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A call for discussion on stereotypic behavior

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ABSTRACT

Researchers and interventionists, particularly behavior analysts, have a long history of empirically evaluating and clinically implementing interventions related to stereotypic behaviors for autistics/individuals diagnosed with autism spectrum disorder. Despite evidence of the effectiveness of these procedures in decreasing stereotypic behaviors and establishing adaptive competing repertoires, some neurodiversity activists have increasingly expressed concerns about interventions related to stereotypic behaviors. The purpose of this paper was to recognize some of the issues raised by various sources, underscore the importance of including consumers in the selection of goals and methods of intervention from a social validity perspective, discuss balancing concerns with the right to effective behavioral treatment, and consider areas of overlap, reconciliation, and discourse. We urge behavior analysts to continue to include relevant consumers in the selection of goals and intervention, ensure effective behavioral treatment, and approach addressing stereotypic behavior from a place of compassion and caring for our clients.

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Kanner's (1943) influential article described 11 children with similar characteristics which would later be identified as autism spectrum disorder (ASD). One characteristic Kanner described included restricted, repetitive, and stereotyped patterns of behavior such as crossing fingers in the air, jumping up and down, and repeating phrases. Since Kanner's article, stereotypic behavior (sometimes referred to as stimming, stereotypy, or self-stimulatory behavior; see, Cunningham & Schreibman, 2008) has remained a feature of the everchanging diagnostic criterion for autism (now ASD; American Psychiatric Association, 2013). Broadly stated, stereotypic behavior, often characterized as vocal or motor stereotypy, has been defined as ongoing, repetitive behavior, occurring with or without objects, that is typically maintained by nonsocial consequences (Rapp & Vollmer, 2005; Wang et al., 2020). Other definitions include that stereotypic behavior is "noncontextual or nonfunctional" (Shawler et al., 2020, p. 355), "without a clear purpose" (Wang et al., 2020, p. 1), "*non-goal-directed*" (Edwards et al., 2012, p. 182), and characterized by "inappropriateness" (Turner, 1999, p. 839).

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Documented topographies of stereotypic behavior have included, but are not limited to, rocking, spinning, repeating phrases, flapping or flicking hands, and humming (McLaughlin & Fleury, 2018). Recent reviews have demonstrated a high prevalence of stereotypic behaviors for autistics/individuals diagnosed with ASD.[1] For example, MacDonald et al. (2007) found that stereotypic behavior was more prevalent with children diagnosed with ASD than with age-matched children without a formal diagnosis. Chebli et al. (2016) reviewed the literature for the prevalence of stereotypy with individuals diagnosed with developmental disabilities and found that autistics/individuals diagnosed with ASD had the highest reported prevalence (i.e., 88%). More recently, Melo et al. (2020) conducted a systematic review and meta-analysis to evaluate the prevalence of stereotypic behaviors among autistics/individuals diagnosed with ASD and found that the median prevalence was 51.8% (range, 21–97.5%) across the 37 studies reviewed.

Behavior analytic researchers and practitioners have been involved in addressing stereotypic behaviors with autistics/individuals diagnosed with ASD that may interfere with learning and/or cause harm for many years (DiGennaro Reed et al., 2012; Lanovaz, Robertson et al., 2013). This work has involved evaluating the possible function(s) of stereotypic behavior (e.g., Kennedy et al., 2000) and designing procedures to reduce the probability of stereotypic behavior (e.g., Dib & Sturmey, 2007) or placing stereotypic behavior under different, or more desired, stimulus control (e.g., Shabani et al., 2001). The result of this work has been several studies documenting the effectiveness of various behavior analytic procedures to reduce stereotypic behaviors with autistics/individuals diagnosed with ASD across several topographies and contexts. Although there is a plethora of behavior analytic research documenting the effectiveness of procedures based upon the science of applied behavior analysis (ABA) to reduce stereotypic behaviors with autistics/individuals diagnosed with ASD, "Autistic people have become increasingly mobilized and vocal in defense of stimming" (Kapp et al., 2019, p. 1783) and have become increasingly outspoken against ABA more generally (e.g., Bascom, 2014; Devita-Raeburn, 2016; Latimer, 2019; Lynch, 2019; Ram, 2020; Sequenzia, 2016).

Separately from the question of effectiveness is the question of whether intervening on stereotypic behavior is a good idea. The discussion of when and if to target stereotypic behaviors is not novel within the literature (e.g., Bakan, 2014; Cook & Rapp, 2020; McLaughlin & Fleury, 2018), and it may be useful to continue and expand the discussion of stereotypic behaviors for autistics/individuals diagnosed with ASD within behavior analytic interventions. Therefore, the purpose of this paper is to start a discussion within the behavior analytic literature surrounding autism rights and neurodiversity activists' concerns about interventions related to stereotypic behaviors. More specifically, we provide (a) an overview of ABA and stereotypic behavior; (b) an overview of criticisms of stereotypic behavior from the neurodiversity movement; (c) responses to these criticisms; (d) a description of how behavior analysts' ethical duties impact decisions of whether and how to intervene on stereotypic behavior; (e) recommendations for behavior analysts; and (f) next steps for behavior analysts.

ABA and stereotypic behavior

Why behavior analysts may address stereotypic behavior

Baer et al. (1968) noted, "In behavioral application, the behavior, stimuli, and/or organism under study are chosen because of their importance to man and society, rather than their importance to theory" (p. 92). As such, applied behavior analysts have a long tradition of addressing behaviors that are of interest to society, in general, as well as those that are important to each client and their families. This has been the case with stereotypic behavior. Research has demonstrated that engagement in stereotypic behavior can have deleterious effects for autistics/individuals diagnosed with ASD. For instance, stereotypic behavior has been shown to impede observational learning (Varni et al., 1979), responding to auditory stimuli (Lovaas et al., 1971), performing on discrimination (Koegel & Covert, 1972) and academic tasks (Cook & Rapp, 2020), and exploring the environment (Pierce & Courchesne, 2001).

