COLONIALITY AND THE SCIENCE OF APPLIED BEHAVIOR ANALYSIS

Malika Naomi Pritchett, M.S.

Dissertation Prepared for the Degree of

DOCTOR OF PHILOSOPHY

UNIVERSITY OF NORTH TEXAS

May 2020

APPROVED:

Shahla Ala'i-Rosales, Committee Chair
Traci Cihon, Committee Member
Alicia Re Cruz, Committee Member
Manish Vaidya, Chair of the Department of Behavior Analysis
Neale Chumbler, Dean of the College of Health and Public Service
Victor Prybutok, Dean of the Toulouse Graduate School

Pritchett, Malika Naomi. *Coloniality and the Science of Applied Behavior Analysis*. Doctor of Philosophy (Health Services Research), May 2020, 94 pp., 3 tables, 7 figures, 2 appendices, references, 123 titles.

Human life is to be universally cherished and valued. Policies about how to value lives are often developed following gross human rights violations. Some of the most horrific violations have occurred under the guise of biomedical and behavioral research. As a result, policies have been developed to protect participants. Presumably, the primary responsibility of the researcher is their protection. There are, however, potential tensions between protections and research agendas, which set the occasion for over selection of participants with vulnerabilities. This dynamic may establish competing contingencies that devalue, and potentially harm, participants. Power imbalances inherent in the researcher-participant relationship establish the researcher as the dominant knowledge seeking authority and the participant as the subservient subject. Ideally, research in applied behavior analysis is driven by a steadfast orientation toward the enhancement of human life and the amelioration of suffering. The purpose of this paper is to present an analysis of human rights trends in the *Journal of Applied Behavior Analysis*. The dependent measures are based on ethical principles established for the protection of participants and recommendations concerning participatory research practices in applied behavior analysis. The results indicate that in some cases, protections have been minimally reported. Furthermore, power imbalances are highly likely given the processes and outcomes reported. The trends appear to be moving in an unfavorable direction in most cases. Findings are discussed on three levels: 1) a conceptual analysis of potential contingencies that influence applied behavior analytic research, 2) considerations around coloniality, and, 3) recommendations to neutralize and diffuse power imbalances to ensure the applied spirit of the science is actualized.

ACKNOWLEDGEMENTS

First, I thank my advisor, mentor, and friend Dr. Shahla Ala'i for nurturing me over the years. Your unwavering support, enthusiasm, faithfulness, and love means the world to me. Thank you for helping me find my voice. To Dr. Traci Cihon, thank you for serving as a member of my committee and for your amazing friendship. Your empathy, guidance, and generosity gave me peace. To Dr. Alicia Re Cruz, thank you for serving as a member of my committee and for introducing me to new concepts and ways of understanding the world. Your kindness, helpfulness, and humility throughout this research process is cherished. To my parents, Dena and Luther Pritchett, thank you for your unconditional love, pride, and support throughout my academic career. Thank you for raising me to be a strong, independent, and courageous woman. Daddy, I'm so sad you had to leave this planet before I completed this dissertation. I love and miss you so much. To my in-laws, Dr. Edna and William Willis, thank you for your constant love, support, and wisdom. To my siblings and extended family, I'm so thankful for your love and steadfastness throughout this journey. Many thanks to Josef Harris and Melody Jones for their assistance with data collection and their dedication to this project. To all of my wonderful friends, thank you for constantly hearing my ideas without judgement, challenging me to think deeper, and supporting me when I felt scared. Most importantly, thank you for giving me space to be unapologetically myself. To my cohort of fellow doctoral students, thank you for your camaraderie and positivity. Finally, to my husband and best friend, Jamaun Willis, thank you for your unconditional love, sacrifice, patience, and strength. Your idealism has transformed me into a braver and more determined woman than I ever imagined I could be. You are my soulmate.

TABLE OF CONTENTS

Page

ACKNOWLEDGEMENTS iii

LIST OF TABLES AND FIGURES vii

INTRODUCTION 1

Engaging Multiple Epistemologies 1
Human Rights in the Context of Biomedical and Behavioral Research 3
The Science of Applied Behavior Analysis 12
Dimensions of Applied Behavior Analysis 12
The Applied Dimension 12
Applied Behavior Analysis in Society 13
Dual Obligations 13
Involuntary Participation and Marginalization 14
Necropolitics 14
Radical Behaviorism 15
Philosophy of the Science and Tenants 15
Pragmatism 16
WEIRD Science 16
Coloniality and Behavior Analysis 17
Quijano’s Definition of Coloniality 17
Behavioral Mechanisms of Coloniality 18
Colonial Research Practices 21
Commodification 21
Taking Data 22
Colonial Relationships: Systems for Taking Commodities 22
Opposing Values and Inherent Tensions: Fawcett’s Shift from Colonial to Collaborative 23
Research Question 24

METHOD 26

Article Selection 26
Scoring 27

Interrater Agreement 27

RESULTS 29

Measures Associated with Core Belmont Principles 29

Respect for Persons 29

Beneficence 29

Justice 29

Measures Associated with Respect for Persons 30

Assent 30

Voluntary 30

Consent 31

Reporting Categories for Measures Associated with Respect for Persons 31

Assent 31

Voluntary 31

Consent 32

Measures Associated with Beneficence 32

Life Improvement 32

Social Validity 33

Real-World Dependent Variables 33

Reporting Categories for Measures Associated with Beneficence 33

Life Improvement 33

Social Validity 34

Real-World Dependent Variables 35

Measures Associated with Justice 35

Collaboration Indicators 36

DISCUSSION 38

Extent to Which the Studies Meets the Belmont Standards 39

Extent to Which the Studies Meet Fawcett's Recommendations 47

Extent to Which Journal Studies Meet the Spirit of Applied 49

Dual Obligations 50

Paradoxes of Our Time 52

The Process 53

Cultural Humility 54

Third Ways 55
Positionality Statement 60

APPENDIX A. OBSERVATION CODE 72

APPENDIX B. DATA SHEET 83

REFERENCES 86

LIST OF TABLES AND FIGURES

Page

Tables

Table 1. Operational Definitions & Scoring Protocol 68

Table 2. Journal of Applied Behavior Analysis Article Sample 71

Table 3. General and Sub Categorial Indicators 71

Figures

Figure 1. Total number of experiments and number of experiments reported across 50 years of the *Journal of Applied Behavior Analysis* by Belmont principles: respect for persons (upper panel), beneficence (middle panel), and justice (lower panel). 61

Figure 2. Total number of measures and number of experiments reported across 50 years of the *Journal of Applied Behavior Analysis* by respect for persons categories: consent (upper panel), voluntary (middle panel), and assent (lower panel). 62

Figure 3. Total number of experiments and number of experiments reporting obtained, not obtained, or no information reported for consent (upper panel), voluntary (middle panel), and assent (lower panel) across 50 years of the *Journal of Applied Behavior Analysis*. 63

Figure 4. Total number of experiments and number of experiments reported across 50 years of the *Journal of Applied Behavior Analysis* by beneficence categories: life improvement (upper panel), social validity (middle panel), and real-world dependent variables (lower panel). 64

Figure 5. Total number of experiments and number of experiments reporting obtained, not obtained, or no information reported for life improvement (upper panel) and socially valid measures (middle panel) and number of experiments reporting increasing behaviors, decreasing behaviors, and proxy behaviors (lower panel) across 50 years of the *Journal of Applied Behavior Analysis*. 65

Figure 6. Total number of experiments and number of experiments reported across 50 years of the *Journal of Applied Behavior Analysis* by justice categories: age, sex, and gender (upper left panel), race and ethnicity (middle left panel), income and occupation (lower left panel), diagnosis and education (upper right panel), marital status and religion (middle right panel), and language and communication (lower right panel). 66

Figure 7. Total of number of collaboration indicators (top panel) and average and range of number of collaboration indicators (bottom panel) reported across 50 years of the *Journal of Applied Behavior Analysis*. 67

INTRODUCTION

Human life is to be universally cherished and valued “without distinction of any kind, such as race, colour, sex, language, religion, political or other opinion, national or social origin, property, birth or other status” (UN General Assembly, 1948). How to value human life is a question. Who determines the value and for whom is an extension of this question. For the purpose of this investigation, both questions will be addressed within the context of coloniality and its relation to science, specifically the science of Applied Behavior Analysis. How does research in the helping professions enhance human life and how does it diminish human life? Applied Behavior Analysis is the nexus for these questions. This introduction includes four major themes that lead to the research question: 1) the importance of engaging multiple epistemologies within a broadly behavior analytic theoretical framework, 2) human rights issues in biomedical and behavior research 3) an overview of the science of behavior analysis (features, role in society, and philosophical underpinnings), and finally, 4) the notion of coloniality and colonial research practices. Each of themes are important to understand the significance of assessing human rights trends in applied behavior analysis and for moving us away from colonial practices.

Engaging Multiple Epistemologies

Epistemology is a branch of philosophy concerned with human knowledge. It addresses critical questions about knowledge such as its origin, how it is defined, if it is acquired, what is missing and how access to knowledge can be pursued (Soloman, 2008). Epistemology is also progressive in nature. It seeks to answer questions about what could be known (Marr, 2003) and asks what “good” knowledge is (Maparyan, 2012, p. 34).

Skinner’s radical behaviorist epistemology adopts a pragmatic theory of truth. Radical behaviorists describe knowledge through descriptions of human behavior. Those descriptions are also amenable to study. In other words, how we know is a behavior in and of itself and there is a lawfulness about how that behavior is learned (Zuriff, 1980). That is, behavior is true if it occasions other behaviors that are effective, useful, and workable (Skinner 1945; 1953; 1957; Zuriff, 1980).

The overarching framework of this research project is rooted in the philosophy of behaviorism. This is evidenced by the behavior analytic conceptualization of the problem and the functional analysis of the behavior-environment relations responsible for various applied behavior analytic research practices. In order to provide a more substantive content analysis of these practices, epistemologies outside behaviorism were considered. This approach proved to be beneficial because it allowed for a more in-depth contingency analysis. For example, the origins of the concept of intersectionality are in black feminist epistemology (Crenshaw, 1991). Through the consideration of this knowledge and the way the knowledge was developed, that is understanding Crenshaw’s epistemological approach, a different level of analysis was possible. Intersectionality provides insight on motivating operations that may have a value-altering effect on reinforcers because of restricted response alternatives. In particular, the value of reinforcers is determined by conditions of intersectionality that result in restricted opportunities to make choices that result in an increased likelihood of experiencing coercion (Goldiamond, 1976).

By investigating complex behavior phenomena through various epistemological lenses, behavior analysts are able to “thicken” their contingency analyses. In fact, one of the considered concepts from anthropology is the concept of thickness. Anthropology offers the concept of the descriptions that offer the voices and perspectives of many people under different conditions.

“Thickness” involves the interplay of contextual detail, emotion, meaning, and motivation that allow deeper understanding of a phenomenon (Ponterotto, 2006). “Thickness” is built on anthropological epistemologies (Thomas, 1997). Cultural phenomena are deeply rooted in the layered intercrossing of people’s interpretations (Geertz, 1973). Narratives play a key role in developing thick descriptions. Obtaining narratives is an important part of qualitative research. (e.g., Sandelowski, 1991). On the surface it appears that this is in epistemological conflict with behavior analytic ways of knowing. However, social validity and content knowledge rest on the voice and the input of stakeholders, and these voices should direct the goals and aims of applied research at both the momentary and disciplinary levels. Incorporating the knowledge of scientists working in social justice arenas such as intersectionality, necropolitics, and coloniality are important to the present paper. In conducting the analysis of our applied research base and discussing other knowledge bases with differing epistemologies, it is my hope that we can continue our study of behavior-environment interactions in a more robust fashion with increased social validity. In the context of this research, the depth and breadth of analysis would have been sacrificed if it were restricted to one epistemology. The contingency analyses would have been superficially topographical and resulted in flaccid recommendations which would have fallen short of the progressive nature of the science of behavior. For that reason, several areas outside of behavior analysis were included in this research. The most foundational aspect to be considered is that of human rights. What are they and how are they protected in research?

Human Rights in the Context of Biomedical and Behavioral Research

Some of the most horrific crimes against humanity the world has ever known have occurred under the guise of biomedical and behavioral research with human subjects. Historically, the burdens of research participation have been disproportionately endured by persons with vulnerabilities who involuntarily suffered inhumane treatments (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979). In Europe during World War II, for example, Jewish concentration camp prisoners were tortured through human experimentation by Nazi physicians. In these experiments, prisoners were subjected to, among other things, “freezing, injection of typhus into the blood, and direct injection of toxic substances” (Rice, 2008). The Nazi physicians were prosecuted for crimes against peace and humanity in The Nuremberg Trials in Nuremberg, Germany between 1945 and 1949. The outcomes of these trials occasioned several waves of initiatives dedicated to defining human rights and developing protections for human research subjects (Rice, 2008; Slavicek & Forsdahl, 2009). In 1948, the United Nations provided the world with the first international declaration, The Universal Declaration of Human Rights (UDHR). The UDHR states,

> Human rights are rights inherent to all human beings, regardless of race, sex, nationality, ethnicity, language, religion, or any other status. Human rights include the right to life and liberty, freedom from slavery and torture, freedom of opinion and expression, the right to work and education, and many more. Everyone is entitled to these rights, without discrimination. (UN General Assembly, 1948)

The UDHR was created in the midst of several other initiatives in Europe. How human rights were to be protected, and by whom, in the context of biomedical and behavioral research, were outlined in ethical standards created specifically in response to violations for the protection of human research subjects. For example, the Nuremberg Code (1947), the Declaration of Geneva (1948), and the Declaration of Helsinki (1964) are all policies directed toward preventing violations (Rice, 2008; Slavicek & Forsdahl, 2009). At the same as time Nazi physicians were being tried for egregious crimes against humanity in Germany, events were taking place in the United States that would further influence protection of research subjects.

On January 29, 1951, Henrietta Lacks entered Johns Hopkins Hospital in Baltimore, Maryland in tremendous pain, seeking physician assistance after discovering a hard mass on her cervix. As a young Black mother living in the Jim Crow era, her options for medical treatment were limited to the subpar, segregated, Black ward of Johns Hopkins. There physicians scraped cells from her cervix for pathology, testing to determine the malignancy of the mass and make recommendations for treatment. Without her consent or knowledge, Ms. Lacks' cells were also sent to a research lab in the hospital for experimentation. Typically, when human cells were taken from patients, the cells only lived for a short period of time; this restricted the research process temporally. As a result, there was a need (in the 1950s) for the constant availability of new specimens for all ongoing research. When Ms. Lacks' cells arrived at the laboratory, they did not die as was commonly the case. Instead they multiplied rapidly. Her cells became immortal. Ms. Lacks died of cervical cancer on October 4, 1951-- in poverty. Her cells ("HeLa" cells) continue to be harvested and distributed by the trillions, for use and experimentation, to research labs across the world. HeLa cells were the first to be shipped by mail, cloned, and sent to outer space. They were also integral in modern medical breakthroughs such as the polio vaccine and in vitro fertilization (Skloot, 2011).

The events that transpired after Ms. Lacks entered the hospital are one example of, perhaps, more nuanced human rights violations in the context of biomedical and behavioral research. Pivotal questions emerged in the years following: To what extent can a person with marginalized social status provide truly informed and meaningful consent? Would Ms. Lacks agree as to how her cells have been and continue to be used today? When specimens leave human bodies to whom do they belong? Who has the right to decide? Who profits from another person’s body? Parallel ethical questions can be found in the context of human behavior research.

In one of the first publications in which operant conditioning was applied with humans, *Operant Conditioning of a Vegetative Human Organism,* Fuller (1949) describes the patient:

> Recently an opportunity was offered us to conduct an operant conditioning experiment on an 18-yr.-old inmate of a feeble-minded institution, whose behavior was that of a 'vegetative idiot.' The term 'vegetative' describes well his condition. He lay on his back and could not roll over; he could, however, open his mouth, blink, and move his arms, head and shoulders, to a slight extent. He never moved his trunk or legs. The attendant reported that he never made any sounds; but in the course of the experiment vocalizations were heard. He had some teeth but did not chew. He had been fed liquids and semi-solids all his life. While being fed, he sometimes choked and would cough vigorously. (p. 588)

Through experimental operant conditioning sessions, the use of a ‘sugar-milk solution’ was delivered as a reinforcer to shape arm-raising responses. Sessions were conducted following a 15-hour food deprivation period. That is, the young man was deprived of all sustenance for 15-hour periods to increase the value of the solution used as a reinforcer. This experiment demonstrated, contrary to the belief at the time, that through operant conditioning a person admitted to an institution for the feeble-minded [*sic*] could learn. Fuller (1949) concluded, “Perhaps by beginning at the bottom of the human scale the transfer from rat to man can be effected” (p. 590).

In one of the most widely used and respected textbooks in applied behavior analysis (Cooper et al., 2019), Fuller’s (1949) research is identified as the first demonstration of human operant conditioning. This experiment begs ethical questions similar to the case of Ms. Lacks. Was the subject of Fuller’s experiment able to meaningfully consent to participate? What knowledge or understanding of the experimental procedures did they have? In what way did the conditioning of an arm-raising response benefit him? What were the conditions under which this person was selected for this experiment? Fuller notes “an opportunity was offered to us” (p.

588). Would the subject of Fuller's experiment consider the experiment an "opportunity" for themselves? In retrospect, the experiments conducted on Ms. Lacks and the unnamed subject of Fuller's experiment are extremely unsettling. They did not, however, serve as catalysts for the series of protections to be established in the United States. Biomedical and behavioral research procedures awaited change until the outcry that followed the Tuskegee Syphilis Study.

