

# On the Social Acceptability of Behavior-Analytic Terms: Crowdsourced Comparisons of Lay and Technical Language

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**Abstract** Behavior analysis has a marketing problem. Although behavior analysts have speculated about the problems regarding our technical behavior-analytic terminology and how our terminology has hindered the dissemination of behavior analysis to outsiders, few have investigated the social acceptability of the terminology. The present paper reports the general public's reactions to technical behavioral jargon versus non-technical substitute terms that refer to applied behavior-analytic techniques. Two-hundred participants, all non-behavior analysts, were recruited from Amazon Mechanical Turk and completed a survey on the social acceptability of behavioral jargon and non-technical terms. Specifically, participants rated the acceptability of how the six pairs of terms (technical and non-technical) sounded if the treatments were to be implemented for each of 10 potential populations of clients that behavior analysts typically work with. The results show that, overall, members of the general public found non-technical substitute terms more acceptable than technical behavior-analytic terms. The finding suggests that specialized vocabulary of behavior analysis may create hurdles to the acceptability of applied behavior-analytic services. The implication of these findings suggest the importance of a systematic investigation of listener behavior with respect to behavior analysis terms.

**Keywords** Amazon mechanical turk · Behavior analysis · Dissemination · Jargon · Terminology · Public perception · Social acceptability

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*Whatever words we utter should be chosen with care for people will hear them and be influenced by them for good or ill. ~Buddha*

By many accounts, behavior analysis has a marketing problem (Doughty, Holloway, Shields, and Kennedy 2012; Freedman 2015; Smith 2015). Despite all of the good that behavior analysts accomplish in research and practice, their contributions remain relatively unappreciated by the general public compared to those of mainstream psychology. Normand, (2014) has suggested that the marketing problem stems in part from a deliberate effort by behavior analysts to distance themselves from the practices of laypersons and mainstream psychologists: “We redefined the subject matter of psychology and redesigned the experiments used to study that subject matter. We renamed almost every part of the world pertaining to that subject matter. We created our own organizations and our own journals.” (p. 67).

Skinner e.g., (1953, 1974) of course, was an early champion of this distancing, suggesting even prior to his formal training in psychology that the discipline required a makeover (see Skinner 1975), and frequently pointed to lay language as inaccurately characterizing the control of behavior. The point of distancing, therefore, was to avoid repeating sins of the past and thereby develop better ways of understanding and controlling behavior—and the many accomplishments of behavior analysis stand in testament to the importance of this effort.

In recent years concerns have been raised about a potential undesirable side effect of distancing. The specific worry is that interacting mainly with like-minded individuals has left behavior analysts unproductively isolated (Friman 2014a; Madden 2013; Morris 2014; Pietras, Reilly, and Jacobs 2013; Podlesnik 2013; Reed 2014; Schlinger 2014; St. Peter 2013; Vyse 2013, 2014), both topically (by addressing too few of the problems that concern the broader population) and linguistically (by discussing important problems with language that fails to inspire, inform, or motivate non-behavior analysts). The present report focuses on the latter concern, which Himeline, (1990) neatly summarized when he remarked that, “Perhaps the resistance to behavioral interpretations and techniques arises from our forbidding terms, from the misunderstood language of control, or from our eschewal of mentalistic phrasing.”

A critical property of verbal behavior is its influence on the listener. Although in *Verbal Behavior*, Skinner, (1957) focused primarily on composition (i.e., dynamics of speaker behavior), never far from the surface was a concern for audience effects. Consistent with this influence, over the years, many behavior analysts have commented on the importance of communicating effectively (e.g., Bailey 1991; Foxx 1996; Morris 1985) and in some cases have attempted to translate the technical jargon of behavior analysis for a general audience (see Lindsley 1991). Unfortunately, however, it appears that few behavior analysts have succeeded in the translation (e.g., see Friman 2014b). Even Skinner experienced difficulties disseminating the science of behavior<sup>1</sup> to non-behaviorists (e.g., note the sometimes blistering reactions to *Verbal Behavior* [1957] and *Beyond Freedom and Dignity* [1971]; e.g., MacCorquodale 1970).