Researchers have also found that engaging in stereotypic behavior is negatively correlated with cognitive functioning (Bodfish et al., 2000; Campbell et al., 2021; Goldman et al., 2009). Further, engagement in stereotypic behavior may impede the development of play, social, and adaptive skills (Koegel et al., 1974), as well as social relationships with peers (Reese et al., 2005). Given these outcomes and the resulting potential for social stigmatization (Cunningham & Schreibman, 2008), stereotypic behavior may lead to being bullied (Rex et al., 2018); isolation from peers; loneliness as evidenced by tools designed to assess social impact of repetitive behaviors (Nevill et al., 2020); and depression (Greenlee et al., 2020), which can have long-lasting, detrimental effects.

In addition to reports of anxiety or agitation when stereotypic behavior is interrupted (Gordon, 2000), stereotypic behavior is highly correlated with self-injurious behavior (SIB; Minshawi et al., 2014). In fact, stereotypy is often a precursor for more serious SIB (Guess & Carr, 1991) suggesting that early intervention to address stereotypy is crucial. Finally, stereotypic behavior may interfere with daily family activities (Lam & Amam, 2007) and has been correlated with high levels of parental stress (Hill-Chapman et al., 2013), reduced family functioning (Boyd et al., 2011), and lack of advancement in careers (Marsack-Topolewski & Church, 2019). Given the possible deleterious effects of engaging in stereotypic behavior and benefits of interventions designed to address stereotypic behavior, it is not surprising that behavior analysts have been involved in the development and evaluation of procedures to decrease the probability of stereotypic behavior or place stereotypic behavior under different, or more desired, stimulus control with autistics/individuals diagnosed with ASD.

A functional account for stereotypic behavior

From a behavior analytic perspective, behavior is a direct function of environmental variables occurring in temporal contiguity with the behavior. Behavior analysts look for causes through direct observation of environmental variables and their functional relationship with the occurrence and nonoccurrence of a behavior of interest (e.g., stereotypic behavior, social behavior, language). As such, behavior analysts view stereotypic behavior as functionally related to observable environmental variables. This pragmatic,

functional approach to behavior has been well documented within the literature and has led to effective, humane interventions (Friman, 2021).

A commonly identified function of stereotypic behavior is automatic (i.e., non-social) reinforcement in which the behavior produces its own reinforcing outcome(s; Lovaas, 1987; Rapp & Vollmer, 2005; Rogers & Ozonoff, 2005). This has also been referred to as having a sensory function (Lovaas, 1987; Rogers & Ozonoff, 2005). While research has often supported the notion of an automatic or non-social function of stereotypic behavior (e.g., Lovaas, 1987), there is some research that has evaluated contingencies of positive social reinforcement as well as escape and avoidance contingencies with some forms of stereotypic behavior (e.g., avoidance of demands; Cunningham & Schreibman, 2008). There is also ample evidence that autistics/individuals diagnosed with ASD engage in stereotypic behavior in more barren environments (Querim et al., 2013). Said more colloquially, the research has demonstrated that autistics/individuals diagnosed with ASD are more likely to engage in stereotypic behavior when bored. Taken together, the results of behavior analytic research suggests that one should not presume the function of stereotypic behavior, and it is imperative to conduct a functional behavioral assessment prior to designing any intervention related to stereotypic behavior.

Behavior analytic approaches to stereotypic behavior

The aforementioned deleterious effects of stereotypic behaviors may be a primary reason why researchers and interventionists, particularly behavior analysts, have a long history of empirically evaluating and clinically implementing interventions related to decreasing the occurrence of stereotypic behaviors for autistics/individuals diagnosed with ASD (see, Akers et al., 2020; DiGennaro Reed et al., 2012; Rapp & Vollmer, 2005; Wang et al., 2020 for reviews) and developing alternative adaptive skills to replace these stigmatizing and often interfering topographies. Interventions across this literature most commonly involve antecedent manipulation (e.g., providing competing stimuli; Hagopian & Toole, 2009), reinforcement-based procedures (e.g., prompting and reinforcing desired play; Lang et al., 2014), punishment-based procedures (e.g., response interruption and redirection in which a series of demands are provided that are presumably incompatible with the stereotypy contingent upon each instance of stereotypy; Giles et al., 2018; Sloman et al., 2022), or a combination of procedures. Ultimately, these interventions can be divided into two broad categories: (a) reduce and replace and (b) changing stimulus control.

Reduce and replace

Reduce and replace interventions aim to reduce stereotypic behavior (e.g., duration, rate) while directly or indirectly increasing other desired behaviors (e.g., Butler et al., 2020; Gehrman et al., 2017; Lang et al., 2014; Lanovaz et al., 2010). For example, Butler et al. (2020) evaluated the use of differential reinforcement of other behavior (DRO) on the motor and vocal stereotypies exhibited across multiple settings by a 22-year-old adult male diagnosed with ASD.[2] Initially, access to one of two highly preferred items was made available following completing work in the absence of motor or vocal stereotypic behavior for 1 min. Any motor or vocal stereotypic behavior that occurred during the targeted interval resulted in resetting the timer. As the participant was successful, the

duration was gradually increased to a maximum duration of 60 min. This was done in an effort to decrease the duration of work with stereotypic behavior and increase the duration of work without stereotypic behavior. The results indicated that a DRO was effective across all settings in which the intervention occurred.

Reduce and replace interventions may also include the identification of a functional match to the stereotypic behavior. Procedures to identify and use functionally matched stimuli (i.e., those that produce similar effects to prior access to engaging in the target behavior) to treat automatically maintained stereotypic behavior have been well documented within the literature (e.g., Fisher et al., 1998; Lanovaz et al., 2009; Love et al., 2012; Piazza et al., 2000). For example, Love et al. (2012) examined the effects of response interruption and redirection (RIRD), noncontingent access to matched stimulation, and RIRD combined with noncontingent access to matched stimulation on the vocal stereotypy of two participants. Items were classified as matched if they made sounds while items that did not make sounds were classified as unmatched. The matched stimulation was further determined by measuring the occurrence of vocal stereotypy while alternating three conditions: baseline, items with sound, and items without sound. The results demonstrated that suppressive effects on vocal stereotypy for one participant across all treatment conditions (i.e., RIRD, noncontingent access to matched stimulation, and RIRD combined with noncontingent access to matched stimulation). There was a slightly greater suppression of vocal stereotypy during the RIRD combined with noncontingent access to matched stimulation condition for the second participant.