The U.S. Public Health Service Syphilis Study was a clinical study conducted from 1932 to 1972 at the Tuskegee Institute in Tuskegee, Alabama. The purpose of this research was to study syphilis. Participants were poor, illiterate, Black sharecroppers in Tuskegee county. Six hundred individuals were selected for participation and were given "incentives" such as free medical exams, transportation, meals, and burial stipends. The participants, under the assumption they were being treated for "bad blood," willingly participated. They were unaware that the true purpose of the research was to study the outcomes effects of untreated syphilis post-mortem. Despite the availability of penicillin as treatment for syphilis in 1947, the men who participated in this research were never treated (Tuskegee University, n.d.).

The public outrage that followed the end of the Tuskegee Syphilis Study in 1974 served as a catalyst for the development of the first national public body dedicated to bioethics policy in the United States-- the National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research (CDC, 2020). The task of the commission was four-fold: 1) to analyze the boundaries between biomedical and behavioral research, including defining acceptable medical practices, 2) to assess risks and benefits in human subject research, 3) to develop guidelines for how human subjects can be selected for research, and 4) to define informed consent in research settings (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979).

One of the main outcomes of the National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research was the Belmont Report: Ethical Principles and Guidelines for the Protection of Human Subjects of Research (1979). The Belmont Report outlines the minimum standard ethical principles and guidelines for biomedical and behavioral research that involves human subjects. There are three core principles: 1) respect for persons, 2) beneficence, and 3) justice (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979).

Central to the principle of respect for persons is autonomy; individuals should be considered autonomous and in the event they have diminished autonomy, they should be protected (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979). This requires the researcher to both acknowledge the value of autonomy and protect persons with diminished autonomy. Persons with diminished autonomy are especially vulnerable due to an inability to express their personal goals and opinions and choices, and to be free from coercion when choices are made available (Bannerman et al., 1990). Evidence of disrespect respect for autonomy is seen when acts of agency are extinguished or punished by the researcher by repudiation or denial of freedom to make decisions, or by withholding information necessary to make informed decisions (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979).

In most cases of research involving human subjects, ensuring respect for persons involves arranging protections for participants such that they may enter into research voluntarily and with adequate information. In some cases, more persons with vulnerabilities are in need of more extensive protection due to circumstances that severely restrict liberty (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979). For example, Ms. Lacks' race, level of education, and socio-economic status are all factors that increased her vulnerability and marginalization in society. Her options for medical care were extremely limited which set the occasion for her to unknowingly become a human research subject. Ms. Lacks "was a black woman born of slavery and sharecropping who fled north for prosperity, only to have her cells used as tools by white scientists without her consent" (Skloot, 2011, p. 197).

Persons with vulnerabilities have diminished capacity to independently make meaningful and informed decisions about their lives. Factors that can diminish capacity include, but are not limited to, age, diminished cognitive ability (e.g., mental illness or intellectual disability), and impaired health status (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979). In some cases, legal guardians, parents, and custodians are given the authority to provide consent for others. Research participants with a diminished ability to clearly understand the risks and benefits of research (e.g., adults with intellectual disabilities or children with developmental disabilities) depend on assistance in the decision-making process. As a result of this inability to provide meaningful and informed consent, additional protections such as obtaining child assent, parental permission, or guardian consent are necessary (Committee on Bioethics, 1995; National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979; Rossi et al., 2003).

It is expected that the principle of respect for persons is maintained throughout research process, rather than a discrete event that occurs only at the outset of the research when forms are signed. Moreover, the extent to which protections are applied are individualized, periodically reevaluated, and adjusted if necessary, by the needs of the subject. These research practices ensure the optimal reduction of risk and maximization of benefit (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979).

The principle of beneficence relates to the well-being of the research participant. Beneficence is defined as the researcher's obligation to do no harm while ensuring maximum benefit and minimal risk. Such cost-benefit analyses are ethically complex and variable due to the difficulty of the decision-making process. The researcher must determine if the potential risks for participants are justifiable in relation to the potential benefits of the research (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979). Fuller (1949), for example, demonstrated the success of an operant conditioning procedure used to shape an arm-raising response, a beneficial outcome of the research. However, the behavior that was learned likely did not expand the repertoire of the subject in a way in that improved their quality of life; the response targeted for change was arbitrary. Additionally, it is likely that the deprivation of sustenance for 15 hours did not contribute to the participant's emotional, physical, or medical well-being. In the ideal scenario, the benefits of the research should be incurred first by the research subject and *then* extended to members of society and the research enterprise outside of the research context (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979).

The principle of justice in biomedical and behavioral research addresses the over selection of populations with vulnerabilities for research participation by calling into question who should bear the burden of the research experience and what members of society receive the benefits of the research. Historically, persons with vulnerabilities have been over selected for research participation, bearing the burden of research due to their inability to understand, self-advocate, or escape the research context because of their marginalized and disempowered positions in society. Acts of injustice occur when benefits are unfairly denied or when burdens are unduly applied. Equitable distribution of benefits among various persons and their positions in society requires researchers to comprehend equality, inequality, and how to distribute research burdens across persons based on these qualifiers (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979). Perhaps most importantly, the selection of research subjects needs to be scrutinized in order to determine whether

> some classes (e.g., welfare patients, particular racial and ethnic minorities, or persons confined to institutions) are being systematically selected simply because of their easy availability, their compromised position, or their manipulability, rather than for reasons directly related to the problem being studied. (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979, p. 6)

For example, the Tuskegee syphilis study included a homogenous group of poor, illiterate, Black, male, sharecroppers who bore the burden of research participation such that the impact of syphilis could be studied before and after they died. Moreover, despite their contributions to the knowledge base that produced the treatment (Tuskegee University, n.d.), they were denied the benefits of a treatment to cure the disease that had previously been discovered.

The principle of justice demands that public funds be used to support research that translates to outcomes that are distributed fairly across persons. In other words, research should not be solely conducted with persons with vulnerabilities such that others who have the privilege to avoid such research conditions benefit (Fawcett, 1991). Lastly, treatment should be provided both in the context of the experiment and then extended beyond the context of research engagement (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979).

The ethical principles in the Belmont Report established a minimum standard for protection of human subjects in biomedical and behavioral research. Applied sciences are to respect these minimum standards. Applied behavior analysis is grounded in action and social relevance (Baer et al., 1968; Baer et al., 1987). The stated values of the science of applied behavior analysis seemed to be not only in keeping with the Belmont principles but surpassing them.

The Science of Applied Behavior Analysis

Dimensions of Applied Behavior Analysis

"Applied behavior analysis is the science in which tactics derived from the principles of behavior are applied systematically to improve socially significant behavior and experimentation is used to identify the variables responsible for the behavior change" (Cooper, et al., 2019, p. 19). Two historical events mark the formation of applied behavior analysis as a formal discipline: 1) the publication of the first applied behavior analytic research journal-- *The Journal of Applied Behavior Analysis*, and the seminal publication titled "Some Current Dimensions of Applied Behavior Analysis" (Baer et al., 1968). Baer et al. (1968, 1987) characterized applied behavior analysis by seven dimensions: 1) applied, 2) behavioral, 3) analytic, 4) technological, 5) conceptually systematic, 6) effective, and 7) generality. Moreover, there was an explicit case made for research to occur in natural settings and for dependent variables targeted for change to be dictated by the needs of the participant rather than the curiosity of the researcher. In other words, the importance of the variables under investigation are to be determined by the participant and not the researcher (Baer et al., 1987).

The Applied Dimension

"Applied research is constrained to examining behaviors which are socially important, rather than convenient for study" (Baer et al., 1968, p. 92), perhaps making the applied dimension of applied behavior analysis the most important. In keeping with the directive that applied research is to be conducted in the natural setting (rather than laboratory or analogue settings). In addition, applied research "is not determined by the research procedures used but by the interest which society shows in the problems being studied" (Baer et al., 1968, p. 92). Given these criteria, applied behavior analytic researchers are obligated to be responsive to both the research participant and society.

Applied behavior analysis emerged in the socio-political context of Civil Rights movements in the United States, which may explain the disciplinary orientation toward social reform and human rights. One prominent applied behavior analytic researcher, Todd Risley (2001), reflecting on his life and career during this time said, "John F. Kennedy and the civil rights movement convinced me that it was not only acceptable to act on social problems – it was imperative to act. And act I have" (p. 272). Early in the field's development, there appeared to be a steadfast orientation toward the amelioration of the types of human suffering often experienced by members of society who are marginalized (Fawcett, 1991). Another prominent applied behavior analytic researcher, Bill Hopkins, spoke of the start of the discipline:

> We also initially focused much of our energy on people with special problems because a large percentage of us are humanitarians; we are particularly likely to try to help the poor, the neglected, the young, the hopeless, the dependent-the people whose problems will be addressed with government funds if at all. (Hopkins, 1987, p. 339)

Given the mission to find scientific solutions to improve human life, many applied researchers have advocated for and looked toward a better understanding of the systems of contingencies arranged in societies (e.g., Holland, 1978; Lee, 2016) that set the occasion for and perpetuate human suffering (e.g., Biglan, 2015; Glenn & Malagodi, 1991; Mattaini, 2013; Fawcett, 1991).

Applied Behavior Analysis in Society

Dual Obligations

Applied behavior analysts are members of the social systems within which they conduct research. While applied behavior analysts often engage in research motivated by improvement of the human condition at the individual level, they are simultaneously operating under the contingencies in place in the social systems within which they operate (Goldiamond, 1978; 1984). Dual obligations to the research participant and to society have the potential to create competing contingencies for the applied behavior analytic researcher. Benjamin (2013) describes a parallel tension in the life sciences and the biotech industry:

> The life sciences and the burgeoning biotech industry are especially vulnerable to conflicts between commercial, medical, and broader social interests, as the application of commercial logic to (and commodification of) the human body leads us full circle to the dangerous medical practices of World War II – and even prior to that, to American chattel slavery. (p. 4)

Involuntary Participation and Marginalization

An area that highlights the difficulty in meeting the dual responsibility regards consent. Henrietta Lacks (Skloot, 2011), the subject involved in Fuller (1949), and the men in Tuskegee (Tuskegee University, n.d.) serve as examples of people who were involuntarily forced to participate in biomedical and behavioral research as a result of their marginalized positions in society. The information gained from the research became a commodity that produced profits. Those who gave their bodies and their behavior to produce the knowledge did not profit from the knowledge. The commodification of the knowledge gained was a direct product of the diminished value of their lives relative to the lives of other members of society; they were used.

Necropolitics

Who can use who? Who controls the course and the value of individual lives? “Necropolotics” is the term used to describe the societal systems that exert power over who is afforded life and who is expendable by death (Mbembé, 2003). Manifestations of power over the lives of others are best understood through the relations of dominant persons who are in positions to determine the value of human lives relative to their societal positions that give them power over persons of lesser autonomy. This power might start with use of groups of persons and go as far as to determine extermination of groups of persons. Through this process, lives perceived as lesser become entities to be possessed, used, and transformed by the dominant group (Foucault, 1997; Mbembé, 2003).

From a behavior analytic vantage point, oppression of this type is perpetuated through coercive control (Sidman, 2001; Skinner, 1953). Holland (1978) discusses the importance of conducting contingency analyses to examine societal structures and systems that set the occasion for (and reinforce) the continuation of coercive and oppressive behaviors that maintain stratified societal systems:

> Our contingencies are largely programmed in our social institutions and it is these systems of contingencies that determine our behavior. If the people of a society are unhappy, if they are poor, if they are deprived, then it is the contingencies embodied in institutions, in the economic system, and in the government which must change. It takes changed contingencies to change behavior. If social equality is a goal, then all the institutional forms that maintain stratification must be replaced with forms that assure equality of power and equality of status. If exploitation is to cease, institutional forms that assure cooperation must be developed. Thus, experimental analysis provides a supporting rationale for the reformer who sets out to change systems. (p. 170)

In order to investigate systems of contingencies that devalue and potentially harm research participants, an understanding of the philosophical orientation and the historical context of the science of applied behavior analysis can be helpful.

Radical Behaviorism

Philosophy of the Science and Tenants

Radical behaviorism is the philosophy of the science of behavior (Skinner, 1974). For the purpose of this discussion, the basic tenants of radical behaviorism of interest here include several areas. First, the behavior of an organism serves as the fundamental datum of analysis. That is, an individual’s responses over time and the conditions under which they occur are of primary interest. Second, the functional and relational nature of stimuli and responses constitute the main experimental questions. That is, how antecedent and consequent stimuli produce functional and systematic patterns of responding over time in organisms. Third, selection by consequences is the causal mode for all three levels of behavior change (e.g., phylogenic, ontogenic, and cultural; Skinner, 1981). Finally, pragmatism drives an empirically-oriented natural science (Moore, 2011).

Pragmatism

The philosophy of behaviorism is ingrained in Western civilization (Leigland, 1992) and in particular, in the social and cultural history of the United States (Morris et al., 1990). Pragmatism, a central framework of behaviorism (Morris, 1988), emerged in an,

> American political environment of manifest destiny, an economic environment driven by the industrial revolution and the Big Business that revolution fostered, and a cultural-intellectual environment of invention and experimentation. By the early 20th century it had become virtually the defining philosophy of American life. (Lattal & Laipple, 2003, p. 42)

Pragmatism was first seen as a way of achieving greater clarity through operationalism and verification and later became synonymous with truth producing (Lattal & Laipple, 2003). In some sense, discovered truths may have become absolute truths due to the limited Western context in which this framework emerged.

WEIRD Science

One particular western context has been described within psychology as western, educated, industrialized, rich, and democratic (or WEIRD; Henrich et al., 2010). In behavioral research, researchers and participants from "WEIRD cultures are considered to be the norm and those who are not are treated as exceptions to the norm" (Nielsen et al., 2017, p. 35). The dominant world view in behavioral research is WEIRD. Research questions and process reflect the priorities and the values of Western cultures. This is, in fact, part of a larger, and perhaps more nefarious, vestige of European domination that continues to restrict the social relations of previously enslaved and conquered peoples (Quijano, 2007). The term for this post-colonial structure is “coloniality of power” (Quijano, 2000).

Coloniality and Behavior Analysis

Quijano’s Definition of Coloniality

Anibal Quijano (2000) developed the phrase “coloniality of power” to describe the structures of power, control, and hegemony that have extend beyond Western colonialism. Western civilization, categorized by systems of European world dominance, is a product of colonialism. Osterhammel (1997) indicates:

> Colonialism is a relationship between an indigenous (or forcibly imported) majority and a minority of foreign invaders. The fundamental decisions affecting the lives of the colonized people are made and implemented by the colonial rulers in pursuit of interests that are often defined in a distant metropolis. Rejecting cultural compromises with the colonized population, the colonizers are convinced of their own superiority and their ordained mandate to rule. (pp. 16-17)

Colonialism was achieved through numerous acts that consisted of conquering and exploiting indigenous persons. As a result, hegemonic power structures emerged that exploited indigenous persons for resources such as labor, land, knowledge, and natural resources (Osterhammel, 1997; Ryan, 1999).

Over time, periods of colonial rule have resulted in acts of active and passive resistance against colonial domination (Young, 2003). This resistance has resulted in the development of postcolonial theoretical frameworks dedicated to understanding the lasting impact of colonialism observed in the world today (i.e., coloniality of power). Postcolonialism is a set of principles motivated by a departure from the power structures of the West dedicated to changing people’s thoughts and behaviors with the overall goal of increasing human equality. In other words, postcolonialism seeks to change the world through radical disruption. In this effort, the status quo is challenged by rejecting the superiority of western cultures, threatening pillars of privilege and power, and demanding human equality and well-being for all of humanity (Young, 2003).

Coloniality is reflected in systems of power relations that exist in postcolonial societies. These power relations are reflected in “racial, political-economic, social, epistemological, linguistic, and gendered hierarchical orders imposed by European colonialism” (Richardson, 2019, p. 103). Coloniality emerged in context of capitalist conquests of the Americas that were achieved through the domination and subordination of persons for the purpose of access and control of resources to be commodified. As a result, Eurocentric and Western dominated orientations are hierarchical and maintained by coercive practices that serve to dominate and control members of society (Maldonado-Torres, 2007).

Historically, developments in Western science, medicine, knowledge-production, and education were motivated by political and economic world domination and achieved through oppression and exploitation of colonized persons (Mignolo, 2007). Practices in the name of the progress of science and medicine were legitimized by 19th century imperial ideologues. Western scientific successes were a way to exert power and to display non-Europeans as intellectually inferior, deserving of colonization (Smithsonian, 2018). Institutions that maintain hierarchies can be found throughout the history of science.

Behavioral Mechanisms of Coloniality

The science of applied behavior analysis has largely Western and hegemonic orientations (Miller et al., 2019). At least three behavioral mechanisms at potentially play in coloniality: coercion, stimulus control, and conditioned reinforcement.

When coercive contingencies are established in a system, one group maintains dominance over the other. Coercive contingencies are reflected in punishment or in the threat of punishment that occasions avoidance- and escape-maintained responses. These responses serve to establish and maintain power imbalances and social stratification (Holland, 1978; Sidman, 2001). Moreover, when the controlled cannot avoid or escape aversive environmental conditions established by the controllers, countercontrol emerges (Sidman, 2001). Power imbalances, therefore, create a coercive cycle that involves control, countercontrol, and counter-countercontrol (Delprato, 2002; Skinner, 1953; Sidman, 2001). These coercive cycles have been described as "colonial practices," which are characterized by "authority, subjugation, and superiority" (Miller et al., 2019, p. 20).

