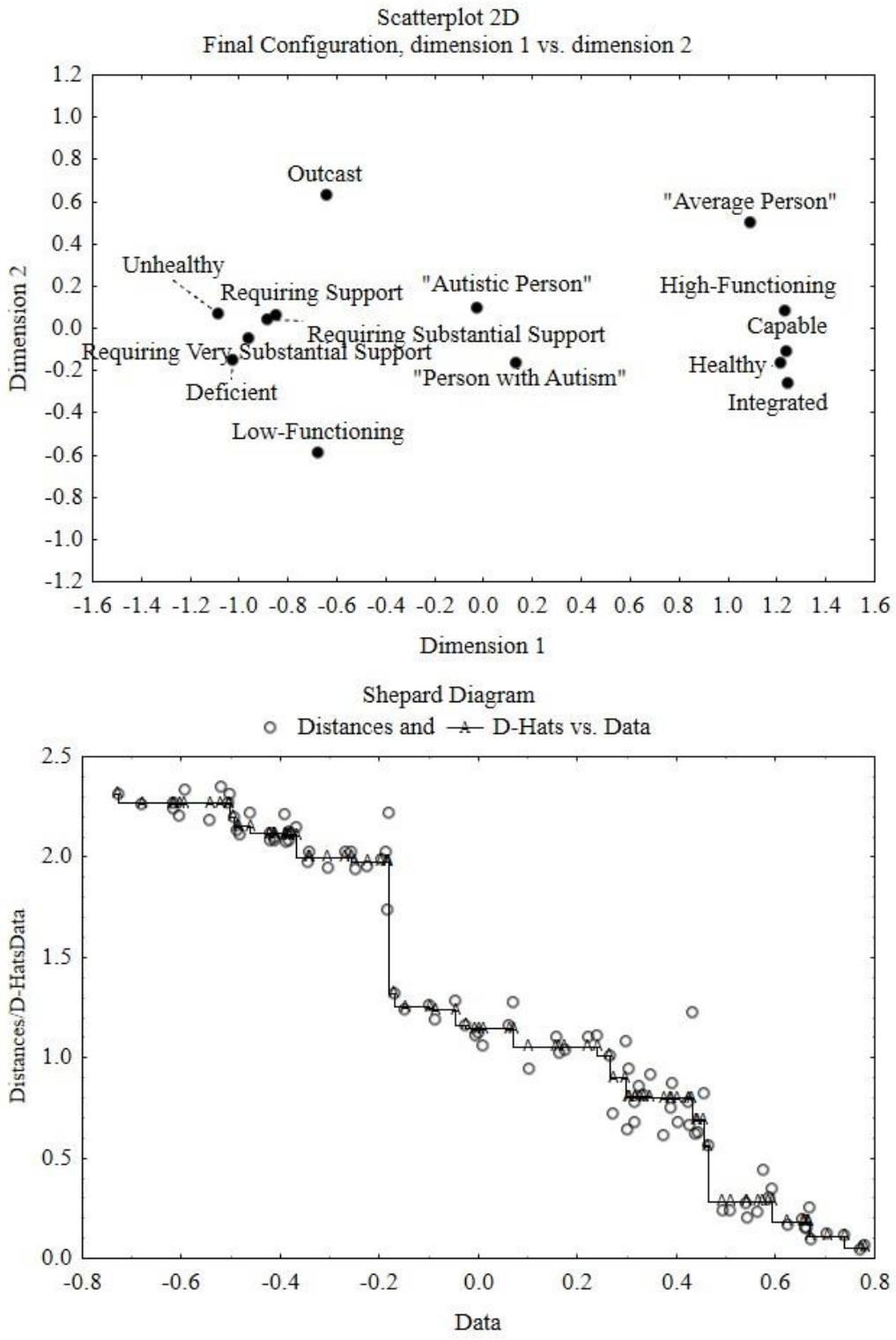

Figure 7. Multidimensional scaling results for Graduate ABA Students with Shepard diagram of the multidimensional scaling output