Changing stimulus control

Interventions have also been developed to place stereotypic behaviors under different, or more desired, stimulus control (e.g., Boyle et al., 2020; Slaton & Hanley, 2016). For example, Slaton and Hanley (2016) evaluated the rate of stereotypy for two children with autism under multiple and chained schedules. Across both schedules, two different colored cards represented conditions where stereotypy would be blocked or allowed. Access to the card associated with access to stereotypy varied based on the schedule in effect. Stimulus control of stereotypy and item engagement was better established with chained schedules. That is, lower rates of stereotypy and higher rates of item engagement occurred in the presence of the color card associated with stereotypy being blocked and more stereotypy and less item engagement occurred in the presence of the color card associated with stereotypy being allowed. This approach for addressing stereotypic behaviors helps individuals learn when such behavior is least likely to be viewed negatively, while still allowing the individual to contact the consequences or products of engaging in the behavior.

Critiques of addressing stereotypic behavior

Society Should be more accepting

Some autism rights activists (see, Bakan, 2014), behavior analysts (e.g., Pakutz, 2019), and neurodiversity activists (see, Bakan, 2014) contend that stereotypic behavior is an integral part of being an autistic/individual diagnosed with ASD, and society should be accepting of them "as they are." Furthermore, Coon and Rapp (2020) noted that "Several social

forums have argued that such [stereotypic] behaviors should not be viewed as problematic but rather a form of 'neurodiversity'" (p. 1827). For example, Kapp (2019) stated, "The neurodiversity movement, which celebrates autism both as a way of being and a disability to accept and support, has embraced stimming" (para. 17), and Fahrenheit (2020) concluded that "We now have research to confirm what autistic people have been saying about stimming-it's important to us and healthy and should be socially accepted" (para. 53). As a result, some autism rights and neurodiversity activists recommend that interventions should not include reducing or replacing stereotypic behavior.

Stereotypy is a coping mechanism

A second concern about targeting stereotypic behavior voiced by autistics/individuals diagnosed with ASD is the notion that behavior analysts overlook purported benefits of stereotypic behavior (Anxious Advocate, 2015; Fahrenheit, 2020; Kapp, 2019). Specifically, based on surveys and other self-reports by those who engage in stereotypic behavior, stereotypic behavior serves as a coping mechanism for stressors within one's environment (e.g., Kapp et al., 2019; Orsini & Smith, 2010). For example, Kapp (2019) surveyed 32 autistic adults and concluded that "Stimming was therefore reported to be a useful behaviour, serving to contain or control excess emotion" (p. 1788). Others have stated that stereotypic behavior "is a natural expression of feelings and helps regulate overwhelming sensory input" (Anxious Advocate, 2015, para. 22).

Body autonomy and dignity violations

A third concern from autism rights and neurodiversity activists is that interventions for stereotypic behaviors violate the dignity and bodily autonomy of autistics/individuals diagnosed with ASD (Ask an Autistic, 2019b; Shoyer, 2015; Spath & Jongsma, 2020). For instance, Shoyer (2015) stated, "In IBI [intensive behavioral intervention], our kids are so often made to do things they aren't comfortable with – stimming is suppressed in favour of 'table ready hands . . . '" (para. 35).

Decreasing stereotypic behavior is abuse

A fourth concern is that the decision to target stereotypic behavior is abusive in and of itself (Ask an Autistic, 2019; Fahrenheit, 2020; Kapp, 2019; Lynch, 2019; Memmott, 2020; Neurodefiant, 2019; Sequenzia, 2015; Shoyer, 2015; Silentlyspeakingvolumes, 2020; Unstrangemind, 2016). For example, Fahrenheit (2020) stated, "Interventions that result in years spent trying to force a child to engage in eye contact, condition a child to stop stimming or obey commands such as 'hands down' with no apparent understanding of the function of such behaviors for children with ASD, is undoubtedly abusive and frankly irresponsible when understanding the autistic brain" (para. 46). Claims of abuse have also extended to ABA more generally with statements such as "All ABA is abuse" (Latimer, 2020, pp. 06,44) or "The ends should never be used to justify the means. Even if ABA has taught your child a useful life skill, if it was done in a way that was abusive (and yes, I consider a violation of a child's autonomy to be abusive) then you have simply created more problems for your child (and therefore yourself) later on" (Shoyer,

2015, para. 21). Claims of abuse are also gaining traction with behavior analysts and consumers on social media platforms (e.g., Do Better Movement, n.d.), webinars (e.g., NJ Autism Center of Excellence, 2020), conference presentations (e.g., TED, 2019), and journal articles (e.g., Sandoval-Norton & Shkedy, 2019).

Responses to critiques of addressing stereotypic behavior

It is essential for members of the behavior analytic community who serve autistics/individuals diagnosed with ASD to carefully and kindly listen to the viewpoints and critiques coming from those in the autistic community. These critiques should not be easily dismissed or ignored, but should result in careful consideration and review by those in the behavior analytic community. What follows are some additional considerations and review of the aforementioned critiques.