Take, for example, the study by Russell et al. (2018) for which the purpose was to determine at what point the child's responding would "break" following ratio strain for schedules of token reinforcement delivery. Although the child was provided with a break card that if exchanged allowed access to escape, the entire purpose of the experiment was to produce enough environmental pressures that the child would select the break card. The task itself was not a learning task; the child was asked to continuously engage in previously mastered responses. The contingencies were explicitly designed to be coercive.

The second is stimulus control and relational frames that involve the stimulus conditions that signal and/or form associations that are racist, sexist, ableist, etc. (Hayes et al., 2016; Matsuda et al., 2020;). That is, stereotypes are maintained by associations that diminish the status of certain groups of people. For example, in a study by Kantorowitz (1978) the physical desirability of women was an integral part of measuring male penile tumescence. That is, depictions of women that were "of initially equal erotic value" (Kantorowitz, 1978, p.23) were shown to men to understand the degree to which timing affects post-organismic ratings of desirability. Among other things, the women whose pictures he showed following organism were rated lower than those pictures that were shown before. Conceivably, this supports several associations about women and objectification and stereotyping of erotic activity as a decontextualized physical response separate from emotional attachments and relationships with woman as human beings.

The third relates to conditioned reinforcement. Conditioned reinforcement refers to the behavioral process in which initially neutral stimuli acquire reinforcing value or become reinforcers through operant conditioning. In operant conditioning, a neutral stimulus is paired with a primary reinforcer. This pairing results in the neutral stimulus acquiring value because of its simultaneous presentation with the primary reinforcer. As a result, the previously neutral stimulus acquires the reinforcing value of the primary reinforcer, and then becomes a conditioned reinforcer. In addition, in the absence of the primary reinforcer, the conditioned reinforcer maintains its acquired value. Conditioned reinforcers affect behavior by increasing the future likelihood of the response or response classes (Williams, 1994).

Various consequent events become conditioned reinforcers as a result of the conditioning histories across a person's life. This concept provides a way to view the role of consequent stimuli in perpetuating specific patterns of behaviors. That is, particular response classes that have been formed and are maintained that purposefully or unintentionally provide reinforcement. In the case of research, conditioned reinforcers that are in effect for one group may be so only at the expense of another group. For instance, more publications, a conditioned reinforcer for the researcher, may come at the expense of persons with vulnerabilities who are easily accessible and frequent environments that are easily manipulated by the experimenter. This dynamic perpetuates colonial practices. For example, more publications are important to academics and some types of publications may be more likely to occur at high rates under more valued conditions. These conditions may encourage scholarship that is rapidly accepted for publication. Additionally, gatekeeping that maintains an environment favorable for publication acceptance may take place. In an analysis of editorial and authorship trends in the *Journal of Applied Behavior Analysis*, Mathews (1997) found that many of the editors were also regular authors (as many as 10 publications in one year) in the same journal. Furthermore, Dunlap et al. (1998) documented a trend toward veteran authors and away from new authors, cautioning the field to consider “the diversity and representativeness of authors in regard to geographic, cultural, ethnic, and other variables” (p. 498). It appears that in applied behavior analytic research, one homogeneous group is accumulating a disproportionate number of conditioned reinforcers. A discussion of colonial research practices can help researchers to understand the environmental conditions that occasion and perpetuate such homogeneous applied behavior analytic research practices.

Colonial Research Practices

Within the context of applied behavior analytic research, colonial research practices may include at least three features: 1) the commodification of behavior data (Benjamin, 2013), 2) the cultivation or “taking” of behavior data (Malott, 2002), and 3) the establishment and perpetuation of colonial relationships (Fawcett, 1991). Each of these have been developed and are maintained by coercion, stimulus control, and conditioned reinforcement.

Commodification

A commodity is a good that can be exchanged within a particular market (Commodity, n.d.). In the context of applied behavior analytic research, behavior data are the commodities.

The commodification of behavior data is characterized by the exchange of behavior data for conditioned reinforcers (e.g., publications). Malott (2002) cautions researchers about reinforcers that are more likely to benefit the student researcher, faculty member, and/or the institutions in which they operate. Such reinforcers include recognition, publications, citations, grant money, appointments to prestigious educational institutions, awards, fame, and elevated social status (Hull, 1978).

Taking Data

The findings and outcomes of research are valuable. Taking data is the process by which applied behavior analytic researchers measure, count, and analyze behavior data in the context of the experiment (Cooper et al., 2019). With respect to "taking data" the immediate concern is related to the use of the word "take." This phrase shifts the measurement of behavior from a numerical form for analysis to an object to be extracted from the person.

Behavior data are a visual representation of a person's state of being. If the researcher controls the data, the autonomy of the participant is threatened because the researcher is then in a position of power. In addition, when data are displayed, reprinted, and publicized, what rights does the person have with respect to the visual representation of their behavior? With respect to ownership and personal liberty, to whom do the data belong once it has been transferred from the acts of the person into a permanent product (e.g., graphs)? By preventing the participant from coming in contact with their behavior data, they are robbed of the opportunity to make informed, personal decisions about their lives (Hilts, 1974).

Colonial Relationships: Systems for Taking Commodities

Colonial relationships are established at the outset of the research endeavor and have the potential to exploit participants to suit the agenda of the researcher. In other words, colonial relationships are established and maintained through coercive contingencies which subjugate human participants through the use of power and control wielded by persons of greater authority such as the researcher. As a result, the researcher-subject relationship is maintained through power imbalances that favor the agenda of the researcher over the needs of the participant (Chavis et al., 1983; Fawcett, 1991).

Opposing Values and Inherent Tensions: Fawcett's Shift from Colonial to Collaborative

If the mission of applied behavior analysis is actualized through relief of suffering, it can then be understood that one motivation for participants to volunteer for research is the potential for relief from suffering (i.e., the removal or lessening of aversive stimuli and/or conditions). This negative reinforcement contingency sets the occasion for an increase in certain participant responses such as asking for professional help and engaging in research activities. The anticipated reinforcers are the termination or avoidance of aversive stimuli and/or conditions offer potential participants an approximation to an improved quality of life. Applied behavior analytic researchers, however, are presumably operating under different contingencies. Their contingencies threaten equality and collaboration. To encourage collaboration and equalization of relationships, Fawcett (1991) offered a broader set of values rooted in community-based participatory research practices with an overall goal to reduce colonial research practices and to address more complex social problems that advance the meaningfulness and impact of applied research in behavior analysis.

Community-based participatory research (CBPR) is an action research methodology; its hallmark is its emphasis on community engagement through the empowerment of community members as *partners* in the research endeavor (Fawcett et al., 2016). As such, participatory research practices focus on reducing hegemonic practices that perpetuate social inequalities and injustices (Miller et al., 2019). One key practice of CBPR is the empowerment of research participants through establishing practices that shift away from the traditional researcher-dominated relationship. Collaborative practices act as a safeguard to prevent exploitation and further marginalization of persons with vulnerabilities that participate in research.

Fawcett’s (1991) overarching values and actions for applied behavior analytic research include: 1) the establishment of collaborative relationships (versus colonial) between applied behavior analytic researchers and participants, 2) research goals and methodology based on socially significant dependent variables, including generality and maintenance of the effects, 3) intervention maintenance after the researchers departure that is supported by locally sustainable funding sources, and 4) advocacy and community change, including increased participant empowerment.

Research Question

The purpose of this investigation is to analyze to what extent Applied Behavior Analytic research has been reflective of 1) the applied spirit of the science as described by Baer et al. (1968), 2) the ethical principles for behavioral research involving human subjects as outlined in the Belmont Report (1979), 3) collaborative versus colonial research practices as described by Fawcett (1991), and 4) the extent to which studies are applied (Baer et al., 1968). Specifically, the current research purposefully sampled and evaluated the first 50 years of the *Journal of Applied Behavior Analysis* to assess trends with respect to the Belmont Report guidelines and recommendations of respect for persons, beneficence, justice (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979) and researcher and participant identity, researchers as stakeholders, research goal collaboration, intervention collaboration, socially significant dependent variables, generalization and maintenance of research effects, research conducted in the natural setting, sustainable funding, maintenance of research effects, and participant empowerment (Fawcett, 1991).

METHOD

The author created general indicator categories based on core bioethical principles dedicated to the protection of human subjects of behavioral research (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979). Each indicator in the main category is classified by their membership to the three core principles as outlined in the Belmont Report: respect for persons, beneficence, and justice. Respect for persons included participant consent, voluntariness, and assent. Beneficence included life improvement and social validity. Justice included participant age, race, ethnicity, religion, sex, gender, household income, education level, diagnosis, language/communication, marital status, and occupation. Subcategories were selected on based on recommendations for community research and action (Fawcett, 1991) that paralleled and extended the core bioethical principles outlined in the Belmont Report. Sub categorical indicators included participant and researcher identity, researchers as community stakeholders, origin of research goals, intervention implementation, dependent measures, generalization of research effects, research setting, source of research funding, maintenance of research effects, and improvement of participant agency (summarized in Table 3). The author created operational definitions for each indicator (summarized in Table 1) based on the descriptors from the Belmont Report (1979) and Fawcett (1991).

Article Selection

A hand search of the *Journal of Applied Behavior Analysis* was conducted to identify experimental articles to be reviewed and scored for content. A purposeful sample of articles was selected from 10-year intervals spanning 50 years of publication: 1968, 1978, 1988, 2008, and 2018. Each publication year included one volume and four issues. The *Journal of Applied Behavior Analysis* categorizes issues by season (i.e., Winter, Spring, Summer, and Fall). The first four experimental articles of each of issue were selected for each 10-year interval (see Table 2). Non-experimental articles (e.g., conceptual articles, reviews, commentaries) were excluded from the analysis. For example, if the first article of the issue was not experimental, it was not selected; instead, the next experimental article in that issue was selected.

Scoring

Two independent scorers were trained to competency on the observation code (see Appendix A) and data sheet used for scoring (see Appendix B). Each experiment from each article was read in its entirety, then it was read again and scored for content. If an experimental article reported on three experiments, each experiment was scored independently. Experiments that did not include a direct manipulation of an independent variable and measure of a dependent variable were not scored (e.g., preference assessments). The total number of scored articles per sample year were also tallied and recorded.

Interrater Agreement

To assess interrater agreement, three volumes from equal 20-year intervals were selected (1968, 1988, 2008). Each article in the volume was assigned a number (1-12) to facilitate the random selection of articles per volume included for interrater agreement. A random number generator was used to select the twelve articles (13% of total articles) scored for interrater agreement (Table 2). Interrater agreement was calculated for each dependent measure. Two raters scored each article and the mean agreement score was obtained for each indicator category. Overall agreement was calculated by calculating the mean agreement on all indicators. Agreement was scored early in the investigation processes to identify ambiguous operational definitions. Subsequently, operational definitions for scoring were revised based on disagreements. Scorers were provided the opportunity to write questions and notes on their data sheets which informed adjustments to operational definitions. This process was repeated until optimal interrater agreement was obtained (Northup et al., 1993). Overall average agreement across all indicator categories was 98.26% (range, 92% to 100%). The lowest agreement score by category was participant information (92%), intervention implementation (92%), and social validity (92%). The remaining indicator categories yielded 100% agreement scores. After obtaining interrater agreement on the randomly selected sample, the remaining 84 articles were read and scored by the author according to the observation code and scoring protocols (Table 1).

RESULTS

Measures Associated with Core Belmont Principles

Respect for Persons

Figure 1 displays the total number of measures reported that are associated with the Belmont Report principle of respect for persons included all reports of assent, consent, and voluntariness for the sample of experiments published in the *Journal of Applied Behavior Analysis* for 1968, 1978, 1988, 1998, 2008, and 2018. The total measures associated with respect were 12 in 1968, 19 in 1978, 16 in 1988, 19 in 1998, 15 in 2008, and 21 in 2018. The total number of measures possible with the experimental sample in the respect for persons category was 90 in 1968, 57 in 1978, 81 in 1988, 66 in 1998, 51 in 2008, and 57 in 2018.

Beneficence

In the beneficence category (Figure 1), the total number of measures reported that are associated with the Belmont Report principle of 'Beneficence' included all reports of life improvement (statements that indicated the person's life was affected in some way that was important to them) and social validity measures (measures for participant feedback related to goals, procedures, outcomes) for the sample of experiments published in the *Journal of Applied Behavior Analysis* for 1968, 1978, 1988, 1998, 2008, and 2018. The total measures associated with beneficence were 5 in 1968, 10 in 1978, 9 in 1988, 4 in 1998, 1 in 2008, and 4 in 2018. The total number of measures possible with the experimental sample in the beneficence category was 60 in 1968, 38 in 1978, 54 in 1988, 44 in 1998, 34 in 2008, and 38 in 2018.

Justice

In the justice category (Figure 1), the total number of measures reported that are associated with the Belmont Report principle of 'Justice' included all reports of age, race, ethnicity, religion, sex, gender, income, education level, diagnosis, language/communication, marital status, and occupation for the sample of experiments published in the *Journal of Applied Behavior Analysis* for 1968, 1978, 1988, 1998, 2008, and 2018. The total measures associated with justice were 118 in 1968, 63 in 1978, 84 in 1988, 97 in 1998, 75 in 2008, and 70 in 2018. The total number of measures possible with the experiment sample in the justice category was 360 in 1968, 228 in 1978, 324 in 1988, 264 in 1998, 204 in 2008, and 228 in 2018.

Measures Associated with Respect for Persons

Assent

In the assent category, the total number of measures reported that are associated with assent, for the sample of experiments published in the *Journal of Applied Behavior Analysis* for 1968, 1978, 1988, 1998, 2008, and 2018 are represented (Figure 2). The total measures associated with assent reported were 1 in 1968, 1 in 1978, 0 in 1988, 4 in 1998, 1 in 2008, and 4 in 2018. The total number of experiments in the assent category was 30 in 1968, 19 in 1978, 27 in 1988, 22 in 1998, 17 in 2008, and 19 in 2018.

Voluntary

In the voluntary category, the total number of measures reported that are associated with voluntariness, for the sample of experiments published in the *Journal of Applied Behavior Analysis* for 1968, 1978, 1988, 1998, 2008, and 2018 are represented (Figure 2). The total measures associated with voluntariness reported were 10 in 1968, 10 in 1978, 13 in 1988, 8 in 1998, 8 in 2008, and 11 in 2018. The total number of experiments in the voluntary category was 30 in 1968, 19 in 1978, 27 in 1988, 22 in 1998, 17 in 2008, and 19 in 2018.

Consent

In the consent category, the total number of measures reported that are associated with consent, for the sample of experiments published in the *Journal of Applied Behavior Analysis* for 1968, 1978, 1988, 1998, 2008, and 2018 are represented (Figure 2). The total measures associated with consent reported were 1 in 1968, 8 in 1978, 3 in 1988, 2 in 1998, 6 in 2008, and 6 in 2018. The total number of experiments in the consent category was 30 in 1968, 19 in 1978, 27 in 1988, 22 in 1998, 17 in 2008, and 19 in 2018.

Reporting Categories for Measures Associated with Respect for Persons

Assent

In the assent category, the number of experiments that reported assent was obtained (yes), not obtained (no), or no information was reported, for the sample of experiments published in the *Journal of Applied Behavior Analysis* for 1968, 1978, 1988, 1998, 2008, and 2018 are represented (Figure 3). The total number of experiments that reported assent was obtained were 1 in 1968, 0 in 1978, 0 in 1988, 4 in 1998, 1 in 2008, and 4 in 2018. The total number of experiments that reported assent was not obtained were 0 in 1968, 0 in 1978, 0 in 1988, 3 in 1998, 0 in 2008, and 0 in 2018. The total number of experiments that reported no information about assent were 29 in 1968, 19 in 1978, 27 in 1988, 15 in 1998, 16 in 2008, and 15 in 2018. The total number of experiments in the assent category was 30 in 1968, 19 in 1978, 27 in 1988, 22 in 1998, 17 in 2008, and 19 in 2018.

Voluntary

In the voluntary category, the number of experiments that reported voluntariness was obtained (yes), not obtained (no), or no information was reported, for the sample of experiments published in the *Journal of Applied Behavior Analysis* for 1968, 1978, 1988, 1998, 2008, and

2018 are represented (Figure 3). The total number of experiments that reported voluntariness was obtained were 10 in 1968, 10 in 1978, 11 in 1988, 12 in 1998, 8 in 2008, and 11 in 2018. The total number of experiments that reported voluntariness was not obtained were 0 in 1968, 0 in 1978, 2 in 1988, 1 in 1998, 0 in 2008, and 0 in 2018.The total number of experiments that reported no information about voluntariness were 20 in 1968, 9 in 1978, 14 in 1988, 9 in 1998, 9 in 2008, and 8 in 2018. The total number of experiments in the voluntary category was 30 in 1968, 19 in 1978, 27 in 1988, 22 in 1998, 17 in 2008, and 19 in 2018.

Consent

In the consent category, the number of experiments that reported consent was obtained (yes), not obtained (no), or no information was reported, for the sample of experiments published in the *Journal of Applied Behavior Analysis* for 1968, 1978, 1988, 1998, 2008, and 2018 are represented (Figure 3). The total number of experiments that reported consent was obtained were 1 in 1968, 9 in 1978, 3 in 1988, 2 in 1998, 6 in 2008, and 6 in 2018. The total number of experiments that reported consent was not obtained were 0 in 1968, 0 in 1978, 2 in 1988, 1 in 1998, 0 in 2008, and 0 in 2018. The total number of experiments that reported no information about consent were 29 in 1968, 11 in 1978, 22 in 1988, 19 in 1998, 11 in 2008, and 13 in 2018.