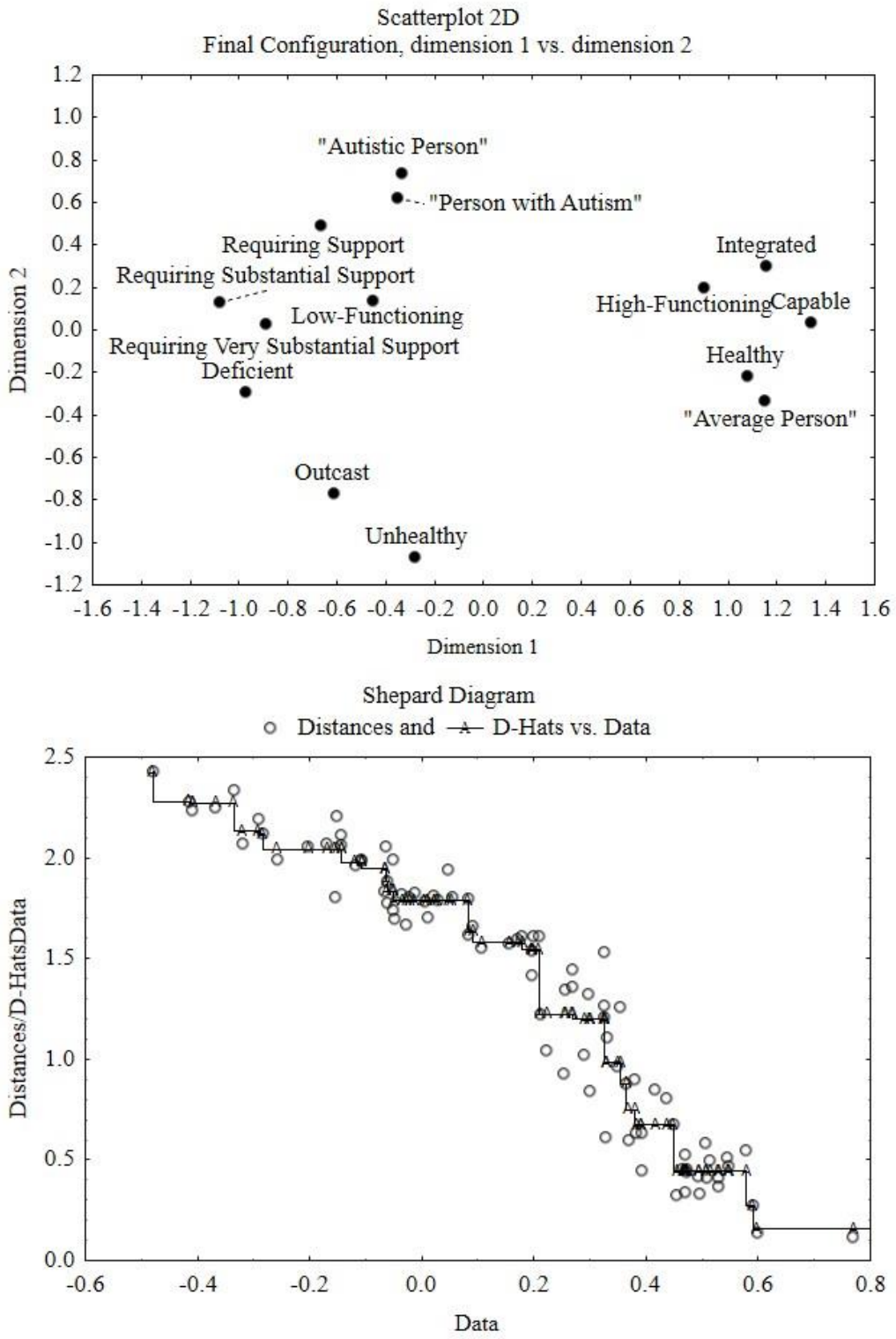

Figure 8. Multidimensional scaling results for ABA Practitioners with Shepard diagram of the multidimensional scaling output.