Society should be more accepting

It is important to acknowledge that research has documented the effects of stereotypic behavior on others. For example, Welsh et al. (2019) found that mainstream teachers reported less sympathy, greater frustration, and less confidence working with individuals who engaged in restricted and repetitive behaviors (i.e., stereotypic behavior) than teachers working in special educational settings. In another example, Coon and Rapp (2020) showed college students (a population that may work with and otherwise engage with autistics/individuals diagnosed with ASD) video clips of a child with ASD engaging in stereotypy. Coon and Rapp found that even low levels of motor stereotypy were correlated with negative perceptions of the child in the video clips, which increased as the child engaged in higher levels of stereotypy. In school and work settings, stereotypic behavior may also be harmful (e.g., playing with saliva; Luiselli et al., 2004) or disruptive (e.g., loud and frequent vocalizations; Lanovaz et al., 2011) to others. It should be noted, however, that recent descriptive analyses of conversation skills among some neurotypical young adults have found that subtle, distracting non-vocal behavior is sometimes common within conversations (e.g., Hood et al., 2021).

We want to emphatically state that we hope no practicing behavior analyst would target stereotypic behavior merely because they, or others, view it as eccentric or socially stigmatizing. Nor is it justified to make a moral judgment about a person's preference for certain types of sensory stimulation. It is our hope that everyone agrees with supporting changes for a more inclusive world where people are more accepting of differences, behaviorally or otherwise. Behavior analysts can and should make an important contribution to promoting values of inclusiveness and acceptance. Challenges arise, however, when considering how to best prepare our clients for the world in which they currently live, which is often not as accepting as may be desired. Society arguably has a long way to go with respect to building a world that is more inclusive and accepting of differences in behavioral patterns. Until this world exists, the behavioral research provides an option for reducing stereotypic behaviors and providing functionally alternative behaviors that may offer an opportunity to empower clients to choose how they behave across settings.

Stereotypy is a coping mechanism

There is no doubt that some autistics/individuals diagnosed with ASD have reported that stereotypic behavior is a coping mechanism (Anxious Advocate, 2015; Fahrenheit, 2020; Kapp, 2019). It is also unlikely that individuals who report stereotypic behavior as a coping mechanism will seek assistance in decreasing its occurrence. Nonetheless, behavior analysts should exhibit caution when generalizing these reports to all autistics/individuals diagnosed with ASD (see, for example, Hanley et al., 2005). This should be the case with any broad generalizations (e.g., we would not assume what functions as a reinforcer for one 5-year-old child diagnosed with ASD would function as a reinforcer for all 5-year-old children diagnosed with ASD). Said differently, it is important to recognize that the experience of one or more individuals may not generalize to the experience of all persons with ASD. Furthermore, while it is possible that stereotypic behavior can result in stress relief for some individuals in some situations, it is also possible that stereotypic behavior is not the only or best option as a coping mechanism.

Additionally, for behavior analysts, relying on self-reports to identify possible causes of a behavior creates challenges to the accurate understanding of the nature of the behavior. Self-report data have been repeatedly demonstrated to be unreliable (Cooper et al., 2020; Kazdin, 2011). Notable sources of inaccuracy have included a lack of correspondence between reported and observed responding (i.e., a lack of say-do correspondence), response-shift bias (Howard & Dailey, 1979), and recency effects (Cooper et al., 2020; Kazdin, 2011). As a result, behavior analysts place emphasis on objective measurement as well as manipulation of environmental variables to determine why behavior occurs (Cunningham & Schreibman, 2008). This is not to say that self-reports do not have their place in a science of human behavior. When used in conjunction with objective measures of treatment outcomes, subjective judgements, such as self-reports, have long been a hallmark of ABA (Wolf, 1978). The problem for behavior analysts, however, arises when subjective judgements are used as the sole measure for identifying the cause of behavior, as in the case from some autism rights and neurodiversity activists.

Body autonomy and dignity violations

Acknowledging that interventions under the hypernym of "ABA" may have violated the dignity and bodily autonomy of some autistics/individuals diagnosed with ASD may be the first step toward reconciliation, while balancing these concerns with the right to effective behavioral treatment (Bannerman et al., 1990; Van Houten et al., 1988). For any autistics/individual diagnosed with ASD whose dignity or bodily autonomy has been violated, we must be apologetic, we must listen, and we must ensure that changes are made in the field for it to not happen again.

However, with respect body autonomy, it is not possible to discuss the implications of targeting stereotypic behavior without first acknowledging the fundamental conflict between freedom versus interventions that influence the choices or restrict the movements of individuals. It is also important to distinguish between children who are incapable of making judgements for themselves and are dependent on adults to decide on their behalf versus adults who are fully capable of making informed decisions for themselves. There are many things a young child would not choose to

do if given full autonomy (e.g., wear shoes when they go outdoors, wash their hands before eating food, get vaccinations) and things they would choose to do that may be detrimental to their wellbeing (e.g., eat excessive amounts of unhealthy food, spend all day on TikTok). Parents, teachers, and therapists make decisions about when and how to influence the behavior of a child based on their values (subjective) and available data (objective) related to the risks of action or inaction, as well as the various types of actions one might take. The greater the judged level of harm that could occur, the greater the imperative to act and the more serious are the consequences of inaction. It is within this context and with close collaboration with parents/guardians that behavior analysts make decisions about what to target and how to target it within an ABA-based intervention program for an autistic child/child diagnosed with ASD.

Decreasing stereotypic behavior is abuse

First and foremost, claims of abuse for targeting stereotypic behavior must be taken seriously. Behavior analysts must take all possible courses of action against any persons causing abuse. Additionally, behavior analysts must put into place systems to ensure that interventions are of high quality and that abuse will not happen. Furthermore, for anyone who has been abused in the name of "ABA," we are sorry. It should not have happened, it was not right, and the field must work to decrease the number of legitimate claims of abuse down to zero. Although we are apologetic, need to listen, and should always look to improve our field, we also should not accept wide claims that targeting stereotypic behaviors is abusive and has resulted in harm without evidence to support such claims. As such, we must look to the research.

