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DISCUSSION AND REVIEW PAPER

Acceptance and Commitment Therapy for Individuals with Disabilities: A Behavior Analytic Strategy for Addressing Private Events in Challenging Behavior

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Abstract Applied behavior analysts work with many populations including individuals with developmental and intellectual disabilities. Although behavior analysts have a variety of empirically supported treatments to implement when working with individuals with disabilities, sometimes, other variables may adversely impact treatment effectiveness. The degree to which problematic thoughts and feelings (private events) influence behavior may be a variable that contributes to treatment efficacy. Traditional behavior analytic services are not always equipped to successfully address the private events influencing client behavior. In such cases, it may be beneficial for behavior analysts to consider additional philosophically aligned treatments for private events. One such treatment, acceptance and commitment therapy, may be a useful tool for behavior analysts to incorporate into their toolbox in order to help clients. The purpose of this paper is to introduce behavior analysts to a potential solution to the problem of effectively addressing private events in behavior analytic services. We then propose a model for thinking about private events in relation to clients with disabilities and present a guide for taking steps to address private events in the clinical setting. We conclude this paper with a call for research and present a possible research agenda for behavior analysts.

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Behavior analytic interventions have been demonstrated to be effective at enacting socially significant behavior change with a wide variety of individuals and diagnoses (Axelrod et al. 2012; Granpeesheh et al. 2009). Many clients served by behavior analysts are diagnosed with intellectual and/or developmental disabilities, and individuals with developmental disabilities and autism spectrum disorders (ASD) are the population most frequently served by applied behavior analysts (Gillis and Carr 2014). This population is broad and diverse and can be conceptualized along a continuum of functioning level and cognitive abilities. Some individuals served by behavior analysts are high functioning and may have extensive cognitive abilities; others may be considered lower functioning but may still demonstrate cognitive and verbal abilities. For the purposes of this paper, we are discussing the entire continuum of individuals with disabilities (either intellectual, developmental, or others, excluding physical disabilities only). For simplicity, we will refer to this population as individuals with disabilities.

Applied behavior analysis is built upon a foundation of taking a functional approach to the analysis of behavior. Applied behavior analysts look at behavior for behavior's sake, not as overt symptoms of an underlying cause. Much research has been done over the past 50 years demonstrating that the behavior analytic approach is effective at addressing behavioral challenges with individuals with disabilities, including behavioral excesses and deficits (Fisher et al. 2011). Many behavior analysts identify as radical behaviorists, meaning that they acknowledge the presence and potential importance of private events as forms of behavior that are subject to the

same environmental control as overt behavior. As such, radical behaviorists acknowledge that, similar to overt behavior, private events can have an impact on future behavior (Michael 1993). Despite the acknowledgement of the importance of private events, comparatively, little research has been conducted to investigate the influence of private events on the behavior of individuals with disabilities.

The state of knowledge on how private events affect behavior of typically developing adults, however, is robust and is growing rapidly. One view is that private events are language-based and can be understood through relational frame theory (RFT) and rule-governed behavior (e.g., Hayes 1989; Hayes et al. 2001; Twohig 2012). According to RFT, human language involves the behavior of relationally framing stimuli, and the way in which we frame is determined by two types of contextual cues. One type of cue guides the relation itself (e.g., the cue *is* guides the relation of *same*). The other type of cue guides the function of stimuli that participate in that relation. For example, if the word "snake" participates in a frame of coordination with gross, scary, and uncivilized, the statement, "Don't date Joe, he's a snake" would guide the function of "Joe" as a stimulus and one would be less likely to date him. Rule-governed behavior is behavior that occurs as a function of the contingencies specified in the rule, rather than as a function of direct contact with the environmental contingencies (Hayes 1989). The effects that overt behavior have on future behavior can be explained both by the direct contingencies in the environment as well as language-based contingencies. Private events, however, affect future behavior through language-based contingencies (i.e., relational framing and rule-governed behavior).

Applied behavior analysts have a rich history of serving clients with disabilities, who range in functioning level from severe intellectual impairment to those who have cognitive and verbal abilities. Many of these individuals, despite their disability, have robust language abilities. For example, it is estimated that 40 % of individuals with autism are verbal and have average or above-average intellectual abilities (Autism Speaks 2015). A large number of interventions that increase desirable behavior and decrease undesirable behavior have been developed and tested with this population (Fisher et al. 2011). For example, functional communication training (FCT) is a behavior analytic intervention that can be used to increase desired communicative responses and decrease undesirable behavior (Carr and Durand 1985), especially if FCT is used in combination with extinction. However, traditional behavior analytic (i.e., function-based) interventions tend not to take the client's language and private events into account when assessing and treating behavior. Some behavior analysts would argue that this may be problematic, based on the knowledge that private events are behavior that can further affect other behaviors (Anderson et al. 2000; Friman et al. 1998; Moore 2000). Over the past two decades, several behavior analysts have called for broader consideration of the role of private events in behavior analysis. In 1998, Friman, Hayes, and Wilson argued that anxiety, and emotion in general, is a suitable subject for behavior-analytic study. They also suggested that behavior analysts no longer avoid private events such as anxiety but approach them from an empirical and theoretical standpoint. Anderson et al. (2000) discussed whether private events belong in a science of human behavior. They point out that private behaviors are often ignored in "analyses of environment-behavior interactions" and that behavior analytic journals contain minimal literature on the roles of private behavior. They concluded that it would be worth the effort to pursue research and applied practice in this area. Moore (2000) suggested that verbal processes are important for understanding challenging behavior, in that they are discriminative for challenging behavior (rather than causal) and that this should be taken into consideration when implementing behavior analytic interventions.