Measures Associated with Beneficence

Life Improvement

In the life improvement category, the total number of measures reported that are associated with life improvement, for the sample of experiments published in the *Journal of Applied Behavior Analysis* for 1968, 1978, 1988, 1998, 2008, and 2018 are represented (Figure 4). The total measures associated with life improvement reported were 0 in 1968, 4 in 1978, 2 in 1988, 1 in 1998, 0 in 2008, and 0 in 2018. The total number of experiments in the life improvement category was 30 in 1968, 19 in 1978, 27 in 1988, 22 in 1998, 17 in 2008, and 19 in 2018.

Social Validity

In the social validity category (e.g. Kazdin, 1977; Schwartz & Baer, 1991; Wolf, 1978) the total number of measures reported that are associated with social validity, for the sample of experiments published in the *Journal of Applied Behavior Analysis* for 1968, 1978, 1988, 1998, 2008, and 2018 are represented (Figure 4). The total measures associated with social validity reported were 5 in 1968, 6 in 1978, 7 in 1988, 3 in 1998, 1 in 2008, and 4 in 2018. The total number of experiments in the social validity category was 30 in 1968, 19 in 1978, 27 in 1988, 22 in 1998, 17 in 2008, and 19 in 2018.

Real-World Dependent Variables

In the real-world dependent variable category, the total number of measures reported that are associated with real-world dependent variables (decreasing a problem, increasing a skill versus a proxy or arbitrary response) for the sample of experiments published in the *Journal of Applied Behavior Analysis* for 1968, 1978, 1988, 1998, 2008, and 2018 are represented (Figure 4). The total measures associated with real-world dependent measures reported were 22 in 1968, 12 in 1978, 11 in 1988, 19 in 1998, 8 in 2008, and 10 in 2018. The total number of experiments in the real-world dependent variable category was 30 in 1968, 19 in 1978, 27 in 1988, 22 in 1998, 17 in 2008, and 19 in 2018.

Reporting Categories for Measures Associated with Beneficence

Life Improvement

In the life improvement category, the number of experiments that reported measures of life improvement was obtained (yes), not obtained (no), or no information was reported, for the sample of experiments published in the *Journal of Applied Behavior Analysis* for 1968, 1978, 1988, 1998, 2008, and 2018 are represented (Figure 5). The total number of experiments that reported measures of life improvement was obtained were 0 in 1968, 2 in 1978, 2 in 1988, 1 in 1998, 0 in 2008, and 0 in 2018. The total number of experiments that reported measures of life improvement were not obtained were 0 in 1968, 0 in 1978, 0 in 1988, 0 in 1998, 0 in 2008, and 0 in 2018. The total number of experiments that reported no information about life improvement were obtained was 30 in 1968, 17 in 1978, 25 in 1988, 21 in 1998, 17 in 2008, and 19 in 2018. The total number of experiments in the life improvement category was 30 in 1968, 19 in 1978, 27 in 1988, 22 in 1998, 17 in 2008, and 19 in 2018.

Social Validity

In the social validity category, the number of experiments that reported measures of social validity was obtained (yes), not obtained (no), or no information was reported, for the sample of experiments published in the *Journal of Applied Behavior Analysis* for 1968, 1978, 1988, 1998, 2008, and 2018 are represented (Figure 5). The total number of experiments that reported measures of social validity was obtained were 5 in 1968, 6 in 1978, 6 in 1988, 3 in 1998, 1 in 2008, and 4 in 2018. The total number of experiments that reported measures of social validity were not obtained were 0 in 1968, 0 in 1978, 1 in 1988, 0 in 1998, 0 in 2008, and 0 in 2018. The total number of experiments that reported no information about measures of social validity was 25 in 1968, 13 in 1978, 20 in 1988, 19 in 1998, 16 in 2008, and 15 in 2018. The total number of experiments in the social validity category was 30 in 1968, 19 in 1978, 27 in 1988, 22 in 1998, 17 in 2008, and 19 in 2018.

Real-World Dependent Variables

In the real-world dependent variable category, the number of experiments that reported measures of increasing behaviors, decreasing behaviors, or proxy behaviors reported, for the sample of experiments published in the *Journal of Applied Behavior Analysis* for 1968, 1978, 1988, 1998, 2008, and 2018 are represented (Figure 5). The total number of experiments that reported measures of increasing behaviors were 16 in 1968, 8 in 1978, 11 in 1988, 14 in 1998, 4 in 2008, and 10 in 2018. The total number of experiments that reported measures of challenging behaviors were 6 in 1968, 4 in 1978, 0 in 1988, 5 in 1998, 4 in 2008, and 0 in 2018. The total number of experiments that reported measures of proxy behaviors was 8 in 1968, 7 in 1978, 16 in 1988, 3 in 1998, 9 in 2008, and 9 in 2018. The total number of experiments in the real-world dependent variable category was 30 in 1968, 19 in 1978, 27 in 1988, 22 in 1998, 17 in 2008, and 19 in 2018.

Measures Associated with Justice

In the justice category, the total number of measures reported that are associated with the Belmont Report principle of ‘Justice’ included all reports of age, race, ethnicity, religion, sex, gender, income, education level, diagnosis, language/communication, marital status, and occupation for the sample of experiments published in the *Journal of Applied Behavior Analysis* for 1968, 1978, 1988, 1998, 2008, and 2018 (Figure 6). The total number of measures associated with age reported were 25 in 1968, 16 in 1978, 20 in 1988, 22 in 1998, 17 in 2008, and 17 in 2018. The total measures associated with race were 4 in 1968, 1 in 1978, 1 in 1988, 2 in 1998, 2 in 2008, and 0 in 2018. The total measures associated with ethnicity were 0 in 1968, 0 in 1978, 0 in 1988, 1 in 1998, 0 in 2008, and 0 in 2018. The total measures associated with religion were 0 in 1968, 1 in 1978, 0 in 1988, 0 in 1998, 0 in 2008, and 0 in 2018. The total measures associated with sex were 24 in 1968, 14 in 1978, 19 in 1988, 21 in 1998, 15 in 2008, and 13 in 2018. The total measures associated with gender were 0 in 1968, 0 in 1978, 0 in 1988, 0 in 1998, 0 in 2008, and 0 in 2018. The total measures associated with income were 11 in 1968, 0 in 1978, 2 in 1988, 1 in 1998, 1 in 2008, and 0 in 2018. The total measures associated with education level were 15 in 1968, 9 in 1978, 14 in 1988, 8 in 1998, 11 in 2008, and 13 in 2018. The total measures associated with diagnosis were 14 in 1968, 13 in 1978, 15 in 1988, 22 in 1998, 15 in 2008, and 14 in 2018. The total measures associated with language/communication were 21 in 1968, 2 in 1978, 9 in 1988, 18 in 1998, 10 in 2008, and 10 in 2018. The total measures associated with marital status were 2 in 1968, 2 in 1978, 84 in 1988, 0 in 1998, 2 in 2008, and 0 in 2018. The total measures associated with occupation were 2 in 1968, 5 in 1978, 84 in 1988, 2 in 1998, 2 in 2008, and 3 in 2018.

Collaboration Indicators

In the collaboration indicators category, the total number of collaboration indicators included all reports of shared identity, community stakeholders, research goal collaboration, intervention collaboration, ‘real-world’ dependent variables, generalization of research effects, natural setting, sustainable funding source, maintenance of treatment effects, and increased empowerment (skills that improve self-determination or agency per Bannerman et al., 1990) for the sample of experiments published in the *Journal of Applied Behavior Analysis* for 1968, 1978, 1988, 1998, 2008, and 2018 are reported (Figure 7).

The total measures associated with shared identity are 0 in 1968, 0 in 1978, 0 in 1988, 0 in 1998, 0 in 2008, and 0 in 2018. The total measures associated with community stakeholders are 5 in 1968, 1 in 1978, 0 in 1988, 0 in 1998, 0 in 2008, and 0 in 2018. The total measures associated with research goal collaboration are 2 in 1968, 0 in 1978, 0 in 1988, 0 in 1998, 0 in

2008, and 0 in 2018. The total measures associated with intervention collaboration are 14 in 1968, 6 in 1978, 11 in 1988, 5 in 1998, 1 in 2008, and 2 in 2018. The total measures associated with ‘real-world’ dependent variables are 29 in 1968, 17 in 1978, 21 in 1988, 20 in 1998, 12 in 2008, 16 in 2018. The total measures associated with generalization of research effects are 3 in 1968, 9 in 1978, 9 in 1988, 2 in 1998, 0 in 2008, 7 in 2018. The total measures associated with natural setting are 20 in 1968, 15 in 1978, 25 in 1988, 14 in 1998, 8 in 2008, 6 in 2018. The total measures associated with sustainable funding source are 0 in 1968, 1 in 1978, 0 in 1988, 0 in 1998, 0 in 2008, and 0 in 2018. The total measures associated with maintenance of treatment effects are 5 in 1968, 11 in 1978, 4 in 1988, 2 in 1998, 0 in 2008, and 5 in 2018. The total measures associated with increased empowerment are 0 in 1968, 3 in 1978, 6 in 1988, 2 in 1998, 0 in 2008, and 3 in 2018. The average number of collaboration indicators are 0.26 in 1968, 0.33 in 1978, 0.28 in 1988, 0.20 in 1998, 0.12 in 2008, and 0.21 in 2018. The range of collaboration indicators are 0 to 4 in 1968, 1 to 5 in 1978, 1 to 5 in 1988, 0 to 5 in 1998, 0 to 5 in 2008, 0 to 5 in 2018.

DISCUSSION

When human life is valued solely as a means to an end, great problems arise. Humanity is united and interdependent in dynamic and complex ways, and the human species-environment relationship is characterized by individual and collective evolution (Karlberg & Farhoumand-Simms, 2006). Accordingly, the science of applied behavior analysis, not only seeks to understand the processes by which behavior change occurs at the individual operant level, it seeks to improve the human condition (Baer et al., 1968) and to ultimately help save the world from destruction (Skinner, 1987).

The purpose of this study was to analyze to what extent applied behavior analytic research has been reflective of 1) the applied spirit of the science, 2) the ethical principles for behavioral research involving human subjects as outlined in the Belmont Report (1979), 3) collaborative versus colonial research practices as outlined by Fawcett (1991), and 4) the extent to which our studies have met the applied dimension of applied behavior analysis (Baer et al., 1968, 1987).

The first 50 years of the flagship *Journal of Applied Behavior Analysis* were evaluated to assess trends in these specific areas: respect for persons, beneficence, justice (Belmont Report, 1979), researcher and participant identity, researchers as stakeholders, indicators of research goal collaboration, indicators of intervention collaboration, socially significant dependent variables, generalization of research effects, research conducted in the natural setting, sustainable funding, maintenance of research effects, indicators of increased participant empowerment (Fawcett's [1991] recommendations) and the extent to which studies are applied (Baer et al., 1968, 1987). The results indicate trends that, in most cases, appear to be moving in an unfavorable direction.

The data suggest that protections are either limited or underreported and that the participants in this research have progressively become a means to an end.

Extent to Which the Studies Meets the Belmont Standards

The Belmont standards were established as minimum protections. The data indicate the extent to which the indicators of respect, beneficence, and justice are being met are minimal at best. The current sample suggests that few applied behavior analytic researchers report conditions for obtaining consent and the trend suggests that this is becoming worse. These data could be interpreted in several ways. First, it is possible that researchers are not obtaining consent or that participants are not being given assent. This may indicate that consent is implied because of the context where the research is conducted (i.e. in residential treatment facilities or state hospitals). Alternatively, editors and reviewers may not ask authors to provide consent information given past concerns regarding the cost associated with printing paper journals, or more recent efforts that require authors to confirm the research was approved by an IRB when submitting articles for publication. Regardless of whether authors or editors may be accountable for this grave oversight, the virtual absence of this information in our studies indicates that our procedures for obtaining consent and assent are not peer reviewed. One may wonder why the procedures for adhering to such an important standard – respect for participants – is not valuable enough to undergo peer review along with our experimental procedures.

For the most part, all measures associated with respect for persons (consent, voluntariness, and assent) are low and remain low over time. In other words, either researchers are not reporting the conditions of consent, or participants are not giving consent, are not free to assent, or are not voluntarily participating. This is a most basic protection and its absence is troubling.

Reports of measures associated with the principle of beneficence show differing trends. There is a decreasing trend across the decades for reports of life improvement or how the research contributed to the participants life. Early on, studies reported life improvement for participants that extended beyond the research context. For example, Hollandsworth et al. (1978) taught social skills to a 30-year-old man to reduce extreme anxiety and improve job interviewing skills. As a result of this research, the authors reported “a reduction of interpersonal anxiety” and “during the last week of training the subject went for three serious job interviews. These three interviews resulted in three definite job offers, one of which he accepted. At present, he is an Administrative Assistant in a hospital with a salary that represents a 253% pay increase over the wage he was receiving when training began” (Hollandsworth, 1978, p. 268). Moreover, following the conclusion of the experiment the authors conducted follow-up phone interviews at 2, 4, 6, and 8-month intervals to see how the gentleman was progressing. These follow up interviews noted improvement in the participant’s reported quality of life. The skills he learned as a research participant also resulted in him being able to volunteer in his church as a lay reader for the congregation. This was after being unable to speak in front of large groups. He also become an active member of the local Jaycee organization and continued to perform well at work. Later studies make no mention of any of these kinds of efforts to understand changes or to report such changes. Similar to the aforementioned lack of consent reporting, low reports of beneficence may be attributed to various factors. Beneficence may not be reported in applied behavior analytic research, because the title of ‘applied’ should imply beneficence. In addition, editors and reviewers may have asked authors to remove this information from their manuscripts due to concerns with page number or word count. Alternatively, reports of beneficence may be overlooked because there are no guidelines or requirements for incorporating this information in journal articles. Regardless, the lack of reports of beneficence indicates a lack of peer reviewed requirements for reporting how the participant's life was improved as a result of research participation.

There was a decreasing trend in reports of social validity from 1988 to 2008, followed by a slight increase in 2018. Early measures of social validity were not only reported but were complex. Kohr et al. (1988), for instance, included measures that may serve as an excellent model of empowerment. They taught eight mothers of children with known or suspected developmental delays advocacy skills to support the understanding and obtainment of specialized services for their children. An advisory group of professionals judged audio recordings of the parents' baseline? interactions with professionals and "rate the parent's effectiveness in communicating with the professional and to indicate those behaviors exhibited by the parent that were or were not conducive to effective communication" (Kohr et al., 1988, p. 23). These ratings were used to create a task analysis of communication skills to be developed. Next, the judges reviewed the task analyses, ranking each task analysis item based on its importance as well as suggesting additional skills (Kohr, et al., 1988).

Conversely, there is a significant increase in real-world dependent variables from 1978 to 1998 followed by a sharp decrease in 2008 and 2018. At first real-world dependent variables included such things as teaching individuals with intellectual disabilities vocational skills (Cuvo et al., 1978) and how to use public transportation (Neef et al., 1978). Later the shift was away from real world use to non-useful (referred to as proxy by Fawcett) dependent measures, such as button pressing and inserting poker chips into a cylinder (Trosclair-Lasserre, et al., 2008) or training tacts of arbitrary stimuli such as maps of foreign countries and Greek, Cyrillic, Hirangana, Katakana, and Hebrew writing systems (Petursdottir et al., 2008). This shift may be attributed to one or more factors. For example, trends in funding, calls for increased translational research (Critchfield & Reed, 2017), changes in emphasis in university programs, an increase in credentialing of behavior analysts, or societal concerns. Nonetheless, beneficence is a basic protection and a key feature of applied research. Overall, the trends are in an unfavorable direction. In fact, they are in the opposite direction: there is less reporting of social validity, less discussion of life improvement/beneficence, and an increase in “proxy”, or arbitrary, dependent variables.

Measures associated with justice are about the fairness, vulnerability and distribution of participants from different populations. The data indicate high, stable rates for reporting of age and sex of participants across all decades. Participant gender was never reported. Lack of reporting of participant gender may be attributed to the year in which articles were published and the psychological theories related to gender beliefs and their relation to homosexuality at the time. For example, from 1968 through 1974 homosexuality was defined by the American Psychiatric Association as a sexual deviation disorder. However, it was not until the 1990s that gender, sex, and sexuality constructs shifted away from pathological disorders (Drescher, 2015). Trends in 2008 and 2018 do not reflect an increase in reporting despite this shift, which is an example of the socially irresponsive nature of applied behavior analytic research practices related to reporting participant gender. The lack of reporting may be due to the notion that such variables should not affect process or outcomes, but if that were the case then no participant characteristics would be described.

Participant diagnosis reports were low and stable from 1968 through 1988 until reports peaked in 1998. In 1998, every article in the sample reported the diagnosis of the participant. Since 1998, reports of participant diagnosis have decreased slightly. Reports of participant education level were low and stable from 1968 through 1988 and then decreased to their lowest across all decades in 1998. Trends in 2008 through 2018 show an increasing trend in participant education level reports and a decreasing trend in reports of participant diagnosis. This increased emphasis in reporting participant diagnosis and decreased emphasis on education level is likely related to the shift of research focus in the mid-1990s toward functional analyses for problem behaviors and translational research (Critchfield & Reed, 2017). This may also reflect the editorial and authorship of these years which was largely experiments conducted by the predominant authors in analogue style research (Mathews, 1997; Dunlap et al., 1998).

Reports of language and communication level and forms are variable across all decades. The highest reports of language and communication in 1968 was followed by zero reports in 1978. Rates of reports increased steadily from 1978 to 1998 and have decreased slightly in 2008 to 2018. In the 1968, reports of English speakers were more common (e.g., Hart & Risley, 1968), whereas in 1998 reports of expressive and receptive language skills were more common and are typically reported in conjunction with the diagnosis of the participant and the goals of the research project. This may be related to research trends in verbal behavior, an increased emphasis on research in autism, or the increased emphasis on assessment and treatment of communication skills. For example, Schepis et al. (1998) conducted an experiment with four children with autism with expressive and receptive communication delays to evaluate the effects a voice output communication aid and naturalistic teaching procedures would have on communication skills. This shift in reporting is most likely influenced by communication skills being selected as the dependent variable to change in experiment, rather than a protections against over or under selection of persons with vulnerabilities (e.g., persons who speak English as a second language).