Reviews of the research on interventions related to stereotypic behavior indicate that "reducing stereotypy generally leads to [positive] changes in other behaviors" (Lanovaz, Rapp et al., 2013, p. 1240). For instance, improvements in item engagement (Zhou et al., 2000), vocalizations (Celiberti et al., 1997), communication (Anderson et al., 2010), sitting (Lanovaz, Robertson et al., 2013), play (Bennett et al., 2011), correct responding (Rosenthal-Malek & Mitchell, 1997), and academic tasks (Cook & Rapp, 2020) have all been observed following a reduction in stereotypic behavior. Researchers have also found that stereotypic behavior can lead to SIB over time (Rojahn et al., 2016). For instance, Rojahn et al. (2016) evaluated the relationship between stereotypy and SIB with 160 infants at risk for developmental delays. Parents of the children completed several assessments at three different points in time separated by approximately 6 months. Rojahn and colleagues found that stereotyped behavior was an important variable in the development of SIB, meaning that children who exhibited more frequent stereotypic behavior in the first assessment tended to have more frequent SIB at the later assessment. Furthermore, none of the research related to behavior analytic interventions for stereotypic behavior or the reviews of this literature (e.g., Akers et al., 2020; Chebli et al., 2016; DiGennaro Reed et al., 2012; Lanovaz, Robertson et al., 2013; Rapp & Vollmer, 2005; Wang et al., 2020) have indicated harm or abuse experienced by the participants within this research. This is not to say that targeting stereotypic behavior may not lead to reports of harm, but it is to say the empirical evidence has not demonstrated this correlation.

Recommendations and future directions

There appears to be some stark differences between the viewpoints and critiques coming from those in the autistic community and ABA-based practice and research. For example, behavior analytic research has found that treating stereotypic behavior results in positive changes for autistics/individuals diagnosed with ASD (Akers et al., 2020; DiGennaro Reed et al., 2012; Rapp & Vollmer, 2005; Wang et al., 2020) while some in the autistic community have become increasingly outspoken against ABA and intervening on stereotypic behavior (e.g., Bascom, 2014; Devita-Raeburn, 2016; Latimer, 2019; Lynch, 2019; Ram, 2020; Sequenzia, 2016). How might behavior analysts balance the views of some autism rights and neurodiversity activists and the research on the potential detrimental effects of engaging in stereotypic behavior? Below we provide some recommendations for behavior analysts on some possible ways to proceed.

Recommendation 1: Engage in ethical practices

One of the most important recommendations is for behavior analysts to engage in compassionate and ethical service delivery. ABA has always strived to be a field that promotes compassion and dignity, helps our consumers live their best life possible, and brings joy and happiness to our learners. This is evident by the final sentence in one of the first studies evaluating the effectiveness of operant conditioning with an autistic boy; "Dicky continues to wear his glasses, does not have tantrums, has no sleeping problems, is becoming increasingly verbal, *and is a new source of joy to the members of his family* [emphasis added]" (Wolf et al., 1964, p. 312). In fact, behavior analytic literature is full of works that have directly or indirectly discussed the importance of compassion as it relates to behavioral intervention. Wolf (1978) pushed for the field to adopt social validity measures to help improve our interventions and outcomes, indirectly ensuring that compassion and dignity would be the goal of all intervention. Van Houten et al. (1988) described the rights of clients to effective treatment, laying out ways that behavior analysts can be more compassionate, achieve outcomes for our clients, and implement quality intervention. To help maintain the dignity and rights of adult clients, Bannerman et al. (1990) challenged the field to consider balancing the right to habilitation with the right to personal liberties. More recently Taylor et al. (2019) described the need for compassionate care as part of behavioral intervention. All of this has resulted in changes and improvement to our field, which is also portrayed in the Behavior Analyst Certification Board (BACB) Ethics Code for Behavior Analysts (Behavior Analyst Certification Board, 2020).

The Ethics Code for Behavior Analysts (Behavior Analyst Certification Board, 2020) has outlined core principles (i.e., benefit others, treat others with compassion, dignity, and respect, behave with integrity, and ensure their competence) to which all behavior analysts should adhere. Within these core principles behavior analysts should: (a) "work to maximize benefits and do no harm;" (b) "behave toward others with compassion, dignity, and respect;" and (c) "fulfill responsibilities to their scientific and professional communities" (Behavior Analyst Certification Board, 2020, p. 4). These core principles can be directly related to behavioral intervention and stereotypic behavior. Intervention plans addressing stereotypic behavior should be informed by a risk/benefit analysis

(described below); include safeguards to ensure it is implemented with compassion, dignity, and respect; and include the client in the intervention and goal selection process when possible. Finally, by relying on objective assessment, data, and behaviorally based interventions when addressing stereotypic behavior, we stay true to the values of science and our behavior analytic community. In addition to these core principles, there are many ethical codes (e.g., 2.01, 2.13, 2.14, 2.17, 2.18) which could be directly related to stereotypic behavior. For example, the use of objective measures (e.g., functional analysis, functional behavior assessment, ABC data) helps determine the environmental cause(s) of stereotypic behavior which can be used in conjunction with subjective measurement (e.g., self-report).

Recommendation 2: Continue to listen

It may first be important to reiterate that much has been and can continue to be learned from listening to consumers' evaluations of our interventions. Based on self-reports found in blogs (e.g., Anxious Advocate, 2015) and the peer-reviewed literature (e.g., Kapp et al., 2019), some view stereotypic behavior as more useful than harmful. Although some behavior analysts might not agree with these perspectives, we should be receptive to viewpoints that differ from our own and recognize that some autistics/individuals diagnosed with ASD view stereotypic behavior as part of their identity. While those who maintain this view are unlikely to seek treatment from a behavior analyst to address stereotypic behavior, behavior analysts should exercise caution when generalizing these viewpoints to all autistics/individuals diagnosed with ASD (see, for example, Hanley et al., 2005). Nonetheless, behavior analysts should continue to invite autistics/individuals diagnosed with ASD to behavior analytic conferences. Doing so will provide more opportunities to hear from a variety of autistic perspectives and hopefully better understand these perspectives and how they were developed. Behavior analysts also should embrace respectful and professional discourse as this has always been a hallmark of science.