As an example of an instance when verbal processes and private events should be taken into account when implementing behavior analytic interventions, consider a hypothetical client with a disability, Ryan. Ryan engages in problem behavior (e.g., banging on desks) when confronted with academic tasks. Although Ryan is diagnosed with a developmental disability, he is considered high functioning and has strong language abilities. The behavior analyst is providing behavior support in his special education classroom and observes that desk banging is accompanied by comments such as "I'm not smart enough" or "I can't do it." The behavior analyst conducts a functional analysis (FA) that reveals the problem behavior is maintained by escape from academic tasks. The behavior analyst decides that an appropriate replacement behavior for the problem behavior is for Ryan to ask for a break. Ryan is taught to ask for a break when presented with academic demands, using FCT procedures. Although he begins to independently ask for breaks, Ryan continues to engage in the problem behavior even after the removal of tasks and being told he may take a break. The behavior analyst notices that he continues to say, "I'm not smart enough" or, "I just can't do it" during the break times while continuing to engage in problem behavior. Although desk banging decreased, the decreases were minimal and not clinically relevant, and the problematic vocal statements continued. Following multiple analyses of the situation and unsuccessful modifications, the behavior analyst cannot identify a successful intervention for Ryan's problem behavior. It is possible in this situation that Ryan's private events, that is, his private verbal behavior, are having an effect on his overt behavior in addition to the non-verbal stimuli in his environment. Specifically, even though there is a change in overt actions, they are not at the needed level, and one of the establishing operations for other behaviors in the behavioral class of "emotional reactions" (e.g., private events about not being smart enough) continues to exist.

It is possible, perhaps probable, that private events contribute to challenging behavior. Assuming that the behavior analyst in the example took the necessary steps to reevaluate

Ryan's assessment and treatment, including reassessing the function of his behavior, developing and analyzing new or additional treatments, assessing treatment fidelity, and identifying effective reinforcers, the behavior analyst might then consider the impact of Ryan's private events on his behavior. It is possible that Ryan's statements ("I can't do it" and "I'm not smart enough") are evidence of private events and self-rules that are affecting his behavior, such that the problem behavior persists at some level despite carefully programmed contingencies. In other words, the private events may be serving as motivating operations that are functioning to evoke challenging behavior (Dougher et al. 2007).

Some may question how frequently behavior analysts are really faced with failures of traditional therapies in treating clients. There is almost no literature base to draw from when examining treatment failures because it would prove difficult to publish failed interventions and/or reviews of function-based treatment failures. Many have referred to this bias in the research literature as the "file drawer effect" (Sham and Smith 2014). Anecdotally, many clinicians report having experienced clinical cases in which traditional methods and therapies did not prove effective, even after multiple modifications. It may be important for behavior analysts to consider the impact of private events when traditional behavior therapies do not prove successful, but maybe, it is more important to address these private events in addition to overt behavior in the hopes of improving our outcomes. Behavior analysts may take a functional approach to dealing with these private events as problematic behavior within the influence of basic behavioral principles. The first step for finding solutions may be for behavior analysts to acknowledge that private events may influence behavior in such a way as to influence traditional therapies and result in ineffective intervention. It may be argued that if behavior analysts truly want to help the variety of individuals with disabilities that we serve, we may need to further consider the effects of private events on behavior.

It may also be the case that behavior analysts receive referrals for clients with disabilities who engage in problem behavior and also report experiencing anxiety and depression. Previous research has documented that the prevalence of individuals with disabilities experiencing anxiety, depression, phobias, and neurotic disorders ranges from 2 to 17.4 % (Reid et al. 2011). Similar to other individuals, these problematic private events may be contributing to the challenging behavior of many individuals with disabilities.

When examining and treating private events with individuals with disabilities, one effective method may be considering cognitive therapies. In a review of cognitive therapy for individuals with disabilities, Sturmey (2006) noted that although, historically, some have challenged the notion that cognitive therapies are suitable for this population, research has accumulated demonstrating that cognitive therapies have been successfully applied for many individuals with disabilities. In a review of cognitive behavioral therapy (CBT) interventions with individuals with autism, Daniel and Wood (2013) identified emerging evidence that cognitive therapies may be useful for treating autism symptoms and anxiety. Further, in a review conducted by Brown et al. (2011), the authors identified several studies concluding that cognitive and related therapies may be feasible and useful for individuals with disabilities given appropriate training of therapists and modifications to protocols and practices involved in the therapies (Haddock et al. 2004; Sturmey 2006; Whitehouse et al. 2006).