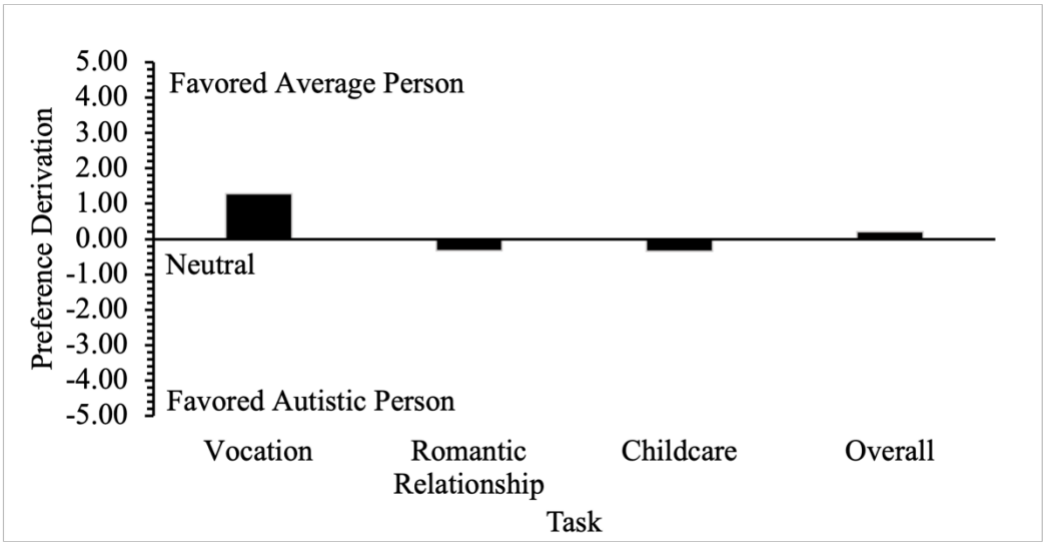

Figure 9. Bar graph of differentiated average results from the Biased Preference Response Task when no negative descriptor is present. Bars above the center line indicate a preference for an average person to perform a task. Bars below the center line indicate a preference for an autistic person to perform a task.