Recommendation 3: Listen critically

Behavior analysts must also be cognizant that autism is not monolithic and there are varying perspectives in the autism community. Also, there are many autistics/individuals diagnosed with ASD without well-developed vocal-verbal repertoires or with cognitive impairments who are less equipped to express their perspectives. In these cases, it is often parents and/or family members who become advocates. Additionally, it is very likely there are some autistics/individuals diagnosed with ASD who no longer want to be associated with autism and/or behavioral intervention. They may simply be content with the services they received and the lives they are living. As such, behavior analysts must treat each person's perspective individually. Learning what is socially valid or invalid for one person or group of people does not permit us to generalize that assessment to other persons or groups. It is likely that something that is socially valid to one person will be socially invalid to another; questions of social validity should always include context (e.g., socially valid to whom?). Reports of the benefits or harm of interventions related to stereotypic behavior should be continually sought from our

clients and their families, as they are the consumers of intervention. As Wolf (1978) noted, "Whether or not the program is helpful can be evaluated only by the consumer" (p. 210). As such, while some may view stereotypic behavior as part of their identity, useful, or otherwise, if they are not the direct consumer of the intervention, their perspective may not provide the most accurate representation of the social validity of the intervention (see, for example, Campbell et al., 2021; Shawler et al., 2020).

Recommendation 4: Conduct risk/benefit analyses

Behavior analysts should conduct a risk-benefit analysis when deciding to address stereotypic behavior. These risk-benefit analyses are directly related to body autonomy. When it comes to the freedom of deciding what to do with one's body, there are important reasons not to automatically provide unrestricted range of movement. Society places restrictions/sets expectations for behavior in many places, making complete body autonomy not available/feasible to anyone. For example, we systematically reinforce remaining in the proximity of an adult and not wandering off while crossing a parking lot, have fines in place for disrupting or destroying the property of others, restrict access entirely or during certain times to private properties, and require those who drive to be restrained by safety harnesses (i.e., seatbelts). The mere act of putting restrictions in place is not in and of itself a violation of individual rights. What is required is a judgment about the degree of restriction weighed against the outcome(s) or benefit(s) for the person. For instance, Shoyer (2015) stated, "In IBI [intensive behavioral intervention], our kids are so often made to do things they aren't comfortable with – stimming is suppressed in favour of 'table ready hands . . . '" (para. 35). This statement demonstrates that, unfortunately, there are likely intervention contexts that autistics/individuals diagnosed with ASD have contacted that have targeted decontextualized behavioral control that is in violation of their dignity and bodily autonomy. This is concerning, and we fear it is the result of a decrease in the quality of training new behavior analysts (see, Carr et al., 2017; Leaf et al., 2020, 2017). We hope that reminders such as this paper will help ensure the quality practice of ABA intervention.

Research evaluating methods to develop repertoires to make informed decisions about one's own behavior will also be helpful in reconciling concerns of violations of dignity and bodily autonomy. For example, Anderson et al. (2010) evaluated the effectiveness of an intervention that taught participants to request access to stimulus conditions in which it was acceptable to engage in stereotypic behavior. Anderson and colleagues hypothesized this approach might be more socially valid than interventions designed to reduce stereotypy across all environments. Extensions of this research may include identifying the necessary repertoires to make informed decisions about the contingencies that may be in place for engaging or not engaging in stereotypic behavior in different environments. For example, engaging in certain topographies of stereotypic behavior (e.g., small finger tapping) in a more public area (e.g., on a bus) may not contact any adverse social contingencies (e.g., bullying), while other topographies (e.g., mouthing the seat) may. In addition to certain topographies of stereotypic behavior, it is likely that the frequency of stereotypic behavior may influence if an intervention is warranted or preferred. Ultimately, a modern, progressive approach to ABA would help develop the necessary repertoires so the autistic/individual diagnosed with ASD could then decide to engage in

stereotypic behavior or not. This approach could, in fact, provide more dignity and bodily autonomy.

As helping professionals, we must identify if and when stereotypic behavior should be targeted, which is not a new topic within behavior analytic research. For example, Cook and Rapp (2020), first published in 2018, sought to evaluate the extent to which direct treatment of vocal stereotypy, motor stereotypy, or both, during academic tasks was required for five children diagnosed with ASD. The results indicated that the extent to which stereotypy required treatment for academic tasks was idiosyncratic. That is, direct treatment was required to increase academic engagement for some participants and not for others. Cook and Rapp provided an assessment model to help practitioners determine the least intrusive, most efficient intervention with respect to stereotypy in the context of academic tasks. Future researchers should help develop similar guides for interventions related to stereotypic behavior in other contexts (e.g., social, play).

Recommendation 5: Need for social validity

As stated throughout this paper, social validity is a critical component of ABA. Unfortunately, the field has not lived up to the promise of social validity as it is not frequently reported (Ferguson et al., 2019). This needs to change in research and in clinical practice. Self-reports are just one form of social validity and can indicate the extent to which those interviewed perceive the importance and acceptability of the goals, procedures, and outcomes of our interventions (i.e., social validity, Wolf, 1978). As such, we should continue to seek these types of social validity data from consumers throughout all phases of intervention. Doing so will help ensure that the procedures we are implementing are preferred by our clients and help examine if the results of these interventions are desired by our clients and consumers.

There are many ways that social validity data should be taken. First, we encourage behavior analysts to include autistics/individuals diagnosed with ASD and their caregivers in the decision-making process at the onset of any intervention designed to address stereotypic behavior. This should, at the least, involve working collaboratively in determining the goals and procedures used. Second, the behavior analyst should check-in regularly to ensure the client and their caregivers are still satisfied with the agreed upon goals and interventions. This provides opportunities to assess if the autistic/individual diagnosed with ASD and/or their caregivers have changed their opinion on the goals or interventions related to stereotypic behavior. Third, if an autistic/individual diagnosed with ASD does not have a well-developed vocal-verbal repertoire, the behavior analyst should consider other methods to evaluate social validity (e.g., concurrent chains assessments that involves on condition in which stereotypy is blocked and another in which it is not; Hanley, 2010). Finally, behavior analysts must remember that the consumers of the intervention may not always agree with the behavior analyst. In these situations, the behavior analyst should (a) listen to the rationale for the disagreement of the client, (b) discuss if and why the proposed goals may be important, (c) collaborate to come to agreement on goals, (d) work to obtain agreement of all stakeholders as to why the learning objectives will result in quality and social valid outcomes, and, if necessary, (e) provide referrals to other providers if unable to come to a mutual agreement.