Ogden Lindsley (1991), who appreciated the marketing problem long before it was popular to discuss, registered two objections to the technical jargon of behavior analysis. The first problem is that “some jargon, like ‘negative reinforcement’ and

<sup>1</sup> We use the term *behavior analysis* here and throughout the manuscript.

‘radical behaviorism,’ imply [sic] to most people the exact opposite of their technical meaning” (p. 449). This, Lindsley believed, results in people acting ineffectively when attempting to measure or change behavior. The second problem is that, “Skinner... never checked what his technical words meant to most people. It was left for those of us who applied his free operant principles and methods to struggle with abrasive jargon like ‘manipulate,’ ‘control,’ ‘subject,’ and ‘intervene,’ which turned users away” (p. 449). The second problem, we submit, is more general and pernicious than the first, because no one is likely to attempt to intervene using behavior-analytic approaches if the very language of behavior analysis makes those approaches seem objectionable.

Maurice (1993) colorfully describes this very phenomenon as part of her account of a lengthy search for services for her daughter. Her initial reaction to behavior-analytic services was to regard them as “harsh” (p. 102), “unnatural” (p. 88), and as a “usurpation... of will” (p. 89). Compare this initial trepidation to Maurice’s more positive reaction to the purveyor of an alternative therapy:

Charming, charismatic, Dr. Welch was full of hugs and gentle spontaneous caresses. Without shyness or reserve, she would reach out and stroke my hair, or clasp my hand in hers.... “What a beautiful mommy Anne-Marie has,” she murmured, smiling into my eyes, holding my gaze. And then, with a look of sadness, “What a terrible, terrible time this has been for you.” ...How caring she was, how natural, unaffected, how unbelievably concerned (p. 94).

One moral of Maurice’s (1993) story concerns the amount of time that was wasted on ineffective approaches that seemed attractive based on the persuasive ways in which they were marketed. In particular, Maurice’s fascination with Dr. Welch delayed her embrace of behavior-analytic services. The lesson for applied behavior analysts should be clear: In the marketplace of human services, anything that makes them seem less warm and approachable—including the use of presumably unpleasant technical terms—might put them at a disadvantage compared to other kinds of service providers.

We do not suggest that behavior analysts have been completely oblivious to the marketability problem. A number of studies have examined consumer reactions to specific interventions, either after they were completed (e.g., Minkin et al. 1976; Wolf 1978) or as they were described prospectively to potential adopters (e.g., Kazdin 1980; Witt and Martens 1983; Witt, Martens, and Elliott 1984). But this is quite different from examining how the words of behavior analysis register with listeners. In most previous studies, behavioral jargon was intermingled with contextual information that also might influence responding. For instance, Witt et al., (1984) described factors for potential interventions such as how long they would require to implement, and in traditional social validity assessment, the consumer has already experienced the benefits of an intervention.

As part of a general quest to understand the scope and magnitude of the marketability problem, we advocate a program of research that will empirically evaluate the general reactions of non-behavior-analysts to behavior-analytic terms (and, consistent with Lindsley’s early marketing efforts, substitute terms that might be more acceptable). To illustrate the approach, we surveyed members of the general population using the popular crowdsourcing platform Amazon Mechanical Turk (mTurk; see Buhrmester, Kwang, and Gosling 2011; Mason and Suri 2012; Paolacci and Chandler 2014; Rand

2012), which is an online labor market comprised of “workers” whose demographic variability is far more representative of U.S. national diversity than the samples of typical university-based research studies (Paolacci and Chandler 2014).<sup>2</sup> These workers can complete brief tasks for financial remuneration (including academic surveys), and at any given time, over 500,000 workers may be online. The purpose of this investigation was to use a sample of mTurk workers to estimate the general public’s reactions to technical versus non-technical terms that refer to applied behavior-analytic techniques.