Reports of race were low and stable across all decades with the highest number of participant race reported in 1968 and 1998 with a decreasing trend from 2008 to 2018. Ethnicity was reported once, “Carl was a 14-year-old Hispanic boy” (Ervin et al., 1998, p. 68). The glaring absence of reported measures of race and ethnicity across all decades is of significant concern. Under reporting of race and ethnicity indicates a bias away from identifying potential racial inequities (Benjamin, 2019) in applied behavior analytic research. This absence of data prevents researchers from being able to assess and make necessary adjustments to potentially mitigate participant vulnerability.

Just as seen in reports of race and ethnicity, the same low and stable rates of reports of marital status, religion, income, and occupation are reported from 1968 through 2018. For example, marital status was reported for two participants as ‘widow’ (Leitenberg et al., 1968) and participants were listed at married (Hollandsworth et al., 1978; Sturgis et al., 1978). Later trends indicate zero reports of marital status in 1998, two reports of married participants in 2008 (Donlin et al., 2008; Ledgerwood et al., 2008) and again marital status was not reported in 2018. Religion is reported once in the sample in a description about the participant’s position as a lay reader at his church (Hollandsworth et al., 1978). Reports of participant income level were highest in 1968 and decreased to very low and stable rates from 1978 through 2008. For example, Hart and Risley (1968), Phillips (1968), and Risley and Hart (1968) all reported participants with low income levels. The lack of reports of marital status, religion, income, and occupation are likely related to the same structural biases found in underreporting of race and ethnicity and indicate a blindness to issues of vulnerability in the large context of societal discriminations.

All of the justice measures are critical in the identification and protection of persons with vulnerabilities research participants. Moreover, participants that are considered especially vulnerable are likely to simultaneously identify as members of multiple populations with vulnerabilities. This concept, called "intersectionality" is used to describe persons with multiple, intersecting areas of identity (e.g., race, class, gender, level of income, etc.) and the compounding effect their identity has on their diminished societal status and how they are treated (Crenshaw, 1991). Intersectionality directly applies to applied behavior analytic research participants because it provides a more holistic representation of the extent to which participants are vulnerable or not. An example of this is illustrated in a workplace attendance and cocaine use research study conducted by Johns Hopkins University School of Medicine researchers Donlin et al. (2008). The researchers acknowledge some of the complex, intersectional vulnerabilities of participants when describing their research eligibility criteria:

> Study eligibility required that participants were at least 18 years old, were currently unemployed, were enrolled in a Baltimore City methadone maintenance program, provided a cocaine-positive urine sample at intake, met criteria for cocaine dependence (American Psychiatric Association, 1994), were currently receiving welfare benefits in Baltimore, and achieved 80% correct on the reading assessment. Participants were excluded if they were considered to be at risk of suicide (reported on the Addiction Severity Index), reported auditory or visual hallucinations (reported on the Addiction Severity Index), had a physical limitation that prevented typing, were incarcerated in a halfway house or under constant monitoring, or if they earned more than $200.00 in the last month in under-the-table (unreported) income. (Donlin et al., 2008, p. 502)

Moreover, 13.5% of participants in this study were reported as HIV positive, 94.5% were reported to be living in poverty, and 64.9% had a felony conviction (Donlin et al., 2008, p. 507). Thus, the people in this study meet criteria for being research participants with vulnerabilities and are entitled to increased protections. Researchers should consider participant positionality in society. Was this a population of convenience? Are participants selected from places like Betty Ford, a well-known upscale rehab center that provides "evidence-based treatments" selected as well (Betty Ford Foundation, n.d.)? Or is the research specifically aimed to help this particular group of persons with vulnerabilities as part of a community effort? As previously discussed, the principle of justice is a safeguard against over selection of persons with vulnerabilities by questioning what members of society should receive the benefits of research and who should bear the burden of the research experience (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979). However, if participant demographic information is unreported, applied behavior analytic researchers will be unable to determine the risk of over selection of persons with vulnerabilities in applied behavior analytic research and unable to determine what role they play in perpetuating oppressive structures. Data matter.

The Belmont Report serves as a minimum standard of ethical principles and guidelines for research involving human subjects in biomedical and behavioral research. These data indicate a failure to meet the minimum standard of protections for human research participants across all core principles of the Belmont Report. Underreporting of human rights measures in applied behavior analytic research leads to at least three concerns: 1) protections for research participants may be in place, but are not being reported, 2) protections are not in place, or 3) the researchers are in a position of power and authority and thus assume the research context is inherently beneficial to the participants (Rivera, 2011). In any of these cases, if we assume protection, it would be with a paternalistic orientation, or in “colonial blindness.” Both erroneously assumes participant well-being and researcher omnificence. Neither paternalism nor blindness facilitate collaboration.

The Belmont Report indicates

> the selection of research subjects needs to be scrutinized in order to determine whether some classes (e.g., welfare patients, particular racial and ethnic minorities, or persons confined to institutions) are being systematically selected simply because of their easy availability, their compromised position, or their manipulability, rather than for reasons

> directly related to the problem being studied. (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979)

The lack of participant demographic information reported (e.g., measures associated with justice) in the *Journal of Behavior Analysis* is alarming and of great concern. The risk of over selection of persons with vulnerabilities for ease and the benefit of the researchers' agenda is highly likely. There are two issues. One, is that it is not reported. Two, there is not disciplinary monitoring of the issue. Both prevent human rights-oriented data-based design and decision making dedicated toward the protection of marginalized persons (Benjamin, 2019). Hopefully, this study contributes to the rationales for and the methods of disciplinary monitoring of protections for populations with vulnerabilities.

Of additional concern is the potential for persons with vulnerabilities to be selected for participation in applied behavior analytic research, and not receiving research benefits during and after the termination of the study. The data here suggest we do not know who is participating (and the corresponding degree of functional vulnerability), that there has been a reduction in descriptions and measures indicating benefit over time (social validity and life improvement), and that there is seldom an indication of what plans are made for treatment following the research completion. This is of concern both in terms of basic protections regarding benefit and in terms of the aims of applied research. It is also of concern if the people that are involved have no ability to exert countercontrol. That is, to object if they receive no benefit during or following the research, especially if they cannot access or afford treatment.

Extent to Which the Studies Meet Fawcett's Recommendations

Fawcett's recommendations for collaborative relationships were articulated almost 20 years ago. Ideally, these recommendations should have impacted collaborative practices and research trends. However, data indicate nominal levels across all measures. Each measure will be discussed in detail.

Shared identity was reported zero times across all decades. As previously indicated, reports of participant demographics were limited. Moreover, reports of researcher demographics are non-existent. As a result, it is difficult to determine the identity of the researchers and their position in society relative to participants. However, the likelihood of researcher-dominant relationships is high given the level of affluence and education required to earn the credentials to become a researcher in our society.

Philips (1968) conducted research as a community stakeholder and collaborated in the development of research goals because he resided in the same home and community as the research participants. However, reports such as these have not been found in the literature since one instance in 1978. These data suggest a shift in research practices from 1968 when reporting was highest to present in researchers working in the same communities to which they belong, or at least the reporting of it. This is likely indicative of colonial research practices. This change indicates a shift away from researchers working within the communities in which they reside and have a vested interest. The only indicators for research goal collaboration were noted in 1968. This indicates a shift away from participatory research practices and is likely a movement toward colonial research practices. This has maintained over time. Similarly, indicators of intervention collaboration were highest in 1968, had a brief resurgence in 1988 and have continued to decrease over time. Indicators of real-world dependent variables and research conducted in the natural setting were highest in 1968, had a brief resurgence in 1988 and have continued to decrease over time. These changes are also likely related to the shift of research focus in the mid-1990s toward functional analyses for problem behaviors and translational research (Critchfield &

Reed, 2017). These data are most concerning as they represent the key features of applied research (i.e., real world, meaningful change).

Sustainable funding sources were noted once in the entire sample. Schnelle et al. (1978) conducted an experiment with the purpose of investigating the effects of police surveillance on frequency of home burglaries. The funding was sustained by local, public funds from the Nashville Police Department.

Reports of generalization are variable with an increase noted in 1978 and 1988 followed by a significant decrease in 1998 and 2008 followed by a slight increase in 2018. Reports of maintenance are low and low with the exception of a moderate increase in 1978. This variability in generalization and maintenance is of great concern because it indicates one of two possibilities: 1) researchers are not concerned and programming for generalization, or 2) generalization and/or maintenance is not achieved and thus not reported. Both possibilities are worrisome.

Lastly, measures of increased agency have been low and stable with the exception of 1988. For example, Wacker et al. (1988) taught students with profound intellectual disabilities to communicate their toy preference and request social attention via microswitches. One outcome of the experiment was the development of agency skills in the forms of ordering food at restaurants and making requests for assistance with daily living skills such as drinking or leisure activities such as playing. The lack of information reported in these key areas of collaboration indicate colonial, rather than collaborative, research practices.

Extent to Which Journal Studies Meet the Spirit of Applied

The aim of applied behavior analytic research is to address problems of social importance through the examination of real-world behaviors of concern occurring in natural settings (Baer et al., 1968; 1987). Thus, dependent variables should be “relevant behaviors of people actually experiencing problems in real-world contexts, not analogue responses of proxy participants chosen for convenience” (Fawcett, 1991, p. 622).

The selection of proxy and arbitrary responses such as hand-raising (Fuller, 1949), button pressing and inserting poker chips into a cylinder (Trosclair-Lasserre, et al., 2008), training tacts of arbitrary stimuli such as maps of foreign countries and Greek, Cyrillic, Hirangana, Katakana, and Hebrew writing systems (Petursdottir et al., 2008), or non-educational computer games (Becraft et al., 2018) to investigate human behavior rather than the selection of real-world, socially significant dependent variables should be reconsidered in applied behavior analytic research and possibly better suited for translational work with populations without vulnerabilities. Instead, the focus of applied should be on socially meaningful change. These changes are socially significant because they improve the participants’ quality of life in various ways including repertoire expansion, amelioration of aversive environmental conditions, and prevention of future suffering (Ala’i et al., 2019).

Dual Obligations

In 1951, a Black woman named Henrietta Lacks had her cells taken from her body by white physicians at Johns Hopkins without her consent or knowledge. She died without knowing her cells had been taken in the name of biomedical advancement. Her cells became, and still are, a commodity. In 1998, applied behavior analytic researchers at the Kennedy Krieger institute (a partner of Johns Hopkins) published an article titled “Functional Analysis and Treatment of Destructive Behavior Maintained by Termination of “Don’t” (and Symmetrical “Do”) Requests.” In this study, Fisher et al. (1998) describe two participants his research team named “Ike” and “Tina.”

The authors describe Ike as “a 13-year-old boy who had been diagnosed with mild to moderate mental retardation, attention deficit hyperactivity disorder, oppositional defiant disorder, and obesity. He was referred primarily for the treatment of physical aggression, but he also displayed verbal aggression, disruption, and dangerous behaviors. He was ambulatory, could follow two- to three-step instructions (e.g., ‘‘Stand up, push your chair under the table, and stand by me’’), and generally spoke in complete sentences. Tina was described as “a 14-year-old girl who had been diagnosed with pervasive developmental disorder, severe mental retardation, and bipolar Type II disorder who had been referred for the treatment of physical aggression. Tina was ambulatory, could follow simple one step instructions, and had an expressive vocabulary of approximately 50 words (Fisher et al., 1998, pp. 341-342).

In 1993, a biographical film called *What’s Love Got to Do With it* starring Angela Bassett (Tina Turner) and Laurence Fishburne (Ike Turner) depicted the horrific domestic violence Tina Turner experienced at the hands of her husband Ike Turner, throughout their marriage (Chapin, Krost, & Gibson, 1993). The expose of trauma became part of the tabloid culture of the mid through late 1990s.

One of the dual obligations of the researcher is to respect their obligations to the research participant and society. Scientific research publications are permanent products which demonstrate these obligations to other researchers, participants, and members of society. This example is one of cultural insensitivity. The context in which we name and frame our participants matters as it is a demonstration of their position in society and creates a relational frame (Matsuda, et al., 2020; Hayes, et al., 2016). This is one of the studies in the sample and the trends indicate we are likely failing to meet our dual obligation to the dignity of participants and members of society. Nuanced racial stereotypes are indicators of failure to meet these dual obligations. Despite Fisher et al. (1998) reporting the race of the participants, they were also stereotyped by their pseudonyms. This establishes and contributes to a set of stimulus conditions which are likely to occasion and perpetuate erroneous and hateful racial stereotypes. Especially when the outcomes of the study do not report improvement in quality of life within or beyond the experiment, measures of social validity, nor evidence of teaching skills to improve agency or self-determination for these two children with vulnerabilities that were mocked in an inappropriate tabloid-style joke.

Paradoxes of Our Time

The *Journal of Applied Behavior Analysis* is the leading journal of the science of applied behavior analysis. Research articles are a permanent product that communicate research outcomes to participants, society, emerging scholars, and fellow researchers. These data indicate a lack of say-do correspondence between the stated mission of the science and research practices (e.g., Baer et al., 1988; Israel & O’Leary, 1973; Luciano et al., 2001; Stokes et al., 1987).

Evaluation of the incongruences between the stated mission of the science of applied behavior analysis and applied behavior analytic research practices are critical for systems change. If an organization decides something is important to them (their values), then there are ways for that organization to come to consensus or design a plan to set the occasion for behaviors that reflect said values (Binder, 2016). This will allow for intentional, purposeful design of participatory-based research environments that allow us to actualize values in the way they envision (Benjamin, 2013).

Some of the most horrific crimes against humanity have occurred under the guise of biomedical and behavioral research. Yet, the discoveries that resulted from this research continue to benefit humanity. The cells stolen from Ms. Lacks without her consent or knowledge are inside every person that has received a polio vaccine. We have benefitted from her suffering whether we know it or not. In addition, science is responsible for the long-standing belief that certain races of persons were inherently inferior and thus of lesser importance in society (Gould, 1996).

The paradox of our time is to have the knowledge to reflect on how we have historically benefited from the suffering of others while simultaneously looking forward with hope and meaningful action. This is also true of our discipline; many populations with vulnerabilities have benefited from the linage that started with Fuller's 1949 report. In fact, a discipline emerged, of which the author is a member. The aim is to improve our world through the science by asking pertinent and difficult questions. As we move forward, we have to acknowledge the oppressive systems in our world that contribute to the inequities experienced by members of society with vulnerabilities. To proceed in ignorance or without acknowledgement of marginalization, trauma, and injustice is unwise and wrong. As a discipline, we should step back and assess, if for no other reason that the majority of the analyzers are white and the majority of those suffering are people of color, the disabled and the marginalized. Research on disciplinary trends of protections and benefit matters. Who conducts that self-evaluation research and why matters. The modern sciences emerged from a colonial structure and seek ways to move forward (Benjamin, 2013). These questions are part of the way forward. Applied behavior analysis is no exception.

The Process

Responsivity to protection requires commitment, resilience, and courage. This work is effortful and exhausting. Thankfully, our science is responsive, progressive, and amenable to change (Leaf et al., 2016). Applied behavior analysis is a problem-solving science that is wellequipped to address concerns of social significance (Baer et al., 1968, 1987). Social problems are systems problems that require analyses and interventions at the cultural level alongside the individual level (Skinner, 1961). In the context of applied behavior analytic research, our humanitarian orientation suggests that systems of oppression must be identified and changed to improve the human condition (Holland, 1978). If not, the cultural practices that sustain suffering will perpetuate. So, for behavior scientists to participate in the systemic disruption of unjust societal systems, they will need to find the courage to disrupt and also to respond to acts of countercontrol that will result from disruptions of privilege (DiAngelo, 2011; Goodman, 2011). For example, if applied behavior analytic researchers from the dominant world view (e.g., WEIRD) are challenged to change their research practices, they face a potential loss of reinforcers (e.g., publications, grants, invited addresses). As a result of this potential loss, there is a high likelihood that they will engage in acts of countercontrol (e.g., verbal aggression, blocking adverse publications) to prevent this disruption. Cultural humility is an orientation that can prevent perpetuation of coercive cycles that are likely to result from in disruptions of systems of privilege (Wright, 2019).

Cultural Humility

The following section outlines thoughtful recommendations on research methodologies to promote the progression of the science through the neutralization of power imbalances and diffusion of power. These methods are rooted in cultural humility (Tervalon & Murray-Garcia, 1998). The spirit of the science of applied behavior analysis can be executed through acts of cultural humility and collaborative research practices which allow space for the voice and subsequent empowerment members of our communities that experience marginalization (Wright, 2019). This requires researchers to be loving. Love is demonstrated through compassion for the suffering of others, happiness in the comfort and well-being of others, allowing and encouraging space for dialogue, and tolerating discomforts that arise from these discourses (Barrera & Kramer, 2009; Smith, 2013; Wright, 2019). In this way, humility is found in purposeful acts of servitude in which researchers humbly work alongside participants to formulate every aspect of the research endeavors.

Cultural humility extends beyond cultural competence and “incorporates a lifelong commitment to self-evaluation and critique, to redressing the power imbalances in the physician-patient dynamic, and to developing mutually beneficial and non-paternalistic partnerships with communities on behalf of individuals and defined populations” (Tervalon & Murray-Garcia, 1998, p. 117). In the context of applied behavior analytic research, acts of cultural humility require courage, determination, idealism and love. This is a “third way” solution to our conflicting values and actions (Barrera & Kramer, 2009).