One specific form of CBT that may be the most conceptually systematic for behavior analysts to consider when working with individuals with disabilities experiencing problematic private events is acceptance and commitment therapy (ACT), which draws from the principles of behavior analysis (Dougher et al. 2014). ACT has been shown to be effective at reducing problematic behaviors by addressing private events. ACT has been demonstrated to be effective as a therapy to reduce problem behavior for most DSM-IV diagnoses. Although research examining the use of ACT with a variety of populations is extensive (see Powers et al. 2009), research examining the use of ACT with individuals with disabilities is limited. However, research on ACT and related therapies with individuals with disabilities has been increasing in recent years. Najdowski et al. (2015a) suggested that research is increasingly examining language and RFT with individuals with disabilities. For example, several articles were published in a recent special issue devoted to research on derived relational responding and individuals with disabilities (Najdowski et al. 2015b). Additionally, in a recent pilot study, Pahnke et al. (2014) examined ACT-based skills training in adolescents with ASD by implementing a modified ACT protocol (Hayes et al. 2012) in a group setting and compared outcomes using a test and waitlist control group. Although the results are preliminary, initial results demonstrated that participants reported positive outcomes (e.g., decreasing emotional stress, increasing prosocial behavior) providing emerging evidence for using ACT with individuals with ASD. Also, Eilers and Hayes (2015) demonstrated decreases in problem behavior following exposure therapy combined with defusion exercises in five children with ASD. The authors noted that as the research base on cognition, language, and RFT accumulates, it may be used to enhance existing applied behavior analytic interventions. In addition to research specifically examining ACT with individuals with disabilities, studies have also been conducted demonstrating the utility of ACT-related techniques (such as mindfulness-based interventions) with individuals with disabilities (e.g., Bellack et al. 1997; Harper et al. 2013; Spek et al. 2013.

The remainder of this paper provides a description of ACT and provides specific examples of how ACT might be implemented with individuals with disabilities and concludes with a call for future research on implementing ACT with individuals with disabilities.

Acceptance and Commitment Therapy

ACT is a form of contextual cognitive behavior therapy (Twohig 2012) that applies the theory and philosophy of behavioral science to a wide variety of psychopathologies (Hayes et al. 2013). ACT assumes that many human struggles and problematic behaviors are products of our language abilities (Hayes et al. 2012) and assumes that language is a product of relational framing. From an ACT point of view, private events have a large impact on overt behavior, but this effect can be regulated. Based on these assumptions, ACT uses a series of constructs to undermine the function of private events and promote behavior change in the service of the client's goals.

ACT is informed by the current behavioral understanding of language, namely RFT and rule-governed behavior. As described earlier, RFT asserts that human language involves the behavior of relationally framing stimuli. Based on this account of language, ACT assumes that the relations that a person has formed between stimuli cannot be undone but that the function of that private event as an establishing operation can be altered to either evoke or abate certain behaviors. In other words, the thought, "I am worthless" can be changed from evoking problematic avoidance behavior to evoking an appropriate alternative response.

Rule-governed behavior also informs the assumptions of ACT. As described earlier, rule-governed behavior is behavior that occurs as a function of the contingencies specified in the rule, rather than as a function of direct contact with the environmental contingencies (Hayes 1989). Privately stated rules (i.e., self-rules) will make a person less sensitive to environmental contingencies (Hayes 1989). This can be problematic if a person is following detrimental self-rules so closely that they never contact the natural contingencies. Skinner (1966) recognized the potential danger of rule-governed behavior when he stated, "when contingencies change and rules do not, rules may be more troublesome than helpful" (p. 223). When using ACT, the therapist or behavior analyst attempts to undermine problematic self-rules by helping clients contact the environmental contingencies for their behaviors (Twohig 2012). This is complicated because new verbal rules will be formed and these rules should also be approached flexibly and changed as situations change.

ACT uses a series of psychological constructs, referred to as the six ACT processes of change, to help clients change their behaviors (Twohig 2012). The overarching clinical goal of ACT is to change the function of private events that set the stage for problematic behavior such that the private events have less influence on the target behavior or now increase behaviors that are in line with the client's personal and social values. In other words, ACT seeks to alter the function of private events such that they no longer serve as discriminative stimuli or motivating operations for problematic behavior or do so for alternative functional actions. As a means to this end, ACT relies on the use of experiential exercises such as metaphors, stories, and behavioral tasks to help support experiencing private events that had historically brought on the target actions, while still engaging in appropriate behaviors (Hayes et al. 2004). This can help the client engage in more appropriate behavior, despite problematic private events and self-rules, and may result in more effective behavior analytic treatment.