## Method

### Participants

Participants were recruited from mTurk and completed the survey as what the mTurk system refers to as a Human Intelligence Task (HIT). The survey was accessible only to those mTurk workers in the USA who had completed at least 100 approved HITs and for whom previous requesters had designated 95 % or more of their previous HITs as reflecting acceptable quality of work. Workers were paid \$0.30 if, within 20 min of accessing the survey, they completed it and submitted a unique completion code. On average, workers took 8.32 min ( $SD = 3.60$  min) to do this. Workers who submitted the survey according to these dictates qualified as participants.

We received data from 204 participants; of the 204, 4 incomplete datasets were removed. All remaining datasets were considered complete and systematic. Among the 200 participants ( $M_{age} = 37.72$ ,  $SD_{age} = 12.8$  years), 50.5 % were male ( $n = 101$ ) and 80 % self-identified as Caucasian, with remaining individuals self-identifying as African American (8.5 %), Asian/Asian American (7.0 %), Hispanic/Latino (3.5 %), and Native Hawaiian or Other Pacific Islander, and Other (~1.0 % combined). Highest completed level of education consisted of high school/GED (10.0 %), some college (24.5 %), 2-year college degree (8.5 %), 4-year college degree (38.5 %), Master’s degree (14.0 %), professional degree (2.5 %), and doctoral degree (2.0 %); 71.5 % reported being employed, 22.5 % unemployed, and 6.0 % retired. Median total income during the past year was \$40,000 to \$44,999 (range under \$5,000 to \$100,000). Of the participants, most (87.0 %) reported being unfamiliar with the field of behavior analysis. One individual reported having a family member who is a Board Certified Behavior Analyst. None of the participants reported having used behavior-analytic services in the past.

### Materials and Procedure

The survey was administered via a survey link which directed participants to a survey presented using *Qualtrics Online Survey Software* (<http://www.qualtrics.com/>). The survey

<sup>2</sup> We note that behavior analysts are beginning to use mTurk for behavioral studies on choice and decision making, and are publishing such findings in behavioral journals (Bechler, Green, and Myerson 2015; Bickel et al. 2014; Jarmolowicz, Bickel, Carter, Franck, and Mueller 2012; Johnson, Herrmann, and Johnson 2015; Myerson, Baumann, and Green 2014; Roma, Hursh, and Hudja 2016).

contained general demographic questions (e.g., gender, age, ethnicity), and six pairs of terms (six technical behavior-analytic terms and six non-technical substitutes). The six technical behavior-analytic terms (non-technical substitute in parentheses) included: escape extinction (follow-through training), negative reinforcement (relieving consequences), negative punishment (penalty), chaining (teaching a sequence of responses), operant conditioning (learning from consequences), and reinforcement (incentivizing). The inspiration for the specific word pairs came from Lindsley's, (1991) translations from technical jargon to plain English, although modifications were made to reflect contemporary usage of the terms.

Each of the 12 terms was presented with the following instruction:

Assume that a behavior analyst has conducted an appropriate battery of behavioral assessments and has recommended a treatment for a socially important behavior/performance issue. How *acceptable* does the recommended treatment *sound* for each population of treatment clients?

A specific treatment was presented in large, boldface letters (e.g., “**Recommended treatment: Escape Extinction**”), followed by 10 visual analog scales (VAS), each representing a type of population with which a behavior analyst might work: infants/toddlers, preschool children, children with special needs, elementary-aged students, high school students, college students, athletes, employees, adults with special needs, and senior citizens. Each VAS consisted of a 100-mm horizontal line with ends labeled as “*Completely Unacceptable*” and “*Completely Acceptable*.” On each line, a slider could be moved with the mouse to any location on this scale.