Third Ways

Third ways are ways of discovering values that diffuse dichotomous, imbalanced power differentials and evoke unity toward stated values. Finding third ways creates space for and empowers marginalized voices which allows persons to harmonize together toward common goals (Barrera & Kramer, 2009). This realignment of values is collaborative and a rejection of the Western normative orientation to goal development in applied behavior analytic research. Values should be collectively developed and articulated and our research culture should begin a monitored and reflective process of aligning our behavior with those values.

From my experience with this research, my input into those values includes several suggestions. The suggestions operate on the premise that coercion is to be reduced, new relational frames are to be established, and the process of conditioning new reinforcers should be supported. I start by summarizing *the spirit* of Fawcett's 1991 and Benjamin's 2013 suggestions, and then add specifics as I see they apply to the science of applied behavior analysis.

The spirit of Fawcett's (1991) recommendations insist the research process should be collaborative and participatory. This arrangement allows for the participant to be actively involved throughout the entire research process. The researcher serves at the invitation of the participant and assumes a participatory role as a guide that works alongside them. Together, they work toward two overarching goals: 1) to discover what environmental events set the occasion for life improvement, and 2) the process by which life improvement is attained. Of course, each has a different point of emphasis. The researcher is interested in both the participants situation as well as the generalities to other groups and in developing an understanding of the mechanisms that produce change. The participant is interested in the particulars of reducing suffering and increasing well-being for their present and future circumstances and for the well-being of their community. Benjamin's (2013) work regarding the People's Science is about bodies and rights but seems to apply equally to behavior and rights. Her basic thesis, as it related to applied behavior analysis extends the basic premise of Fawcett. She says new institutions need to be created and imagined; that we can't change within the current environments, that we need new systems built on different values and principles and that those values and principles should center on dynamic process that encourage evolution. Here, I apply these fundamental suggestions to research practices in applied behavior analysis.

These are core values that seem to me to enable evolution and capture the spirit of applied behavior analytic research: courage, determination, idealism, and love. I will define each and then give examples of how they would translate into non-coercive, healthy relational frames and conditioned reinforcers for participants and researchers alike. I rely on Binder's suggestions for translation of values into practice (2016) and a resource on developing virtues in society (Popov, 1997).

Courage is demonstrated through continuous action toward an important goal, despite fear and fatigue. Acts of courage are demonstrated in facing adversities despite the dangers that arise from trying new things. Courage requires us to attempt innovative tasks, make mistakes, ask for help, and continue on our paths despite social disapprovals. It requires us to do the right thing in love (Popov, 1997). Courage in applied behavior analytic research means we are embark on new areas of research that will improve the human condition and we work to create conditions that minimize discouragement and disapproval from our colleagues. We can reinforce courageous applied behavior analytic research through creating policies that continually supports publishing research that is collaborative, novel, groundbreaking, and pioneering. This should occur on a regular basis, not only in the context of special journal issues or sections. For example, publications should include research conducted by members of our community such as children, undergraduate students, community and recreation center, etc. Furthermore, the degree to which the researchers share concerns, identities and geographic locations should be reported and monitored. This is especially true in hotbed areas such as Johns Hopkins. Such research should be featured in keynote speeches and funded by granting agencies. In other words, to prevent fatigue and research abandonment, communities of research reinforcement should be established within and outside the discipline. The occurrence of member led research should be counted and tracked. Trends should be responded to with actions to increase accelerating trends. Creating such communities will require great courage.

Determination is demonstrated through focused energy and efforts on a specific task and completing the task through to the end despite obstacles, distractions and difficulties. To be determined requires a complete understanding the importance of the task, and a particular dedication to problems of larger than one's immediate conditions. Problems of global importance (Popov, 1997). Determination in applied behavior analytic research means learning and anticipating the difficulties of the process, allowing time to pause when you become discouraged, and then re-starting. It requires setting goals, eliminating distractions, asking for help from trusted colleagues, and finishing what we start. Determination in applied behavior analytic research also requires us to continue engaging in difficult dialogue which requires us to continue talking, listening, and creating environments for everyone to have a voice, even when conversations are challenging. Determination will improve the participatory nature of the scientific effort by ensuring voices of persons with vulnerabilities are heard and benefits are shared (Benjamin, 2013). This again will require the development of measures that allow monitoring of trends. The monitoring will include counts by individual participants (number of goals set, breaks taken, requests for helps, safe listening environments, etc.), and collective measures of number of persons with vulnerabilities having input and number of participatory studies published. Acceleration is the goal and we should respond to the data to produce the acceleration of voices and enhance participation.

Idealism is the belief that the world can become a better place. It requires a rejection of the status quo by investing the time and energy necessary to make meaningful life improvements. It requires caring about what is truly right and good in life. Idealists use their imaginations to dream big and then convert dreams into actions. They refuse to accept suffering and hope for well-being (Popov, 1997). Applied behavior analytic researchers can demonstrate idealism by envisioning the innumerable possibilities of ethical and collaborative research and then executing the vision thorough collaborative development of loving research projects.

Research actions should match innovative visions. Specifically, new criteria for the design, evaluation, and publication of journal articles should be developed in collaboration with community members. This can be pursued with embedded feedback loops and systematic criteria for what should be learned and what revisions should be made to ensure vision attainment. Publication emphasis should shift away from primarily internal validity to also include and be balanced by social and external validity. Again, trends should be monitored and celebration should be responded to accordingly.

Love is demonstrated in compassion and empathy toward others through care, kindness, and acceptance. It assumes a genuine concern for the well-being of others. Demonstrations of love include giving undivided attention, spending time with others, giving heartfelt gifts, and/or helping others with tasks to relieve burdens (Chapman, 2015; Popov, 1997). In applied behavior analytic research, love is engaging in continuous improvement for the well-being and happiness of the science. It means including participants in the process. It means having and reporting measures and indicators of life improvement achieved in a desirable and meaningful fashion. It means working towards systems (funding, monitoring, publishing) that supports genuine concern for well-being, for all people, over time and place.

These values are a guide, and this work will be difficult. As we proceed together in harmony, we should do so intentionally and from the vantage point of love:

> Love is the vantage point in which we cease to see other people's behavior as merely costly means to our ends (or costly barriers to them). Love, then, becomes extremely useful because with it goes trust: the knowledge that I can depend on other people *not* to treat me as merely an animal, and to live up to their part of the bargain. When the love is not there, and its attendant trust, I must engage in all manner of costly protective activity, dissipating human capital. If the vantage point of love should disappear, slavery would be the norm and every "free" person would have to live within a fortress, because then all people's behavior would be viewed merely as animal activities…But if everyone stands also in the vantage point of love, we will know that others are training us to a mutually agreeable purpose and that the benefits of the activity will be fairly distributed among

> us…to love is to stand in the human vantage point, which requires us to stand with others for a common purpose. (Gilbert, 2013, pp. 347-48)

Positionality Statement

As an author who identifies as a mixed-race woman, my identity and sense of belonging is complicated. I acknowledge this research is motivated by my history of learning as a citizen of the United States of America and a behavior scientist. Within these contexts I have been, and will likely continue to be, a victim of othering, exclusion, and marginalization. I identify as a person of African American, Scottish, and Sudanese heritage. Thus, I am a representation of the enslaved, the colonizer, and the colonized. Inshallah, this dissertation will serve to strengthen the impact of my voice and the voice of my family, despite our position in the kyriarchy. This manuscript is a demonstration of countercontrol and social action. I look forward to a more loving future.

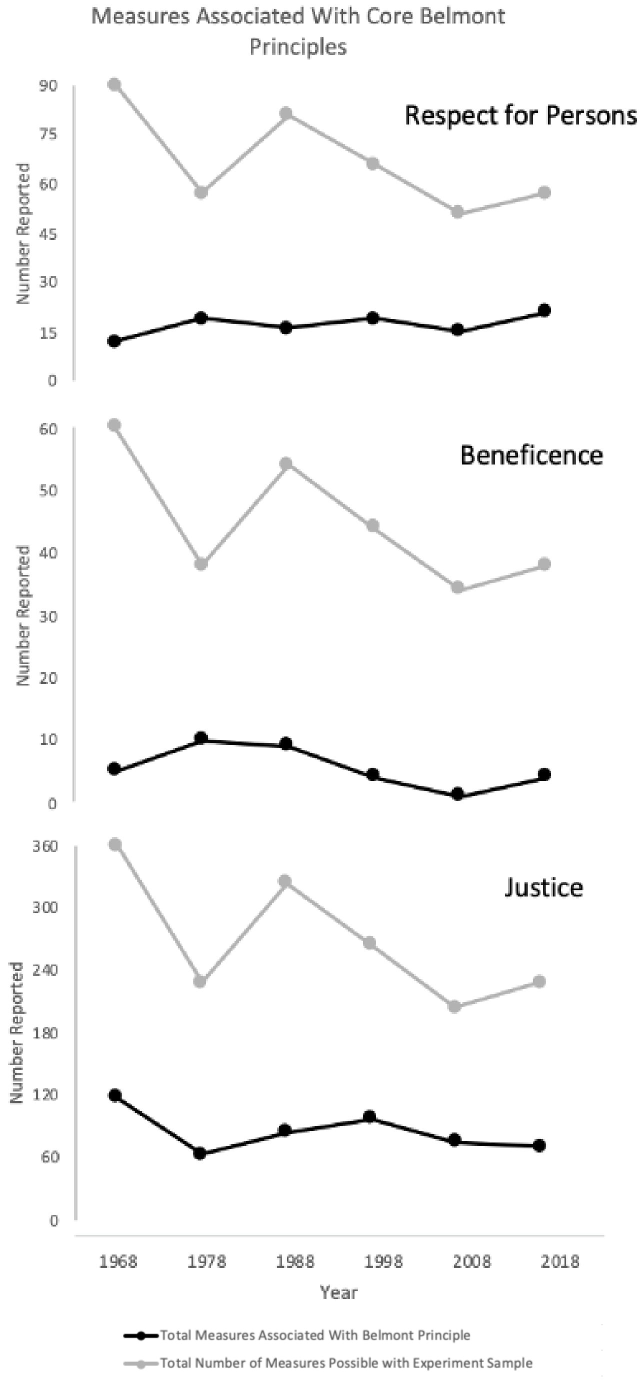


Figure 1. Total number of experiments and number of experiments reported across 50 years of the *Journal of Applied Behavior Analysis* by Belmont principles: respect for persons (upper panel), beneficence (middle panel), and justice (lower panel).

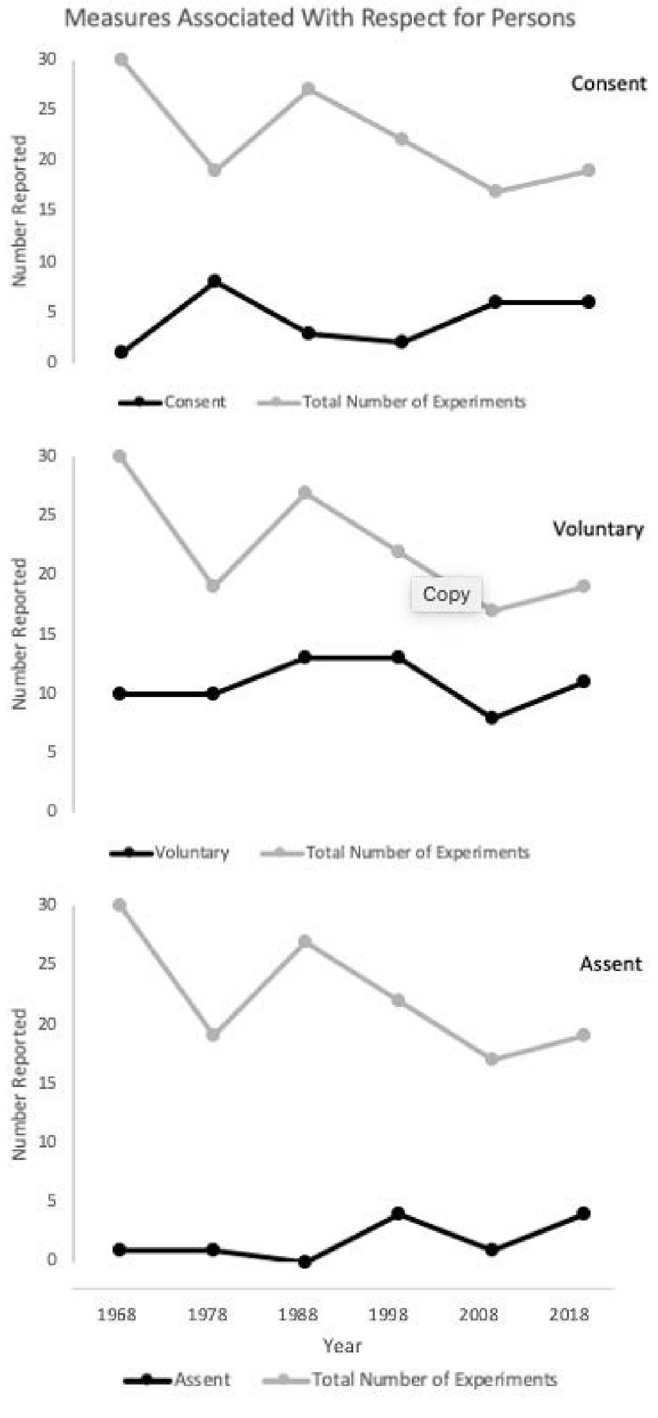


Figure 2. Total number of measures and number of experiments reported across 50 years of the *Journal of Applied Behavior Analysis* by respect for persons categories: consent (upper panel), voluntary (middle panel), and assent (lower panel).

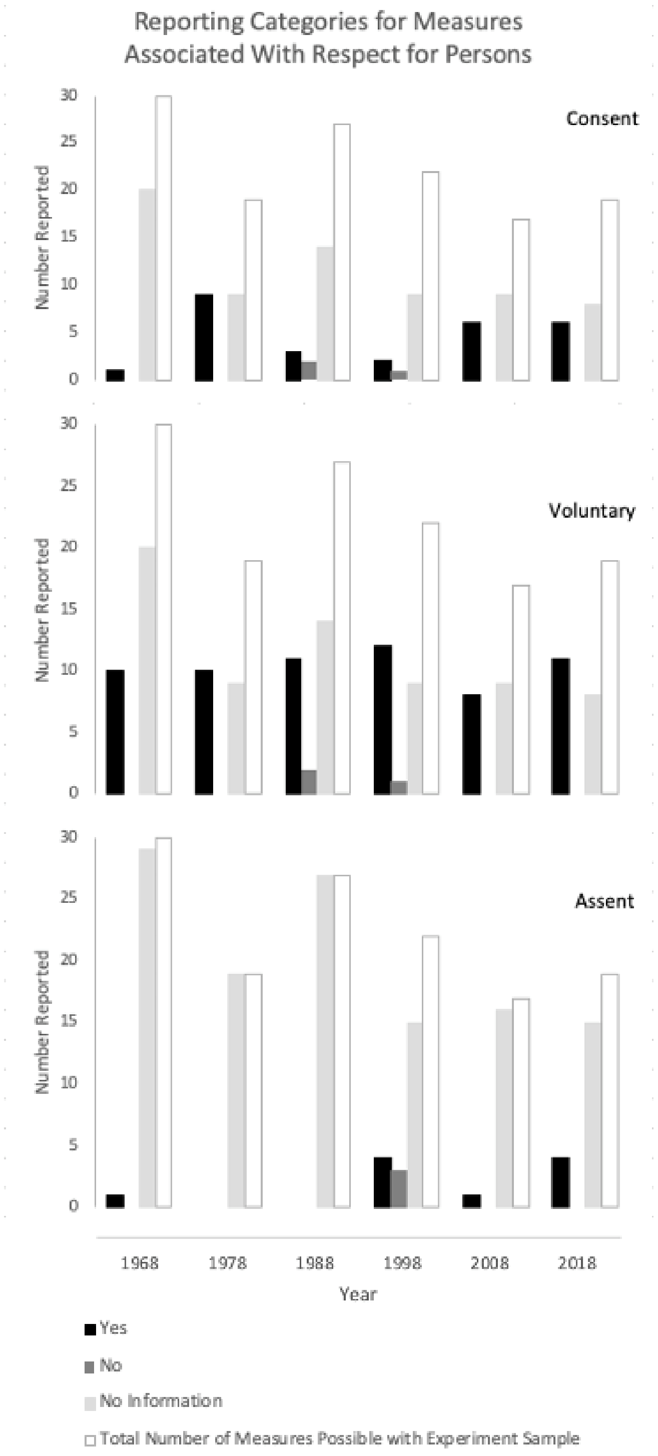


Figure 3. Total number of experiments and number of experiments reporting obtained, not obtained, or no information reported for consent (upper panel), voluntary (middle panel), and assent (lower panel) across 50 years of the *Journal of Applied Behavior Analysis*.