Recommendation 6: A behavioral account of assent and consent

Behavior analysts should put efforts into providing a behavioral account of consent and, more importantly, assent. These efforts should take a functional-pragmatic approach to understanding the conditions under which assent is used (see, Skinner, 1945). Assent likely consists of a constellation of behaviors such as, but not limited to, approach (i.e., increasing proximity to the interventionist), retreat (i.e., decreasing proximity to the interventionist), and affect (e.g., favorable, unfavorable, neutral). Examining the various conditions under which individuals indicate assent will help expand and clarify the constellation of behaviors that should be measured to assess assent. These efforts will go a long way in providing more objective, measurable definitions of assent and consent which, in turn, will allow practicing behavior analysts to develop ongoing measurement of assent and consent.

The decision of what behaviors to target should always be a collaborative process between the clinician, the client, and the relevant stakeholders. In the case of young children, it is, of course, the parents/guardians who hold the right to consent to treatment. In the case of adult clients, if they do not perceive the need for intervention, they will likely not seek the services of a behavior analyst in the first place. On the happenstance that an adult autistic/diagnosed with ASD seeks assistance with something in their life that causes them dissatisfaction, they might not view it as related to stereotypic behavior. The client may find comfort in stereotypic behavior, but the clinician, without making a negative judgment about them, may identify ways in which certain choices being made by the autistic client may be counterproductive to achieving the goals that are important to them. Ultimately the decision is up to the client, but the clinician has a responsibility to point out any potential advantages and disadvantages of stereotypic behavior and the availability of alternatives. In some instances, an employer may request intervention for stereotypic behavior if the behavior disrupts the work environment. In these scenarios, the treating clinician will need to work with the client to address the behavior and keep the client employed.

Recommendation 7: Meaningful curriculum

The goal of reducing stereotypic behavior and teaching functional alternatives is not about achieving conformity, but, rather, to empower and enhance options. Successful ABA-based intervention can result in autistics/individuals diagnosed with ASD developing the repertoires necessary to choose whether or not to adapt to different situations. Some individuals who view stereotypic behavior as part of their identity are likely to view any intervention that changes behavior as a threat to their identity and unlikely to seek treatment to change this behavior. If these individuals, however, seek to limit access to such treatment for individuals and families who are interested in such intervention, it will likely be difficult for behavior analysts to navigate and may not be reconcilable.

There are some steps a behavior analyst may take when developing an intervention to address stereotypic behavior. The behavior analyst should first determine if it is necessary to address stereotypic behavior in the first place. The behavior analyst must, in collaboration with the client (when possible) and caregivers, determine if engaging in stereotypic behavior has an immediate, negative impact on the learner's life, such as disrupting

learning, reducing social opportunities, or leading to SIB. If there is a negative effect, the behavior analyst should consider developing an intervention to address stereotypic behavior. If there is not an agreed-upon potential for an immediate, negative impact, the behavior analyst should discuss the possible long-term, negative impact with the client (when possible) and caregivers, as well as options moving forward. When addressing stereotypic behavior, the behavior analyst should work with the client to develop an intervention that is effective and a good fit for the client and their current circumstances. This could include determining the function of the stereotypic behavior, if the intervention should be reduce and replace or change stimulus control, and if there are any possible functional alternatives to the stereotypic behavior. These goals must meet the client's needs and provide them with a skill that will be beneficial for their long-term growth.

Recommendation 8: Behavior analysis and coping skills

An important component of a meaningful curriculum should be developing adaptive and functional coping skills for autistics/individuals diagnosed with ASD. This requires a behavioral account of coping skills using the aforementioned functional-pragmatic approach. For our purposes, we define coping skills as a repertoire of behavior that may be occasioned by aversive events that may not be escapable (e.g., visiting the dentist) which temporarily lessen the aversiveness of the events permitting the individual to participate/complete the activity. Practicing behavior analysts should frequently measure coping behavior and the effects of this engagement with autistics/individuals diagnosed with ASD. This could include, but is not limited to, tensing, heart rate, trembling, sweating, and self-report.

Behavior analysts should also identify effective coping strategies for various contexts and demographics. For example, research has demonstrated that systematic relaxation training can be beneficial to decrease measures of stress and anxiety for autistics/individuals diagnosed with ASD (e.g., Mullins & Christian, 2001; Rosenblatt et al., 2011). Other coping strategies include deep breathing, squeezing a stress ball, and counting. These strategies should be explored while considering age and other demographics (e.g., older individuals may have access to more coping strategies than younger individuals). Finally, the right of adults to choose their preferred coping strategy should be respected, and with the support and consent of parents or guardians, behavior analysts can assist young children and adults in learning a full range of coping strategies. This is important as behavior analysts can teach autistics/individuals diagnosed with ASD strategies that may alleviate stress or anxiety without the potential undesired effects of engaging in stereotypic behavior (e.g., decreasing learning opportunities, stigmatization, or more restricted living arrangements).

Recommendation 9: Have confidence in addressing stereotypic behavior when necessary

Based upon the preponderance of research on stereotypic behavior, behavior analysts should feel comfortable and confident in including interventions for stereotypic behavior

when necessary (e.g., when there is evidence that stereotypy is detrimental to the individual, it is reasonable to expect benefits from promoting alternative behavior). As Van Houten et al. (1988) noted, "An Individual Has a Right to Services Whose Overriding Goal is Personal Welfare" and "the ultimate goal of all services is to increase the ability of individuals to function effectively in both their immediate environment and the larger society" (p. 382). Client and caregiver preference, client assent, caregiver consent, professional expertise, and synthesized results of the research should be used to make the determination of necessity (e.g., when there is evidence that stereotypy is detrimental to the individual, it is reasonable to expect benefits from promoting alternative behavior, the client has indicated they would like to restrict their engagement of stereotypic behavior to a specific environment).