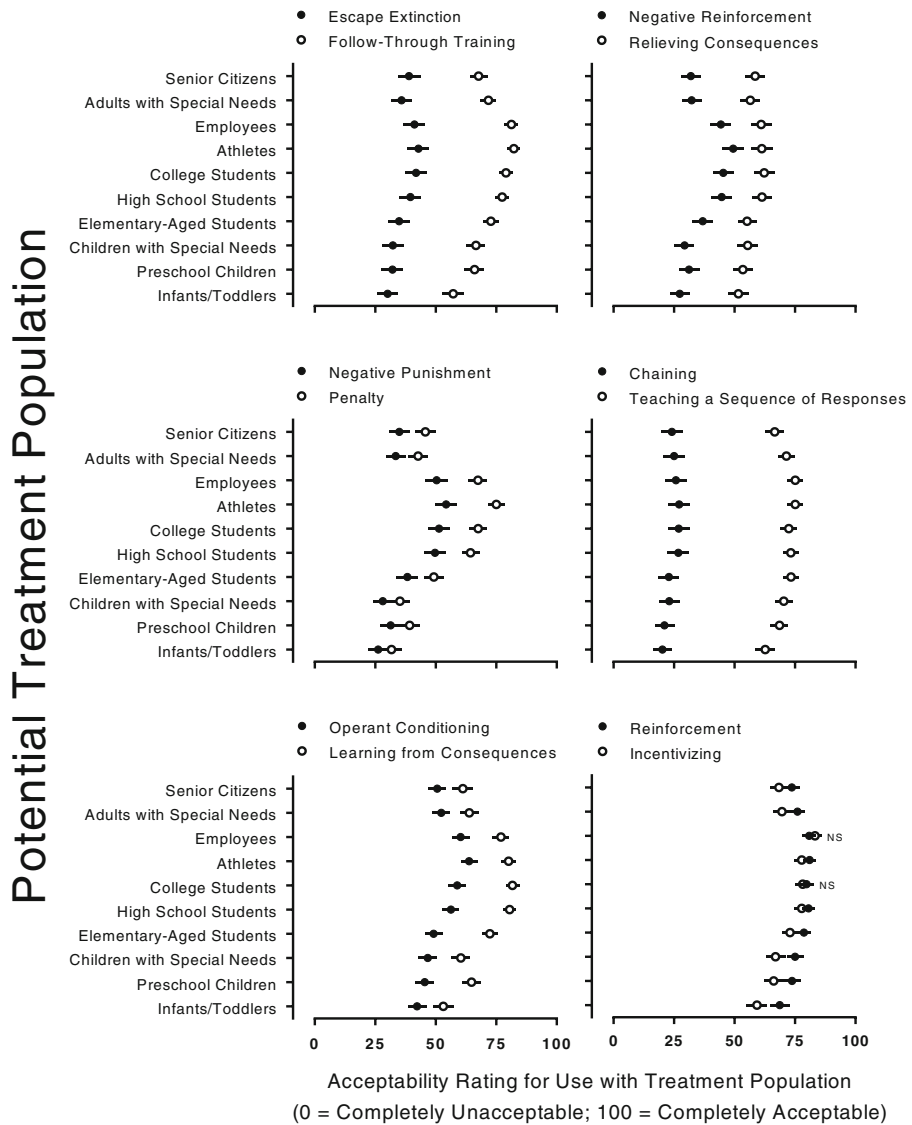
## Results

Analyses focused on comparing ratings given to a technical term and its non-technical substitute. For economy of expression, we will refer to these comparisons as participant *preferences* (although, technically speaking, participants did not select between terms, but instead rated them separately). Because the D'Agostino-Pearson omnibus normality test indicated that VAS responses were not normally distributed, workers' responses to the behavior analysis and substitute term in each pair were compared using the two-tailed Wilcoxon matched-pairs signed rank test. All rating differences were statistically significant except for those labeled as “NS” (non-significant) in Fig. 1.

Figure 1 shows the mean participant ratings for each term for each of the 10 populations of clients. Substitute terms were reliably rated as more acceptable than technical terms for all 10 populations for five out of the six pairs of terms. The behavior-analytic term “reinforcement” as rated more favorably than the substitute, “incentivizing” for every category of client except “employees” and “college students,” though in all of the instances the mean difference was of modest magnitude.

## Discussion

Overall, members of the general public who were not behavior analysts found non-technical substitute terms, based on those suggested by Lindsley, (1991), to be more



**Fig. 1** Means and 95 % CI for participants' rating for technical behavior-analytic terms (*closed circles*) and lay terms (*open circles*). *NS* depicts non-significant statistical differences

acceptable than technical behavior-analytic terms. There are many ways to construct survey items, and item construction can influence survey responding (e.g., Couper, Traugott, and Lamias 2001; Moser and Kalton 1971), so we extrapolate from these results only cautiously and while acknowledging a need for additional studies to evaluate the generality of the effects. For now, it may be observed that the effects are consistent with the suggestion that behavior analysis has a marketing problem (Doughty et al. 2012; Freedman 2015; Smith 2015), and these effects suggest that the specialized vocabulary of behavior analysis may create hurdles to the acceptability of applied behavior-analytic services.