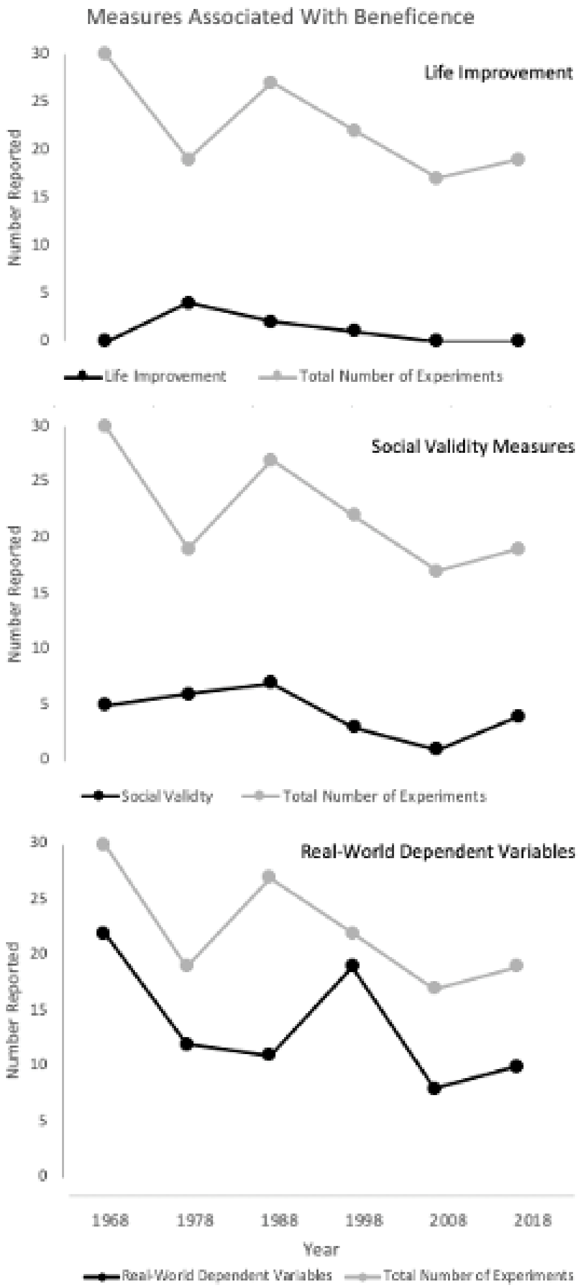


Figure 4. Total number of experiments and number of experiments reported across 50 years of the *Journal of Applied Behavior Analysis* by beneficence categories: life improvement (upper panel), social validity (middle panel), and real-world dependent variables (lower panel).

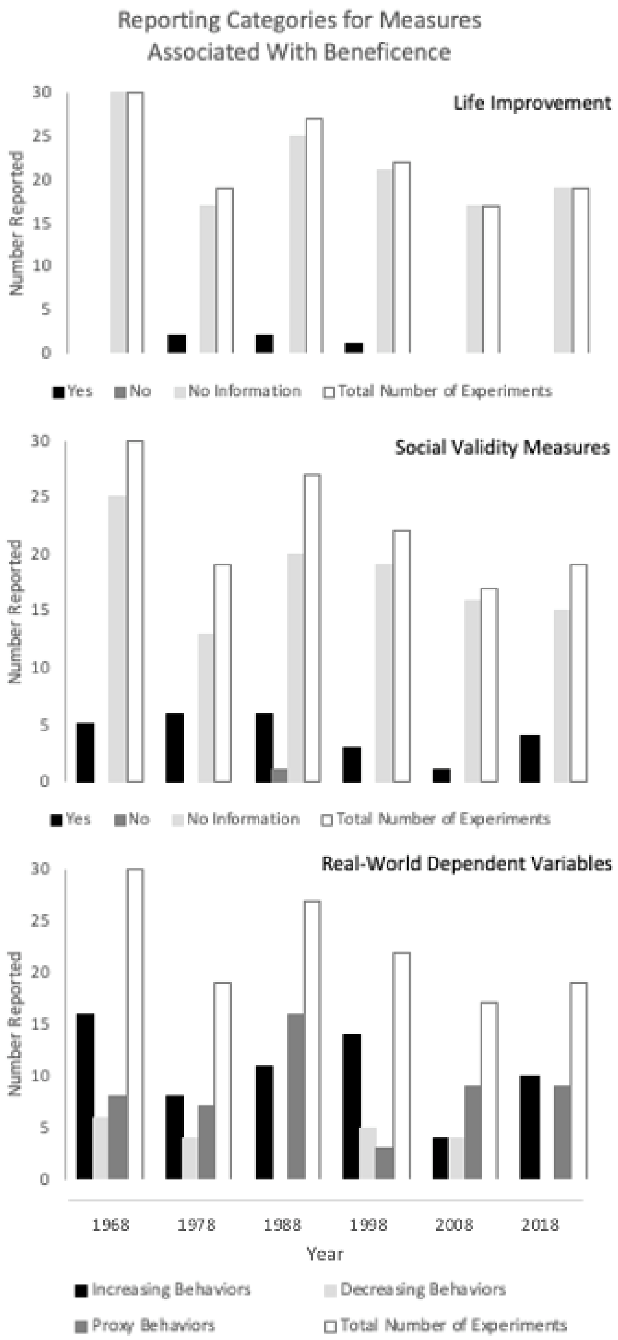


Figure 5. Total number of experiments and number of experiments reporting obtained, not obtained, or no information reported for life improvement (upper panel) and socially valid measures (middle panel) and number of experiments reporting increasing behaviors, decreasing behaviors, and proxy behaviors (lower panel) across 50 years of the *Journal of Applied Behavior Analysis.*

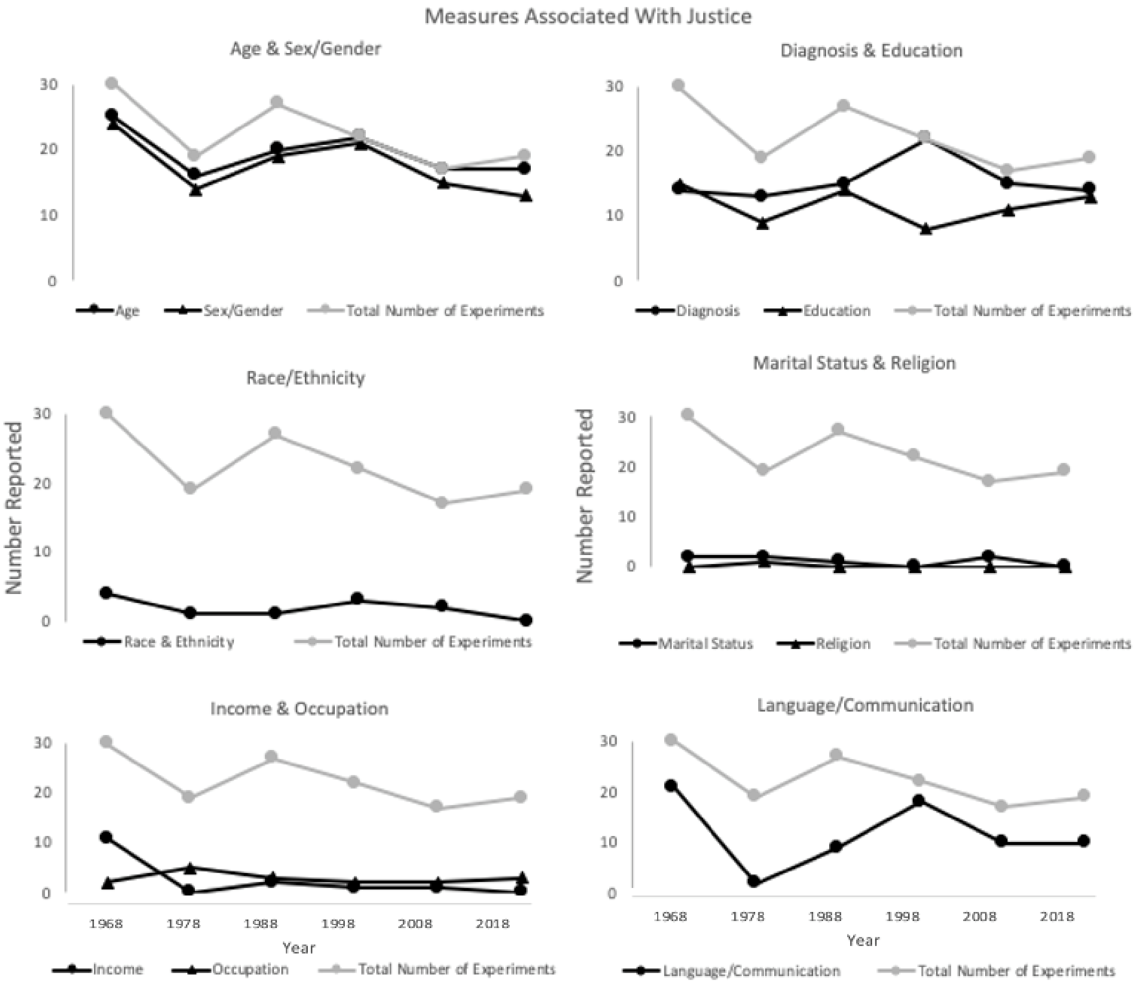


Figure 6. Total number of experiments and number of experiments reported across 50 years of the *Journal of Applied Behavior Analysis* by justice categories: age, sex, and gender (upper left panel), race and ethnicity (middle left panel), income and occupation (lower left panel), diagnosis and education (upper right panel), marital status and religion (middle right panel), and language and communication (lower right panel).

Collaboration Indicators						
Total Number of Experiments	30	19	27	22	17	19
Shared Identity	0	0	0	0	0	0
Community Stakeholders	5	1	0	0	0	0
Research Goal Collaboration	2	0	0	0	0	0
Intervention Collaboration	14	6	11	5	1	2
Socially Significant DV	29	17	21	20	12	16
Generalization of Effects	3	9	9	2	0	7
Natural Setting	20	15	25	14	8	6
Funding Source	0	1	0	0	0	0
Maintenance of Effects	5	11	4	2	0	5
Increased Empowerment	0	3	6	2	0	3
Year	**1968**	**1978**	**1988**	**1998**	**2008**	**2018**

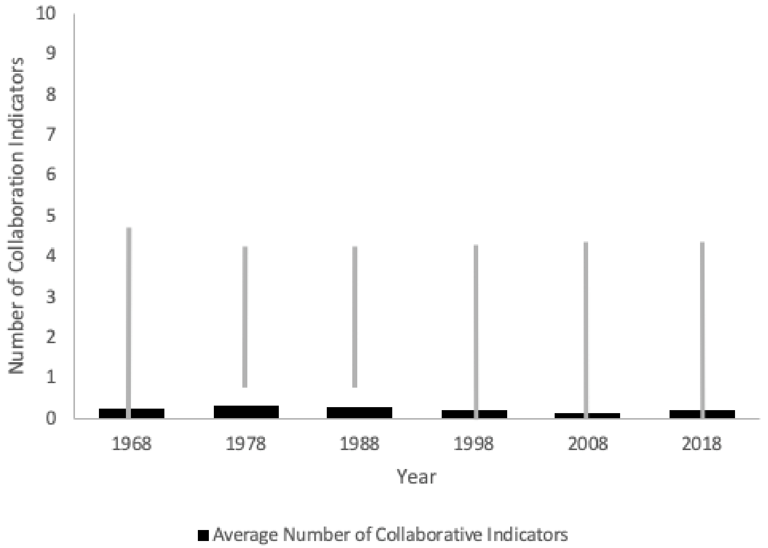


Figure 7. Total of number of collaboration indicators (top panel) and average and range of number of collaboration indicators (bottom panel) reported across 50 years of the *Journal of Applied Behavior Analysis*.

Table 1

Operational Definitions & Scoring Protocol

Respect for Persons	
Consent	Informed consent is the process by which researchers working with human participants describe their research project and obtain the subjects' consent to participate in the research based on the subjects' understanding of the project's methods and goals. Scored as yes (consent reported); no (consent reported not obtained); or no information (no information regarding consent reported).
Voluntary	A form of case selection which is purposive rather than based on the principles of random or probability sampling. It usually involves individuals who agree to participate in research, sometimes for payment. Scored as yes (voluntary participation reported); no (involuntary participation reported); or no information (no information regarding voluntary participation reported).
Assent	Assent process is an ongoing, interactive conversation between the research team and the child, young adult, typically developing adult, or adult lacking the capacity to give informed consent. This provides them with the opportunity to leave or terminate the research study. This does not include guardians that give or withdraw consent. This does not include participants that miss or reschedule or postpone a session due to illness, vacation, schedule conflicts, etc. This does not include taking a break, pausing, or any other delays allowed during the research study. Scored as yes (assent reported); no (assent reported not honored); or no information (no information regarding assent reported).
Beneficence	
Quality of Life	Any impact the experiment had that improved the participants' quality of life. Scored as yes (improved quality of life reported); no (decreased quality of life reported); or no information (no information regarding quality of life reported).
Social Validity	Social validity or significance includes systems and measures for asking for participant feedback about how the research goals, procedures, and/or outcomes related to their values and reinforcers. Scored as yes (social validity reported); no (social validity reported not obtained); or no information (no information regarding social validity reported).
Dependent Variables	A dependent variable (DV) is the behavior(s) being measured in the experiment. Scored as behaviors to increase (e.g. learning janitorial skills); behaviors to decrease (e.g. reduction in physical aggression); or proxy behaviors (e.g. button pressing)
Justice	
Age	Chronological age – the number of years a person has lived (typically reported in years and/or months). Scored as yes (age reported) or no information (age not reported).

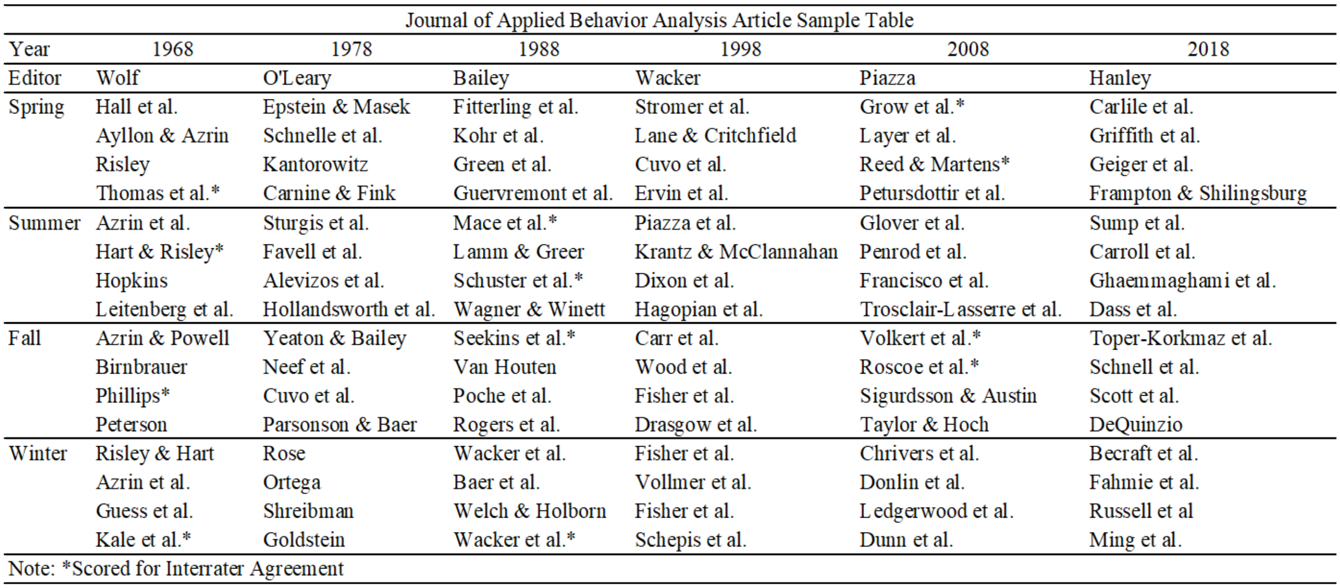
Race	A social construct that divides people into distinct groups based on characteristics such as physical appearance (e.g. bone structure and skin color). Scored as yes (race reported) or no information (race not reported).
Ethnicity	A social construct which divides people into smaller social groups based on characteristics such as shared sense of group membership, values, behavioral patterns, language, political and economic interest, history and ancestral geographical base. Scored as yes (ethnicity reported) or no information (ethnicity not reported).
Religion	A personal or institutionalized system of beliefs and practices concerning the cause, nature, and purpose of the universe, often grounded in belief in and reverence for some supernatural power or powers; often involves devotional and ritual observances and contains a moral code governing the conduct of human affairs. Scored as yes (religion reported) or no information (religion not reported).
Sex	A medically constructed categorization. Sex is often assigned based on the appearance of the genitalia, either in ultrasound or at birth. Scored as yes (sex reported) or no information (sex not reported).
Gender	A social construct used to classify a person as a man, woman, or some other identity. Fundamentally different from the sex one is assigned at birth. Scored as yes (gender reported) or no information (gender not reported).
Household Income	An economic measure used to measure income of every resident in a household. Scored as yes (income reported) or no information (income not reported).
Education Level	Level of schooling or credential. Scored as yes (education level reported) or no information (education level not reported).
Diagnosis	Nature of disability or illness. Scored as yes (diagnosis reported) or no information (diagnosis not reported).
Language/Communication	System of communication (including augmentative communication systems, languages spoken, or modes of communication used within a particular community). Scored as yes (language/communication reported) or no information (language/communication not reported).
Marital Status	The personal status of each individual in relation to the marriage laws or customs of a country. Scored as yes (marital status reported) or no information (marital status not reported).
Occupation	Type of work a person does (e.g. job title or industry) to earn money. Scored as yes (occupation reported) or no information (occupation not reported).
Collaboration	
Identity	A community is a group of people that is interconnected by demographics or other social variables (economic, social, race, ethnicity, level of education, etc.). Scored yes (identity variables shared) or no information (no information about shared identity variables).