Although it is clear that more research needs to be conducted, one potential way to enhance traditional behavioral treatment may be for practitioners to begin using ACT with this population based on the knowledge accumulated thus far. That is, evidence has demonstrated that individuals with disabilities have varying language abilities and experience private events that may influence behavior (Reid et al. 2011). Further, behavior analysts have encouraged more consideration of private events in treatment (Anderson et al. 2000; Friman et al. 1998; Moore 2000). Finally, ACT may be an appropriate approach because it is conceptually systematic with and grounded in the assumptions and principles of behavior analysis.

If a behavior analyst is faced with a client similar to Ryan, whose problem behavior is not responding well to traditional behavior analytic interventions or whose problem behavior involves problematic rule-governed behavior or private events, ACT may be of use. This technology is available to behavior analysts seeking to gain a more comprehensive skill set to better serve the wide variety of clients that may seek behavior analytic services. Preliminary and related research presents a framework that practitioners may use to get started. Additionally, a growing number of books and resources are available to behavior analysts seeking to use ACT in their practice (Dixon 2014; Greco and Hayes 2008; Rehfeldt and Barnes-Holmes 2009). Behavior analysts can also modify ACT processes and implement procedures specifically altered to the special needs of certain individuals with disabilities. For example, a behavior analyst could use a general resource including ACT exercises and metaphors (c.f. Stoddard and Afari 2014) and modify the exercises, keeping individual client needs in mind. Using ACT processes in combination with behavior analytic interventions may allow practitioners to treat a broader range of behavior and enact socially meaningful change to better serve clients.

Six ACT Processes of Change: Strategies and Applications for Individuals with Disabilities

To better understand how ACT may be applicable to individuals with disabilities, summaries of the six ACT processes of change are provided. We have also included possible translations of the processes to terminology that may be more useful for the behavior analytic community providing services for individuals with disabilities. Furthermore, examples of

modified hands-on exercises are provided for potential use with this population.

It is important to remember that each of the six processes serves to alter the function of private events and the subsequent effects on overt behavior. For example, if the thought, "I am worthless" tends to evoke problematic avoidance behavior, ACT will utilize one or more of the processes to alter the function of that thought such that it will come to evoke an appropriate alternative behavior instead or is less likely to lead to avoidance. These processes do this by changing the discriminative and/or motivative properties of private verbal stimuli, as well as changing the reinforcing and punishing properties of both private and physical stimuli. The goal of ACT is not to change the private events (i.e., thoughts and feelings) that a person has, but rather to change the way the person reacts to those thoughts and feelings.

Attention to Present/Present Moment Awareness

Attention to present, or present moment awareness, refers to the action of experiencing our environment (including both private and external events) as it is happening *now* rather than focusing our attention on events that occurred in the past or may occur in the future. ACT asserts that it is difficult to function effectively on a daily basis if you are consistently focused on the past or future and that attending to the events that are occurring now can help your actions be shaped by the current contingencies. For example, Ryan, our hypothetical client from earlier, might be so focused on thoughts of "being stupid" that he is not attending to the events happening at the moment, namely that the difficult task is not even present because the therapist has given him a break. Because Ryan is focusing on a past event where he felt stupid or a future one where he may be evaluated as stupid, he is not "in the present" engaging in appropriate academic behavior.

Being present in the current moment allows one to experience environmental contingencies directly and possibly enables a person to engage in behavior that is functional at the moment. One method that ACT uses to target attention to present is having the client use language to simply describe events that are occurring in the moment without judging those events or predicting what will happen next. For example, the client might practice tacting surrounding sights and sounds or tacting his or her feelings and emotions. The key is not reacting to these stimuli as discriminative or motivative stimuli occasioning a response, but to simply notice them while differentially responding to other (appropriate) stimuli in the immediate environment. This process of tacting stimuli, but not reacting to them, can be practiced so that attention is flexible and directed to the stimuli in the immediate environment, instead of directed toward events that are not immediately present (i.e., past or future events). Through verbal behavior, this process can help to alter the reinforcing value of different consequences (via rule-governed behavior) for attending behavior. In other words, by helping the client practice different ways to experience their environment, the therapist can help the client increase the reinforcing value of items currently present in the environment (which will help the client reduce his/her focus on the past or present). In the example of Ryan, the behavior analyst could help him notice that his immediate environment had changed and that the demand is no longer present. This may help Ryan to contact the programmed contingencies within the FCT procedure so that his challenging behavior will decrease.

Interventions to improve attention to present, or present moment awareness, often include mindfulness exercises such as monitoring one's breath intake or paying attention to what is happening using one's five senses. Attention training may be necessary to develop the skill of present moment awareness. This may involve having a client notice specific sensory experiences and narrowing and broadening attention to these experiences. For example, the client may be asked to pay attention to how it feels to be in a room sitting in a chair and then broadening this to other experiences in the room. First, a therapist may gently direct a client to pay attention to how each part of his/her body feels sitting in the chair. This is noticing specific sensory experiences. Next, the therapist may broaden attention by inviting the client to notice other sounds in the room and then focus on both how the body feels sitting in the chair and other sounds in the room.