Unaddressed in our survey is exactly why members of the general public found behavior-analytic terms to be problematic. One possibility is simply that technical terms are unfamiliar. A sizeable literature on dissemination indicates that innovations are most likely to be adopted when they are compatible with existing cultural practices (e.g., Rogers 2003), especially considering that communication largely dominates cultural practices (e.g., Aune, Hunter, Kim, and Kim 2001; Infante and Rancer 1996).<sup>3</sup> It follows that people who “talk funny” are unlikely to be well-regarded (e.g., Wright and Bougie 2007). A more specific possible interpretation of our results was communicated by one participant who spontaneously wrote to us that, “Some of the behavior approaches sounded cruel, even medieval.” This reaction is consistent with Lindsley’s, (1991) observation that, in his experience, non-behavior analysts find technical terms to be “abrasive” (p. 449); with Maurice’s, (1993) observation that consumers may initially view behavioral interventions as “harsh” (p. 102); and with the view, sometimes propagated by non-behavior-analytic professionals, that behavioral interventions are psychologically damaging (Maurice 1993; see also Kohn 1993).

To paraphrase Skinner, (1957, 1977), the listener is always right, or, as Lindsley, (1991) observed: “You should select words for their impact on the listener, not on the speaker” (p. 449). Although Lindsley claimed to have developed non-technical substitute terms by vetting them with non-specialists, he presented no data to support his proposition that such people respond more positively to the substitute terms than their technical equivalents. Similarly, contextual behavioral psychologists have argued for the use of *middle level functional terms* that “serve as shortcuts for applying basic principles and theories to complex situations” (Villardaga et al. 2009, p. 115), but we have not seen any data validating their superiority over technical terms. The present findings might be largely predictable, but that does not diminish their standing as an *empirical* demonstration of an effect that numerous observers have thought to be important to the dissemination and societal support of behavior analysis.

Although behavior analysts have speculated about the linguistic basis of their marketability problem more often than they have examined it empirically, the present findings do have some precedent in the literature. Witt, Moe, Gutkin, and Andrews (1984) found that classroom teachers responded more negatively to interventions that were described using behavioral terms (e.g., *time out*) versus everyday language (*having a quiet time*). Interestingly, acceptability of behaviorally described interventions declined as a function of years of teaching experience, suggesting that the more entrenched an alternative vocabulary, the more objectionable behavior-analytic language will be (Witt, Martens, et al. 1984). More generally, it appears that people respond negatively to jargon, behavioral or otherwise, in part because it promotes awkward phrasing and tends to lack human-interest narrative features (Klare, Mabry, and Gustafson 1955a, 1955b). For example, Witt, Moe, et al. (1984) found that, like behavior-analytic jargon, humanistic psychology jargon also contributed to negative evaluation of some interventions.

<sup>3</sup> Although it is beyond the scope of this paper to address the extent to which people, particularly those in Western cultures, understand behavioral phenomena, including verbal and social behavior, we refer interested readers to Field and Hinline (2008) for a systematic discussion on the ubiquity of dispositional causes (i.e., traditional interpretations) for complex, temporally extended behavioral phenomena; namely, the verbal community may be uncomfortable with behavioral interpretations and prose that are distinct from their particular terms.

Behavior analysts might take some comfort in the fact that one of the six targeted technical terms in our survey, “reinforcement,” was not reliably judged as less acceptable than a possible substitute term, “incentivizing.” One interpretation of this finding is that “reinforcement,” complete with relatively accurate connotations, has made its way into the lay vocabulary, thereby representing a rare success in the quest to behavioralize the culture. It is equally possible, of course, that “reinforcement” was deemed acceptable precisely because the term is widely misunderstood (e.g., people sometimes use it to mean “being nice” in a non-contingent fashion). Our survey was not intended to parse precisely what the target terms meant to participants, but of course that could be a productive focus of future studies.