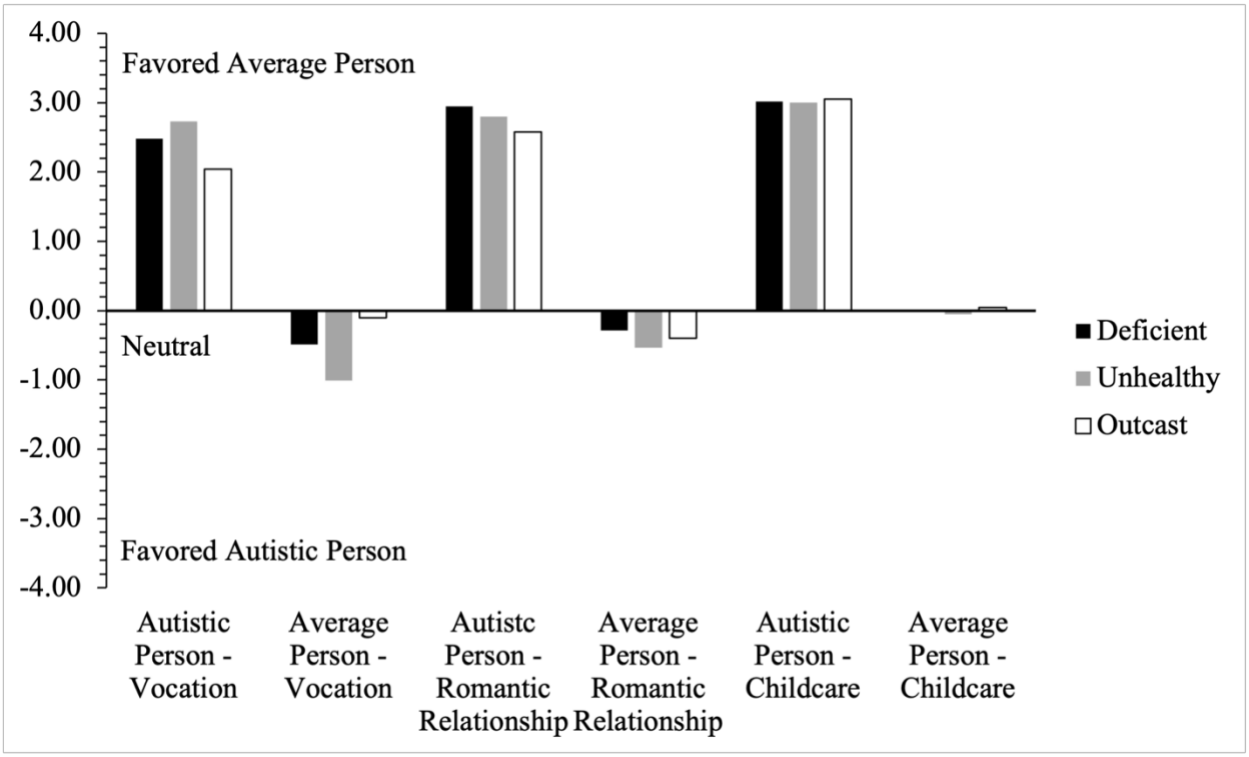

Figure 10. Bar graphs of mean differentiated results from the vocational, romantic relationship, and childcare tasks of the Biased Preference Response task. Each grouping displays the results for when a stigmatic descriptor was presented in for the average or autistic person in a task. Black bars indicate the term 'deficient' was ascribed to the person. Grey bars indicate that the term 'unhealthy' was ascribed and white bars indicate that the person was ascribed as 'outcast.'

SUMMARY

In order for behavior analysis to contribute meaningfully to the dismantlement of systemic issues research should be conducted at multiple levels. The Theory to Impact model (Dixon et al., 2018) provides a framework to be able to categorize research in terms of levels. The theory also allows for the analysis of the body of literature without the field to identify within what levels is there a lack of research on a particular topic. In the context of the first study, the topics of sexism and racism discussions are occurring within the field however, research is nearly non-existent at the translation, implementation, and impact levels of the model. An increasing trend is observed within the field of behavior analysis is observed during the review showing that there is an interest in these topics by researchers. Although there are conversations occurring they are currently mostly centered around the topics at hand. Discussion is not being criticized here as it is essential to develop an understanding of complex topics such as race and gender. Instead, it can be identified as the strongest area of knowledge that behavior analysis has regarding these topics but the failure to translate this information would be disadvantageous to the field as we would create no impact on the issues that are discussed. More research is needed in areas such as translational and implementation as identified by the first study presented in this paper. Research in these areas should build from the pre-existing discussions that are occurring in the field of behavior analysis.

The limited translational research could benefit from the application of RDT (Belisle & Dixon, 2020) which provides a theoretical extension of RFT (Barnes-Holmes et al., 2001) that could be highly relevant to the issues of discrimination and prejudice. In the case of autistic individuals, we see the clustering of most autism labels with a negative network while a

consistent relation to the positive network is seen with the average person in the first experiment. Negative relations around autism are demonstrated in the second experiment as transferring to task performance preference where average individuals are highly preferred to autistic individuals. The outcomes of the second experiment can result in privilege systems or interlocking contingencies that can negatively impact autistic people. The reinforcement that those who control the contingency receive for the punishment of the behavior of autistic individuals is what maintains these interlocking contingencies. The maintenance of harmful interlocking contingencies may have been made present within the field of ABA. In experiment 1, greater biases in the ABA sample may provide some very early evidence that there may be metacontengencies operating in a clinical space or in the field more broadly that promote ableism. Given that 80% of individuals that receive ABA services are autistic people (Axelrod et al., 2012), this is something that behavior analysis should deem as an important issue to address.