One present moment exercise that has been modified specifically for individuals with disabilities is the "Soles of the Feet" exercise (Singh et al. 2003), which has been successfully implemented to reduce aggressive behavior. The purpose of this exercise is to help the client shift his or her attention away from problem-behavior-evoking thoughts and toward stimuli that are less likely to evoke problem behavior (e.g., the soles of their feet). If we were to use this exercise with the client Ryan that we introduced previously, we would instruct Ryan to identify when he is frustrated or times he is likely to respond negatively in a situation. Then, we would guide Ryan to focus on the soles of his feet (instead of his problematic private events). We would then help him to practice switching his focus back and forth between his private events (e.g., feelings of frustration) and back to the soles of his feet. We would repeat this exercise until Ryan could willingly focus on his feet rather than his problematic private events, and this would reduce his motivation to engage in problem behavior. Behavior analysts could easily utilize these procedures with clients with disabilities.

Self as Context/Dimensions of Self

According to ACT, there are different ways to view the "self." In other words, there are different ways to think about and refer to yourself that can have an impact on your overt

behavior. One dimension of self is the "conceptualized self," which is the self that a person believes he or she is. For example, Ryan's conceptualized self may be "stupid" and "not good enough." Thinking about oneself in such a way could potentially evoke behaviors that "match" that concept of oneself. Ryan might engage in behaviors that match stupid and not good enough (i.e., a self-fulfilling prophecy, to speak loosely). Another dimension of self is "self as context," which is when a person experiences thoughts and feelings (such as "I'm stupid" or "I'm not good enough") as just thoughts and not actual descriptions of the self. For example, someone who has a strong conceptualized self might say, "I'm useless" whereas someone who has a strong contextual self might say, "I am having the thought that I am useless." The first person might engage in problem behavior that matches "useless" whereas the second person would be more likely to engage in behaviors that are appropriate to the situation.

ACT assumes that it is human language, namely RFT, that leads to different senses of self (i.e., the self as context) that then affect overt behavior. For example, relational frames that involve "I" versus "You" or "Here" versus "There" may result in a sense of who we are based on verbal behavior. As such, I can be involved in many relational frames such as "smart" or "lazy." Engaging in behavior that matches our view of ourselves too closely can have a profound effect on our behavior. For example, if one has a strong conceptualized self and has the thought "I'm too stupid to do my homework," he/she may be more likely to give up and avoid the homework altogether, thus reinforcing the idea that he/she is too stupid to do it. Developing self-as-context involves developing perspective-taking skills that allow a person to see beyond their views of themselves in order to engage in effective behavior (e.g., doing homework even when you view yourself as stupid).

Altering one's dimension of self can function to alter the motivation to engage in certain behavior (e.g., to evoke appropriate behavior and abate inappropriate behavior). Hayes et al. (2012) suggest that there are three goals to strive for when working on this process. First, undermine the client's attachment to the conceptualized self. For example, the therapist might point out that the thoughts and beliefs that the client has are not problems in themselves but that behaving according to those thoughts and beliefs can be problematic. Second, help the client develop the ability to notice the continuous flow of experience, which is similar to present moment awareness described previously. Third, help the client engage in perspective taking. You could do this by asking the client questions requiring him or her to take a different perspective and reinforce responses that demonstrate perspective taking (e.g., responding as an observer of the self-conceptualization rather than *from* it), for example, asking the client "How do you think Jimmy would feel if you take his ball?" and reinforcing client responses in line with "bad, sad, mad," etc. Working on self-as-context may require targeting covert behavior for manipulation. This can be made easier by using salient stimuli that represent the client's identity and having the client use the stimuli to describe themselves and then use the same stimuli and descriptors to describe other situations (to practice taking other perspectives).

One common clinical intervention used to address self-as-context is the *Storyline* exercise (Hayes et al. 2012). In this exercise, the therapist would have the client describe himself or herself using only objective facts about their lives (e.g., my hair is brown, I am 4 ft tall, etc.). Following the description, the therapist would have him/her write subjective thoughts and feelings to describe themselves (e.g., "I am stupid" or "I can't do math"). The therapist can help the client direct attention to the different ways that the self can be viewed and perhaps how other people may view him/her. This exercise can help clients to see that they "are" the objective facts (e.g., a 4-ft-tall boy) and that they "experience" thoughts (e.g., "I am having the thought that I'm dumb") rather than "being" the content of thoughts. For example, doing this exercise with Ryan might help him to engage in appropriate behaviors even though he is having the thoughts that he is not good enough.

A possible modification to self-as-context exercises might be to use tangible materials to help make this concept less abstract. For example, Dixon (2014) suggested having clients list one evaluation and one observation about themselves and then have the clients draw apples on a piece of paper and write their evaluations on the apples. Next, the therapist would create a tree so the clients can place their evaluations on the tree. Then, the therapist can explain that just like the tree is still a tree without the apples, the clients are the same without the evaluations.