Recommendation 10: Continued research

The field of ABA has always been a science with a major emphasis on research. Researchers should continue to evaluate the possible function(s) of stereotypic behavior in different contexts and the best interventions for stereotypic behavior in each context. Given claims that ABA has been abusive, an additional course of action could involve conducting research and interviews that ask questions about the conditions under which the abuse occurred (e.g., What were the components of the intervention?) and how the abuse was identified (e.g., What were the signs of abuse?) to help the field learn from the mistakes of others and inform programmatic changes (see, Wolf, 1978). This can also clarify if the intervention was in fact ABA-based or another type of intervention under the guise of ABA. Afterall, ABA, by definition, is respectful, compassionate, and only employs methods to change behaviors that are of societal interest (Baer et al., 1968, 1987; Pritchett et al., 2020; Wolf, 1978).

Relatedly, claims of abuse related to addressing stereotypic behavior within the literature should be evaluated for methodological rigor and accuracy. For example, Kupferstein (2018) conducted a survey of 460 respondents and claimed to find evidence of increased PTSD symptoms for autistics who had been exposed to ABA. However, Leaf et al. (2018) reviewed Kupferstein's methods and found serious methodological flaws resulting in recommendations of caution when interpreting Kupferstein's results. Furthermore, Leaf et al. concluded that:

> Those within the field should take every accusation that ABA-based interventions could be potentially traumatic for the individuals receiving those interventions seriously. As such, we encourage research to assess consumers' opinions of ABA-based interventions as well as research which accurately measures potential positive and negative collateral effects of ABA-based interventions without bias or prejudice. This kind of research would help applied behavior analysts to continue to refine methods and improve ABA-based interventions for individuals diagnosed with ASD. It is unfortunate that methodological and other flaws prevent Kupferstein's results from providing this information. (p. 127)

Conclusions

Concerns related to ABA among autism rights and neurodiversity activists have become more prevalent. This provides behavior analysts with a valuable opportunity to listen to those voices and assess the acceptability of the goals, procedures, and outcomes of ABA-based interventions for autistics/individuals diagnosed with ASD. While this is useful information, consumer judges of social validity can and should include a variety of individuals including those controlling the contingencies for the client, those closely affected by the targeted behavior, those implementing the intervention, funding agents, consumer advocates, and researchers (Fawcett, 1991). What is socially valid or invalid to one consumer judge may differ for another consumer judge. This does not discount the perspective or judgements of one consumer over the other; however, those directly affected by the intervention (e.g., clients, caregivers) may provide the most informative perspective on the intervention and have the most at stake.

Continued research is needed to identify the conditions under which interventions related to stereotypic behavior are necessary (e.g., Cook & Rapp, 2020) and may help reconcile concerns from autism rights and neurodiversity activists. Interventions for stereotypic behavior may be found to be unnecessary due to low rates or durations and more widely accepted topographies (e.g., chewing on a pen cap) that do not interfere with learning opportunities. Currently, however, much of the research points to conditions under which interventions related to stereotypic behavior are necessary due to the possible detrimental effects of not intervening, such as social stigmatization; bullying, isolation from peers; loneliness; depression; impairments in social, adaptive, and play behavior; and the risk for bodily harm and the development of SIB.

As noted in an early example of contemplating how to balance the right to habilitation with the right to personal liberties, Bannerman et al. (1990) noted, "While learning, clients should be encouraged to make as many choices as their abilities allow as long as these choices are not detrimental to the client or to others" (p. 86). We urge behavior analysts to take a similar approach as it relates to stereotypic behavior for autistics/individuals diagnosed with ASD. That is, behavior analysts should continue to include relevant consumers in the selection of goals and intervention (Wolf, 1978), ensure effective behavioral treatments (Van Houten et al., 1988), and approach stereotypic behavior from a place of compassion and care for our clients. This would include, but is not limited to, ensuring consumer rights (Bannerman et al., 1990), ensuring familiarity with the literature related to addressing stereotypic behavior, and being inclusive of consumers' needs and preferences. It is likely this approach will lead to a three-pronged solution to stereotypic behavior for autistics/individuals diagnosed with ASD involving 1) placing stereotypic behaviors under different, or more desired, stimulus control; 2) teaching multiple options for contacting functionally matched outcomes with alternative behavior; and 3) working with others in the environment to be more inclusive and accepting of differences. Finally, we urge our member organizations (e.g., ABAI, APBA, CASP) to allocate resources toward ensuring that clinicians are carefully considering client/caregiver preference, one's right to access interventions

for stereotypic behavior (if deemed necessary by the client/caregivers), and possible negative side effects of these interventions.

Notes

1. This terminology was selected to adhere to the 7th edition of the American Psychological Association Publication Manual and to be inclusive of those who prefer person-first as well as identity-first language.
2. When discussing prior research, the terminology used within that research is preserved.

Disclosure statement

J. Leaf, Cihon, Ferguson, and Milne are employed by a non-for-profit that conducts ABA-based research and provides ABA-based trainings and services. R. Leaf and McEachin own a company that provides ABA-based trainings and services. J. Leaf, R. Leaf, McEachin, Cihon, Ferguson, and Milne have authored ABA-based books that are available for sale. All other authors have no potential conflict of interest to report.

Compliance with ethical standards

No funding was received for this manuscript. There were no human participants in this manuscript and therefore we did not need to receive informed consent was obtained from the parents of all individual participants included in the study. We were in accordance with ethical standards of the institutional research committee and with 1964 Helsinki decoration and its later amendments or comparable ethical standards.

Data availability statement

The data to support this review was based upon previous research. Therefore, there is no data that is publicly available.

Informed consent statement

There were no participants in this manuscript. Therefore we did not need to receive informed consent.

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