Close inspection of Fig. 1 shows that, in a majority of cases (41 out of 60 instances) across the six pairs of terms, the absolute mean ratings of behavioral terms were in the negative range of the “Completely Unacceptable” to “Complete Acceptable” rating scale. This is noteworthy in light of research documenting a general positivity bias in language, that is, a tendency for people to use words with pleasant connotations more often than words with unpleasant connotations (Dodds et al. 2015; Kloumann, Danforth, Harris, Bliss, and Dodds 2012). If, as the present modest survey may suggest, behavioral terms tend to be regarded as unpleasant, one wonders about the effects on listeners when behavior analysts use the terms. It is reasonable to suggest that consumers may seek out professionals whose behavior they find to be pleasant, and avoid those whose behavior they find to be unpleasant.

Of course, the adverse effects of poorly chosen language are not limited to consumers of therapy services. College students, for instance, typically enter a first behavior analysis course with little to no understanding of behavioral principles and interventions, and as Lindsley, (1991) pointed out they may decide whether to pursue further study of behavior analysis partly based on the quality of their experience in the course. Because students emerge from the general population, they are likely to regard jargon with the same disfavor as our participants, and therefore a too-early, too-intense immersion in technical vocabulary may contribute to an unfavorable experience. As Lindsley argued, there is a need for substitute terms that bring novice’s behavior under control of the functional relations of behavior without being off-putting.

Also noteworthy is the demand on behavior analysts who work in multidisciplinary settings to maintain good relations with other kinds of professionals. As Friman (2014b) has described, unfortunately, few behavior analysts appear to have developed sophisticated repertoires for recruiting non-behavior analysts into productive collaboration (see also Hearst 1967). A colorful example of this problem was offered by Berger, (1973), who observed that:

When the behaviorists ... begin to discuss conjunctive schedules and respondent discrimination, the social workers turn pale and begin to leave the room... The avoidance behavior of the social worker is understandable. Nowhere in the archives of psychology is there more esoteric nomenclature and mathematical formulation than in the behaviorist’s repertoire (p. 106).

It is reasonable to suggest that productive collaboration requires conversation, a core prerequisite of which would seem to be reliance on mutually acceptable and understandable terms.



The most obvious implication of the present study is to suggest the importance of a systematic investigation of listener behavior with respect to behavior analysis terms. Knowing the ways in which various listeners respond to various terms—as a matter of empirical demonstration rather than speculation—provides a basis for deciding which existing terms to retain, and which to supplement, for which purposes. For example, according to one interpretation, our results are consistent with the assumption that “reinforcement” is adequate for use with laypersons, but “escape extinction” and “chaining” probably are not. The results might, however, be different with other kinds of respondents (e.g., speech-language therapists who have been exposed to behavioral concepts and technology). Empirical approaches also are recommended for determining which specific substitute terms to embrace.

Some behavior analysts may regard the methodology that we employed with suspicion due to the dismissal of verbal-report methods by Skinner, (1953) and by some pioneering applied behavior analysts. As Baer, Wolf, and Risley (1968) observed, in most analyses of a person’s behavior, “the relevant question is not what he can say, but what he can do” (p. 93). When the topic of interest is verbal behavior, however, what a person can say is one important thing that the person can do, and there is plenty of precedent for assuming that that what people say about intervention acceptability correlates with their practical responses (e.g., Kazdin 1980; Rapucci and Saunders 1974; Witt and Martens 1983; Wolf 1978; for a more general discussion of the potential utility of verbal-report methods, see Critchfield and Epting 1998; Critchfield, Tucker, and Vuchinich 1998). We suggest, therefore, that survey responses can provide a valuable preliminary glimpse into the impact that behavioral jargon has on the behavior of non-behavior analysts.