Defusion

ACT assumes that, due to the nature of human language, individuals will sometimes respond to private events as if they are concrete stimuli in the external environment. This is known as cognitive fusion. It is the nature of human language and cognition that stimulus functions from relational frames may dominate over other sources of behavioral regulation (such as actual environmental contingencies). In other words, a person might respond to their private events as if they were physical stimuli in the environment, while not responding to the actual external stimuli and contingencies. This human process may occur without any awareness, resulting in an individual having less contact with the present environment and experiences and being more governed by verbal rules (Hayes 1989). Fused responses are under the control of the derived properties of stimuli (e.g., verbal rules) rather than a history of direct contact with them (e.g., direct contingencies; Snyder et al. 2011). One way to change how someone interacts with these thoughts is through the process of *defusion*. Behavior analysts might view this as altering the functional context

under which private events occur. The function of thoughts may be changed by creating function-altering contexts, thereby creating different experiences that are then associated with the thought or part of the thought's relational network.

There are two categories of defusion exercises. The first category attempts to alter the function by teaching the client to observe their thoughts or covert language. The second category attempts to alter the function by de-literalizing language. Because observing thoughts may be difficult or abstract for individuals with disabilities, it may be easier for therapists to initially focus on de-literalizing language.

Word repetition (Masuda et al. 2010) is an exercise in which a therapist may have a client repeat a word several times until the word would seem to lose its meaning. For example, the therapist may start by asking the client what he or she thinks about when the word "milk" (or pickle, or any word) is spoken and point out how milk was experienced without milk actually being present (i.e., the word milk evokes thoughts of the sight and taste of milk). The therapist could then have a client repeat the word *milk*. As the client says, "*milk, miiilk, mi-lk, milk*…" repeatedly, the exercise brings the client into contact with the direct properties of the stimulus (i.e., the sound of the word m-i-l-k) and reduces the contact with the derived properties (i.e., white, cold, and creamy). The therapist could then point out to the client that the word has essentially lost its meaning because the client could now experience that thought as just sounds rather than its derived experience. Following this exercise, the therapist could also have the client repeat one of his or her own potentially fused thoughts to help him or her realize it is just a thought as opposed to a "truth." For example, the behavior analyst and Ryan (the client from the beginning of the paper) could go through this defusion exercise with the word stupid to help him experience stupid as just a word versus a reality. Then, they could repeat this process using other words or thoughts, to give Ryan several examples. This exercise would hopefully help him defuse from some of the problematic thoughts interfering with appropriate behavior.

Another exercise in defusion that could be modified for individuals with disabilities is the passenger on the bus metaphor (Hayes et al. 2012). The metaphor encourages clients to view emotions and thoughts as unwanted passengers on a bus, and the client as the driver of the bus. The point of the metaphor is that the client as the driver has control over where the bus goes, despite unwanted distractions from the passengers (e.g., thoughts, emotions). This metaphor could be demonstrated with an actual toy bus and small figurines that the client could label as each "bad thought." It may be effective to ask the client what each passenger is saying while engaging with the figurines. Then, point out what the driver's job is and what the driver can do with those thoughts. Demonstrate that, as the client moves the bus, he or she determines where it goes even if the passengers or the bad thoughts are telling them otherwise and that, as a driver, he does not have to listen to or discuss his actions with the passengers.

Acceptance

Human behavior is often controlled by immediate contingencies, and as such, avoiding unpleasant thoughts or experiences can be immediately reinforcing but may also lead to problems for a client. However, since one cannot avoid unpleasant thoughts, one is likely to avoid the experiences and situations that evoke the unpleasant thoughts. This is referred to as experiential avoidance. More precisely, experiential avoidance is the attempt to alter the form and frequency of unpleasant private events even when doing so causes behavioral harm (Hayes et al. 1996). Acceptance is one process used to counter experiential avoidance.

Acceptance is the action of allowing unpleasant private events to occur and purposefully approaching the experiences and situations that evoke them (Hayes et al. 2004). A nonhuman animal can avoid pain by simply avoiding the situations where pain occurred in the past. The ability to frame stimuli relationally, however, prevents humans from being able to do this because relational frames allow pain to occur anywhere and in response to almost anything. Because humans cannot avoid pain by situational means, they try to avoid the thoughts and feelings themselves, but this behavior comes to cue the avoided event, which then strengthens the relational frames and makes it even more difficult to avoid (Hayes et al. 2004). Acceptance acts as a replacement behavior to experiential avoidance, as the replacement behavior strengthens, extinction of avoidance behavior also takes place. For example, the person might avoid going to a holiday family dinner to avoid aversive thoughts and feelings associated with their family members that may have occurred at previous dinners. Acceptance of these thoughts and feelings helps teach the client to be in situations and experience those thoughts and feelings willingly while also experiencing the event (and the positive things that come along with it).

Acceptance can be taught didactically by helping the client relate to an inner experience as something that "needs a home" rather than something "negative." For example, the client could describe his or her negative inner experience like a puppy, kitten, or troubled friend. This provides some level of compassion for that feeling. The client can then be asked how that puppy, kitten, or friend should be treated. Usually, the client responds that it should be treated kindly. The therapist can say something like, "well your anger or frustration is sort of like that puppy and needs somewhere to go" and "could it maybe exist in you?" An older client might be told that his inner experience is like an annoying classmate who needs a friend, even though he is sort of annoying.