The issues presented in this paper related to racism, sexism, and the stigmatization of autism are all intersectional identities. Results from both studies presented are likely to generalize to the other because of their intersectional nature. Translational research within these areas is minimal but is underway and growing as two articles, published after this review was conducted, have applied RDT to gender (Sickman et al., 2023) and race (Belisle et al., 2023). In a preliminary analysis of research on autism stigma, we found similar results displaying negative and positive networks clustering autism that have been found in other recently published accounts of RDT concerning race and gender. Behavior analysis is in the preliminary stages of fully understanding the relational frames surrounding issues such as race, gender, and disability. As the field moves forward, we must keep in mind that research must be done at all levels to be able to make a meaningful change in the world outside of our field. With our current

understanding of the issues, we are able to discuss the issues at hand, but it is in the nature of our field to be acting to save the world. The further behavior analysis is able to push into areas of research that focus on intervention to mediate systemic issues we will be able to make an impact on the harmful contingencies around us.

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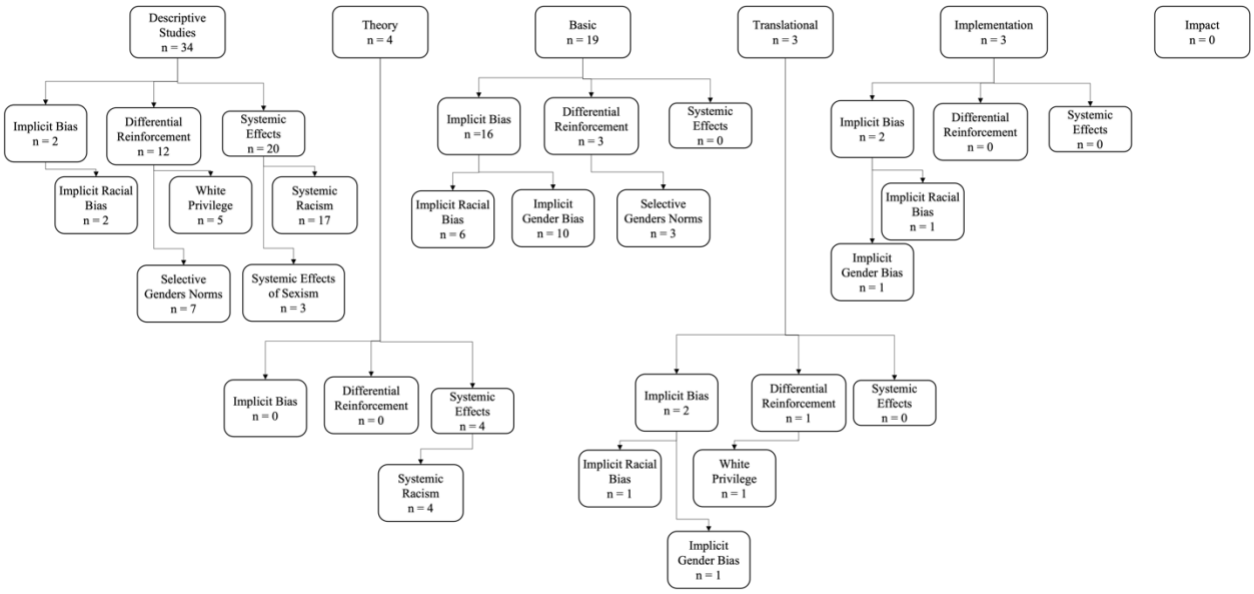
APPENDICES

Appendix A: Flow Diagram of the number of articles per Nested Model level by Theory to Impact Model level



Appendix B: Human Subjects IRB Approval Form Study 2

Date: 7-9-2023

IRB #: IRB-FY2022-425
Title: Disability Stigmatization in Relational Frames: Utilizing the Theoretical Relational Density Framework
Creation Date: 1-31-2022
End Date:
Status: Approved
Principal Investigator: Jordan Belisle
Review Board: MSU
Sponsor:

Study History

Submission Type	Review Type	Decision
Initial	Exempt	Exempt

Key Study Contacts

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