Consider the example from Rolider, Axelrod, and Van Houten (1998) who surveyed behavior analysts and non-behavior analysts about their perceived understanding of behavior-analytic procedures, the extent to which they deemed the procedure as legitimate and compassionate, and the extent to which the hypothetical client was viewed as a participant in the treatment. Their results suggest that the heavy use of technical jargon *decreased* the non-behavior analysts’ understanding of the behavioral procedures and evoked unfavorable emotional reactions (Rolider et al. 1998). Of course, a thoroughgoing program of research on jargon and its substitutes will include non-survey methods that examine what people actually do after encountering behavioral jargon (e.g., whether consumers accept or reject a given type of intervention; and whether or not non-experts are led to they effectively pinpoint, measure, and intervene to change behavior).

Notwithstanding the nature of the verbal-report method employed in this study, some limitations remain, particularly regarding the representativeness of respondents obtained from mTurk and the use of a relatively small number of behavior-analytic terms and lay terms. Although this is the first study to examine social acceptability of behavior-analytic terms using mTurk, a number of recent studies have employed similar crowdsourcing methods, particularly within psychology and linguistics (see Lengel and Mullins-Sweatt 2016 and Sprouse 2011, respectively). However, the skeptical reader ought to question the generality of results obtained from people completing computerized tasks (i.e., mTurkers); we remind the reader, however, to consider the benefits of using mTurk (ease of use, low cost, broad sample of the American public; see Paolacci and Chandler 2014) relative to traditional survey-based

methods relying primarily on small samples of undergraduate students. Regardless, future studies should attempt to compare the acceptability of terms across various populations and settings, especially in the service field (i.e., behavior analysts working with clients). The inspiration for the specific word pairs in our study came from Lindsley's, (1991) translations from technical jargon to plain English, although modifications were made to reflect more modern usage of the terms. We invite future studies to investigate social acceptability of other popular behavior-analytic terms and their presumed lay counterparts.

In conclusion, it may be said that the incentive for studying the impact of behavior analysis jargon on listener behavior is twofold. One thrust is to promote dissemination by identifying terms that do not create listener responses that interfere with dissemination. Lindsley, (1991) went so far as to regard this as the hallmark of a successfully disseminated science. Science promotes the development of technology, and consequently, as happened in behavior analysis, technology often inherits the language of its progenitor science. An often-overlooked next step, according Lindsley (see also Fixsen, Naoom, Blase, Friedman, and Wallace 2005; Rogers 2003), is to divorce technology from the native scientific vocabulary and embed it in a way of speaking that is consistent with the existing practices of potential adopters:

A technology has only a technical jargon, but... a profession has both a technical jargon and a set of plain English equivalents.... The development of accurate, comfortable application names may be one of the most important steps in moving from a technology to a profession. (p. 450).

In a human-services marketplace full of non-behavioral approaches, it is a reasonable bet that competitor models of service delivery have observed the need to adopt user-friendly language (e.g., see Green 1996), calling to mind Wolf's, (1978) seminal statement about the importance of social validity in behavior analysis:

It is clear that a number of the most important concepts in our culture are subjective, perhaps even the most important. Martin Luther, as the story goes, was severely criticized for setting Protestant hymns to the popular melodies of songs and dances of the time. He replied, "Why should we let the devil have all the best tunes?" (p. 210).

A very direct means of discovering what "tunes" (terms) are most acceptable to members of the general public is to ask them.

A second reason to study the effects of jargon on listener behavior is to achieve conceptual consistency in how terminology is regarded. Rorty, (1991) cautioned against assuming that a technical scientific vocabulary accurately represents a "true reality" whereas a lay vocabulary does not. The only valid measure of vocabulary is heuristic—its effectiveness in promoting the prediction and control of behavior (Leigland 2010), one aspect of which concerns the willingness of the public to engage with behavior-analytic services. If the marketing problem in behavior analysis is real, and if inflexible allegiance to jargon is one of its origins, then to date, behavior analysts have done a poor job of applying their own functional perspective on verbal behavior to problems

regarding their own societal acceptance, and new data are needed to guide a solution to this problem.

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**Funding** The authors used no grant funding in this study.

**Ethical Approval** All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

**Informed Consent** Informed consent was obtained from all individual participants included in the study.

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

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