An exercise in which an individual with a disability could practice acceptance may resemble overcoming fears through

gradual or systematic exposure. The therapist and client could practice gradually coming into contact with that inner experience while the therapist coaches being open to experiencing it. Going back to our example at the beginning of the paper, Ryan may be having trouble experiencing and accepting feelings of inadequacy or anxiety in relation to the statements, "I'm not smart enough" and "I can't do it." While Ryan is experiencing academic demands, it may be helpful to add a visual representation of his problematic thought statements that he can physically carry with him, for example, a card, which he can put in his pocket, that says, "bad feelings" or "bad thoughts" or has pictures on it that he relates to the way he feels. This symbolic action may remind clients that it is okay to have bad feelings and to accept them while they are still engaging in value-driven action (e.g., working hard and completing homework).

Connecting with Values

Values, as they relate to ACT, can be viewed as a certain type of rule (i.e., augmentals; Plumb et al. 2009) that alter the reinforcing properties of other stimuli. Values function similarly to motivating operations, except that they derive their functional properties through language rather than through a specific history with the environment. Thus, values can alter the reinforcing (or punishing) properties of stimuli that a person has never been in contact with before (and thus has no history with). In less technical terms, values are ideas, actions, and activities that clients identify as being important to them. Values are used in ACT to encourage purposive action and help clients engage in appropriate and functional behavior while maintaining accepting and defused ways of thinking and responding to their verbal behavior. Thus, values may act similar to establishing operations for engaging in behavior that may have once been difficult, yet beneficial, for the client. In Ryan's case, the behavior analyst could engage in some activities to identify Ryan's values (described in the following paragraph). The behavior analyst could then use the values to remind Ryan of the things (reinforcers) that he is working toward and help motivate Ryan to engage in appropriate behavior.

Murrell and Wilson (2003) describe an exercise that might be useful for clients with disabilities to identify values. Part of their exercise included delineating values and useful thoughts by having clients take cards with written words (or pictures) of important thoughts and match the cards to a picture of a mind (e.g., silhouette of a brain). They also took pictures and written words of important things that they needed and matched them to a picture of a heart. They then discussed the differences between the functions of the mind and the heart. For other clients, it may help to touch and sort cards depicting the values that they are discussing. The therapist could help the client order and sort the value cards in conjunction with behavior and committed action (to be discussed shortly). For example, when the therapist is discussing committed actions, they could set out the relevant value card so the client can visually connect specific committed actions linked to each value card. For example, if the client's identified value is family, his value card could say "family time" and include a picture of his family engaged in a fun activity. If the client's problem behavior and problematic private events were hindering family activities, the client could be reminded that engaging in appropriate behavior can increase contact with the value of family. The value cards could also be used in a daily self-awareness activity where the client could look through the cards as a visual prompt to remind him/her of the committed actions that he/she is attempting to engage in while working in valued directions.

Committed Action

Working in conjunction with the other five processes, committed action involves motivating the client to engage in behavior that helps him or her to function in healthy ways. Committed action is the psychological process that is most in-line with traditional behavior analysis. The therapist helps the client to identify behaviors that are in agreement with their personal values and supports and promotes the client engaging in those behaviors. The therapist or behavior analyst might do this by arranging environmental contingencies, such as antecedent and consequence manipulations. Ultimately, however, the therapist is not responsible for providing reinforcement for the client's behavior. Although specifically arranged contingencies may initially be used to promote appropriate behavior, they should be systematically faded so that the client is engaging in the appropriate behaviors in the natural environment. Reinforcement for committed action should be automatic, especially if the client has identified true values. This ensures that the client will contact reinforcement in the absence of the therapist, thus supporting maintenance and generalization of the behavior change.

To promote client-committed action, the therapist can use a myriad of behavioral tools, including goal setting, skill acquisition techniques, and behavioral contracts. These small committed actions are akin to the shaping process in behavior analysis. Small actions toward a goal are met with reinforcement and as the client practices and improves these actions larger, or more effortful, actions may be added. Eventually, the client will engage in larger response chains that will increase the behavioral repertoire toward his or her chosen values.

It may be helpful when working with individuals with disabilities to link the behavior to the client's values, perhaps by attaching a relevant picture to a list of behaviors that the client is going to engage in. There are also a variety of exercises and metaphors that can be used to support committed action. One example is an exercise called "Zorg the Alien" created by Nina Ferreira (Stoddard and Afari 2014), in which the

therapist explains that there is an alien (Zorg) who is studying human life and has chosen the client as his subject. The alien is able to tell what the human (the client) values based on his actions and his actions alone (because the alien cannot read minds). The therapist then asks the client what the alien would think the client's values were. This exercise can help the client identify which behaviors are linked to values and which ones are actually working against his or her values. The therapist could also help the client identify ways in which he or she could engage in different behavior that would help the alien determine the client's actual values. This exercise could be made more salient for individuals with disabilities by acting it out with figurines.

Summary and Call for Research

In summary, we are proposing that applied behavior analysts, both researchers and practitioners alike, begin to consider the role of private events in challenging behavior of clients with disabilities and also consider implementing ACT as an additional intervention to achieve socially significant outcomes. There are multiple ways that behavior analysts can incorporate the use of ACT into their professional repertoires. When conceptualizing using ACT with clients with disabilities, the six core processes of ACT can be utilized in isolation or in combination with traditional behavior analytic interventions. For example, a behavior analyst serving a client presenting with problem behavior that seems insensitive to typical behavior analytic interventions may combine behavior analytic services with implementation of ACT protocols. Perhaps, a functional assessment of challenging behavior could include questions intended to identify if a client has problematic thoughts occurring with problem behavior or what emotions co-occur with the target behavior. For example, a behavior analyst could interview a parent or caregiver (or client) and ask questions about problematic thoughts or about vocal behavior that co-occurs with the targeted problem behavior. The behavior analyst could then use session time with the client to introduce ACT processes, using metaphors and activities similar to the ones previously outlined to address the assessed private events. Perhaps, following the introduction of ACT processes, the therapist could link the behavior analytic work to valued directions and self-management goals and see a socially significant increase in appropriate behavior and a reduction in inappropriate behavior.

Another option might be to incorporate brief ACT protocols into the client's interventions (Gómez et al. 2014). The brief model may be modified to work in conjunction with more traditional behavior analytic services. For example, a day of sessions could be broken into portions including behavior analytic sessions and portions including ACT client-therapist discussion and activity. Alternatively, ACT could be introduced in isolation followed by more traditional behavior analytic sessions (for example, 3 weeks of ACT sessions followed by 3 weeks of traditional behavior analytic sessions building upon the concepts and skills taught initially using ACT) or vice versa. A therapist could also use resources such as worksheets and activities targeting ACT processes in conjunction with traditional behavior therapy. For example, in Dixon's (2014) book, *ACT for Children with Autism and Emotional Challenges*, worksheets and activities are presented for each of the six processes. The therapist could designate a 10–20-min time period to implement the ACT protocols and work on increasing the client's psychological flexibility.

One important consideration, arguably the most important consideration, is the individual client and his/her ability to benefit from the metaphors and activities involved in ACT. Behavior analysts should be mindful in making accommodations and modifications on a case-by-case basis depending upon the skills and abilities of each client. For example, behavior analysts should consider the client's verbal abilities prior to implementing ACT, as ACT is language-based. When working with individuals with disabilities, some researchers have recommended utilizing visual aides (Lang et al. 2011). Chapman et al. (2013) recommended that therapists implementing mindfulness-based therapies with individuals with disabilities provide regular practice, explicit instructions, concrete examples and stimuli, and role-play opportunities to clients with disabilities. These recommendations were based on feedback from actual clients with disabilities. It may be that these same recommendations are applicable to using ACT with this population. The metaphors and experiential exercises outlined in this paper provide examples of modifications made specifically for this population.

Of course, these are merely hypothetical examples of how a behavior analyst might use ACT in combination with behavior analytic interventions. It is our hope that behavior analysts can use this paper as a framework for analyzing applied problems and looking for solutions beyond traditional behavior analytic interventions when needed. ACT may be a useful tool for behavior analysts to add to their toolbox when working with individuals with disabilities. However, more empirical research is needed to evaluate the outcomes of using ACT in conjunction with behavior analytic services. It is also our hope that, as behavior analysts incorporate ACT into their professional repertoires, they will pursue research opportunities that may arise.

Future research may provide closer examination of using ACT with individuals with disabilities. One place to start might be in publishing successful case studies including cases in which behavior analytic therapies and ACT are used in conjunction leading to socially significant treatment outcomes. From there, researchers could examine ACT in combination with various traditional behavior analytic interventions, for example, examining ACT in combinations with a

self-management token system or ACT in combination with the use of signaled multiple schedules. Recent research has proposed the use of self-control training methods and ACT, an example of the potential for combining behavior analytic interventions (i.e., self-control training) and ACT (McKeel and Dixon 2014). Another area for potential research could include examining implementation of ACT, for example, ways in which practitioners can systematically adapt and modify ACT protocols and procedures for use with individuals with disabilities. Researchers may also examine specific subpopulations of individuals with disabilities and the effects of ACT; perhaps, research could demonstrate critical individual differences that differentially influence the effectiveness of ACT within the broad population of individuals with disabilities. Additionally, using ACT with individuals with disabilities may further both the fields of applied behavior analysis and ACT, as behavior analysts modify and adapt ACT processes to encourage positive changes in the lives' of their clients with disabilities.

Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no conflict of interest.

Ethical Approval and Informed Consent This article does not contain any studies with human participants or animals performed by any of the authors.

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