Stakeholders	A stakeholder is a representative of the identity population or is explicitly stated as an advocate or ally on behalf of the participant of the research. Scored as yes (researchers are community stakeholders); no (researchers are not community stakeholders); or no information (no information about researchers as community stakeholders)
Research Goal	A research goal is the purpose of the research study or experiment. Scored as yes (research goal developed in collaboration with participant); no (research goal developed by researcher alone); or no information (no information about who developed research goals reported).
Intervention	Interventions or treatments can be behavioral procedures, intervention programs, or independent variables (IVs) being applied. The person implementing the intervention includes describing who set up the procedural arrangement in the environment (e.g. materials, setting, observation room) where the research is conducted. Scored as yes (intervention goal developed in collaboration with participant); no (intervention goal developed by researcher alone); or no information (no information about who developed intervention goals reported).
Generalization	A behavior change that has not been explicitly trained and occurs outside of the training conditions. This includes stimulus/setting generalization and response generalization; also called generalized outcome. Scored as yes (generalization reported); no (generalization not achieved); no information (no generalization information reported).
Setting	The research setting is the place(s) where the research took place. Scored as yes (research occurred in the natural setting, e.g., living room of group home) or no (research occurred in analogue setting, e.g., observation room).
Funding Source	Research funding covers any funding of scientific research (e.g. grants, scholarships, donations). Scored as yes (funding source sustainable e.g. funds from local taxpayer), no (funding source not sustainable e.g., National Science Foundation grant), or no information (no information reported about source of funding).
Maintenance	The extent to which the learner continues to perform the target behavior after a portion or all of the intervention has been terminated (i.e., response maintenance), a dependent variable or characteristic of behavior. Scored as yes (maintenance reported); no (maintenance not achieved); no information (no maintained information reported).
Empowerment	Self-Determination or agency refers to acting volitionally, based on one’s own mind or will, without external compulsion such as having a variety of available options and to be free from coercion when choosing between options. Scored as yes (skills to increase agency reported); no (skills reported did not improve agency); or no information (no information regarding is researchers taught agency reported).

Note. All ‘yes’ scored as 1; all ‘no’ and ‘no information’ scored as 0

Table 2

Journal of Applied Behavior Analysis Article Sample



Journal of Applied Behavior Analysis Article Sample Table

Year	1968	1978	1988	1998	2008	2018
Editor	Wolf	O'Leary	Bailey	Wacker	Piazza	Hanley
Spring	Hall et al.	Epstein & Masek	Fitterling et al.	Stromer et al.	Grow et al.*	Carlile et al.
	Ayllon & Azrin	Schnelle et al.	Kohr et al.	Lane & Critchfield	Layer et al.	Griffith et al.
	Risley	Kantorowitz	Green et al.	Cuvo et al.	Reed & Martens*	Geiger et al.
	Thomas et al.*	Carnine & Fink	Guervremont et al.	Ervin et al.	Petursdottir et al.	Frampton & Shilingsburg
Summer	Azrin et al.	Sturgis et al.	Mace et al.*	Piazza et al.	Glover et al.	Sump et al.
	Hart & Risley*	Favell et al.	Lamm & Greer	Krantz & McClannahan	Penrod et al.	Carroll et al.
	Hopkins	Alevizos et al.	Schuster et al.*	Dixon et al.	Francisco et al.	Ghaemmaghami et al.
	Leitenberg et al.	Hollandsworth et al.	Wagner & Winett	Hagopian et al.	Trosclair-Lasserre et al.	Dass et al.
Fall	Azrin & Powell	Yeaton & Bailey	Seekins et al.*	Carr et al.	Volkert et al.*	Toper-Korkmaz et al.
	Birnbrauer	Neef et al.	Van Houten	Wood et al.	Roscoe et al.*	Schnell et al.
	Phillips*	Cuvo et al.	Poche et al.	Fisher et al.	Sigurdsson & Austin	Scott et al.
	Peterson	Parsonson & Baer	Rogers et al.	Drasgow et al.	Taylor & Hoch	DeQuinzio
Winter	Risley & Hart	Rose	Wacker et al.	Fisher et al.	Chrivers et al.	Becraft et al.
	Azrin et al.	Ortega	Baer et al.	Vollmer et al.	Donlin et al.	Fahmie et al.
	Guess et al.	Shreibman	Welch & Holborn	Fisher et al.	Ledgerwood et al.	Russell et al
	Kale et al.*	Goldstein	Wacker et al.*	Schepis et al.	Dunn et al.	Ming et al.

Note: *Scored for Interrater Agreement

Table 3

General and Sub Categorial Indicators

Respect for Persons	Beneficence	Justice	Collaboration
Consent	Quality of Life	Age	Identity
Voluntary	Social Validity	Race	Stakeholders
Assent	Real-World Dependent Variables	Ethnicity	Intervention
		Religion	Generalization
		Sex	Natural Setting
		Gender	Funding Source
		Household Income	Maintenance
		Education Level	Empowerment
		Diagnosis	
		Language/Communication	
		Marital Status	
		Occupation	

APPENDIX A

OBSERVATION CODE

Indicator		Record and/or Classify	Notes
1	Funding Source	1. Find the funding source of the research (be sure to check the footnote) 2. Fill in the funding source of the research 3. If there is no information that explicitly states research funding source, write *NI*	Definition: Research funding covers any funding of scientific research. Example: USPHS Research Grant No. 11440. from the National Institute of Mental Health, and EHA Title VI-B, No. 42-00000-0000832/025, from the California Department of Education to the Office of the County Superintendent of Schools, Santa Barbara, California Examples: “award,” “grant,” “funded,” “scholarship”
2	What identity categories do the researchers and participants share? Identity Categories: • Race • Ethnicity • Religion • Disability • Sexual Orientation • Occupation • Education • Economic Status • Gender	1. Find information about the researchers and participants in the introduction and/or methods section 2. List any identity categories the researchers and participants share. If there is no information about the researcher (s) and/or participant(s) identity category, write *NI or none*	Definition: a community is a group of people that is interconnected by demographics or other social variables (economic, social, race, ethnicity, level of education, etc.) Definition exclusion: Not simply a measure of geographical proximity between researcher and subject Examples: Race: Researchers 1, 2, 3, and 4 report their race as Black. Participants 1, 2, and 5 report their race as Black. Participants 3 and 4 report their race as White. Identity in this category is shared for Participants 1, 2, and 5 to Researchers 1, 2, 3, and 4. Identity in this category is not shared for Participants 3 & 4 to Researchers 1, 2, 3, and 4. Education: Researcher 1 has a doctorate degree and Researcher 2 has a Master’s degree; Participant 1 has a Master’s degree and Participant 2 has an Associate’s degree; Identity in this category is shared for Participant 1 and Researcher 2; not shared for Participant 1 and Researcher 1; and not shared for Participant 2 and Researchers 1 and 2.
3	Are the researchers also stakeholders in the community?	1. Find information about the researchers and participants in the introduction and/or methods section 2. Write *yes* if the researcher is a stakeholder in the community; write *no* if the researcher is not a stakeholder in the community; write *NI* if there is no information explicitly stated about the researcher being a stakeholder in the community	Definition: A stakeholder is a representative of the identity population or is explicitly stated as an advocate or ally on behalf of the participant of the research. Examples: The researcher works as a community researcher as well as a swimming instructor at a public pool in the community where she lives. She is conducting research on best teaching strategies for children diagnosed with autism that are enrolled in swimming lessons at the community pool

Indicator		Record and/or Classify	Notes
		3. Fill in the specific role the researcher has in the community	
4	Setting	1. Find information about the location/setting where the research specifically took place in the introduction and/or methods section 2. Fill in the setting description (you can list multiple locations) 3. Write *NI* if there is no information about the research setting	Definition: The research setting is the place(s) where the research took place. Examples: Sterling House Assistant Living Facility Chicago, Illinois The University of Florida family home school daycare center community center psychiatric hospital residential treatment facility group home residential institution classroom grocery store
5	Participant Dependent Measures/Variables	1. Find information about what behaviors were counted and reported in all of the graphs and/or tables found in the results section and/or the figure captions 2. Fill in the information for all behaviors that were counted use exact labels as stated in the graph(s) and/or table(s)	Definition: Participants (or subjects) are those whose behavior would be understood or changed as the result of the research. Definition: dependent variables (DV) is the behavior(s) being measured Examples: Rates of SIB for subjects 1, 2, 3, 4, 5, 6, 7, 8, & 9 Number of cigarettes smokes per day by Sara Duration of “on-task” behavior for all students during a class period
6	Total Number of Participants	1. Find information about the total number of participants in the methods and/or results section 2. Fill in the number of participants	Definition: Participants (or subjects) are those whose behavior would be understood or changed as the result of the research. Example: 3 nursing home residents and 1 CNA; 2 student groups; 4 parent child dyads; 3 children with autism

Indicator		Record and/or Classify	Notes
7	Participant Information	1. Find the participant identifiers in the introduction and/or methods section 2. Fill in the identifying information for the participants as listed in the article (add an additional page if necessary) by writing the name, ID number, or other indicator used in the article	Definition: Participants (or subjects) are those whose behavior would be understood or changed as the result of the research. Example: Joseph, Sara, and Becky; subjects 1 & 2; participants A, B, C, D, & E; group A and group B
8	Age	1. Find the participant information in the introduction and/or methods section 2. Fill in the information for the participant age listed in the article 3. Write *NI* if there is no information explicitly stated about the age of the participant(s)	Definition: Chronological age – the number of years a person has lived (typically reported in years and/or months). Examples: Subject 3 – 13 years; Subject 6 – 7 years & 6 months; All children were 4-5 years old; participants age ranged from 2-16 years Non-examples: Developmental ages of subject 3 = 8-10 months and subject 6 = 6-9 months.
9	Race	1. Find the participant information in the introduction and/or methods section 2. Fill in the information for the participant race listed in the article 3. Write *NI* if there is no information explicitly stated about the race of the participant(s)	Definition: A social construct that divides people into distinct groups based on characteristics such as physical appearance (e.g. bone structure and skin color). Examples: White or Caucasian; African-American or Black (Negro); American Indian or Alaska Native; Asian; Native Hawaiian or Other Pacific Islander.
10	Ethnicity	1. Find the participant information in the introduction and/or methods section 2. Fill in the information for the participant ethnicity listed in the article 3. Write *NI* if there is no information explicitly stated about the ethnicity of the participant(s)	Definition: A social construct which divides people into smaller social groups based on characteristics such as shared sense of group membership, values, behavioral patterns, language, political and economic interest, history and ancestral geographical base. Examples: Middle Eastern; German; Nigerian, Hispanic, Kurds
11	Religion	1. Find the participant information in the introduction and/or methods section 2. Fill in the information for the participant religion listed in the article	Definition: A personal or institutionalized system of beliefs and practices concerning the cause, nature, and purpose of the universe, often grounded in belief in and reverence for some supernatural power or powers; often involves devotional and ritual observances and contains a moral code governing the conduct of human affairs.

Indicator		Record and/or Classify	Notes
		3. Write *NI* if there is no information explicitly stated about the religion of the participant(s)	Examples: Atheist, Buddhist, Jewish, Christian, Agnostic, Wiccan
12	Sex	1. Find the participant information in the introduction and/or methods section 2. Fill in the information for the participant sex listed in the article 3. Write *NI* if there is no information explicitly stated about the sex of the participant(s)	Definition: A medically constructed categorization. Sex is often assigned based on the appearance of the genitalia, either in ultrasound or at birth. Examples: Male, Female, Boy, Girl, Man, Woman, He, She, Him, Her, His, Her, His, Hers, Himself, Herself, Mother, Father, Priest, Nun, Widow, Widower Non-examples: They, Them, Their, Theirs
13	Gender	1. Find the participant information in the introduction and/or methods section 2. Fill in the information for the participant gender listed in the article 3. Write *NI* if there is no information explicitly stated about the gender of the participant(s)	Definition: A social construct used to classify a person as a man, woman, or some other identity. Fundamentally different from the sex one is assigned at birth. Examples: trans, genderqueer, genderfluid, agender, etc.
14	Household Income	1. Find the participant information in the introduction and/or methods section 2. Fill in the information for the household income listed in the article 3. Write *NI* if there is no information explicitly stated about the household income of the participant(s)	Definition: an economic measure used to measure income of every resident in a household. Examples: Capitalist class Upper middle class Lower middle class Working class Working poor Lower class Well off Wealthy Poor Financially stable Household income per year: $25k or less $25k - $50k $50k - $75k

Indicator		Record and/or Classify	Notes
			$75k - $100k $100k +
15	Education Level	1. Find the participant information in the introduction and/or methods section 2. Fill in the information for the participant education level listed in the article 3. Write *NI* if there is no information explicitly stated about the education level of the participant(s)	Definition: Level of schooling or credential. Examples: • Enrolled in school • Preschool • Elementary School • Middle School • Primary School • High School • Less than 9th grade • Some high school • High school graduate • Some college • Associate degree • Bachelor’s degree • Bachelor’s degree or more • Master’s degree • Professional degree • Doctoral degree • Well-educated • Uneducated • High-school dropout • Illiterate
16	Diagnosis	1. Find the participant information in the introduction and/or methods section 2. Fill in the information for the participant diagnosis listed in the article 3. Write *NI* if there is no information explicitly stated about the diagnosis of the participant(s)	Definition: Nature of disability or illness Examples: Subject 3 – Profound mental retardation, Down’s syndrome; Subject 6 – Developmental delay, craniosynostosis
17	Language/Communication	1. Find the participant information in the introduction and/or methods section 2. Fill in the information for the participant’s language or communication listed in the article	Definition: System of communication (including communication systems used by a particular community or country). Examples: Bilingual (Spanish & English), French, Arabic, American Sign Language, PECS, Nonverbal, uses some words and gestures to communicate, etc.

Indicator		Record and/or Classify	Notes
		3. Write *NI* if there is no information explicitly stated about the language/communication of the participant(s)	If the person is quoted in the article, document the language they were quoted in. For example, if the participant was quoted as saying: “This is the dumbest program I’ve seen yet, and whoever wrote it obviously doesn’t know me,” document this as English.
18	Marital Status	1. Find the participant information in the introduction and/or methods section 2. Fill in the information for the participant marital status listed in the article 3. Write *NI* if there is no information explicitly stated about the marital status of the participant(s)	Definition: The personal status of each individual in relation to the marriage laws or customs of a country. Examples: Widowed, Widower, Single, Married, Never Married, or Divorced
19	Occupation	1. Find the participant information in the introduction and/or methods section 2. Fill in the information for the participant occupation listed in the article 3. Write *NI* if there is no information explicitly stated about the occupation of the participant(s)	Examples: College professor, homemaker, fork-lift operator, lawyer, engineer Non-example: Student
20	Did the researcher ask for volunteers? Note: Score based on the majority of volunteers (at least 50% and above)	1. Find information about if the researcher asked for volunteers to participate in the study in the introduction, methods, and/or discussion sections 2. Write *yes* if the researchers asked for volunteers; write *no* if the participants were forced to participate in research or did not voluntarily participate in the research; write *NI* if there is no information explicitly stated about if the researcher asked for volunteers	Definition: A form of case selection which is purposive rather than based on the principles of random or probability sampling. It usually involves individuals who agree to participate in research, sometimes for payment. Examples: “Selected,” “recruited,” “enrolled,” “invited,” “responded (as in to an ad or recruitment flyer),” “referred,” “nominated,” “chosen”
21	Was consent obtained?	1. Find information about consent in the introduction and/or methods section 2. Write *yes* if the researchers asked for and obtained consent; write *no* if the researchers	Definition: Informed consent is the process by which researchers working with human participants describe their research project and obtain the subjects' consent to participate in the research based on the subjects' understanding of the project's methods and goals.

Indicator		Record and/or Classify	Notes
		did not ask for/did not obtain consent; write *NI* if there is no information explicitly stated about consent	Examples: “Students read and were given the opportunity to sign the informed consent agreement.” “Students who attended small-group sections during the 2nd week of the term received an informed consent agreement to sign, if they wished.” “Written consent was obtained.” “Informed consent for participation was provided by parents.” “The subject provided verbal consent to participate in the research study.”
22	Who developed the research goals?	1. Find information about how research goals were developed in the introduction, methods, and/or discussion section(s) 2. Circle who participated in the development of the research goals (researcher, participant, or both); write *NI* if there is no information explicitly stated about who developed the research goals	Definition: Research goals indicate the purpose of the research study. Example: Both parents are asked what skills are important for their child with autism to learn in order to increase the child’s quality of life and participation in family activities (e.g. families were asked what they valued in order to incorporate their values into the research goals). Non-example: Asking caregivers, family members, parents, etc. for input about the procedures, reinforcers, preferences, behavioral repertoires, skills, materials to be used in the research study/experiment Non-example: This does not include a statement of the research problem or the researcher’s rationale for selecting the research topic
23	Who implemented the interventions?	1. Find information about interventions in the introduction, methods, and/or discussion section(s) 2. List all persons reported in the article that participated in the implementation of the interventions; write *NI* if there is no information explicitly stated about who implemented the interventions	Definition: Interventions or treatments can be behavioral procedures, intervention programs, or independent variables (IVs) being applied. The person implementing the intervention includes describing who set up the procedural arrangement in the environment (e.g. materials, setting, observation room) where the research is conducted. Example: Both parents took turns implementing the teaching procedures for teaching their teenager with autism independent cooking skills.

Indicator		Record and/or Classify	Notes
			Non-example: This is not a report of the participant(s) or subject(s) engaging in a response “therapist(s),” “graduate student(s),” “undergraduate student(s),” “researcher,” “teacher,” “experimenter,” “observer,” “parent,” “student,” “participant,” “subject”
24	Did the researchers provide participants opportunities for assent?	1. Find information about assent in the introduction and/or methods section 2. Write *yes* if the researchers provided opportunities for assent; write *no* if the researchers did not honor requests for assent; write *NI* if there is no information explicitly stated about if the researchers provided participants with opportunities for assent	Definition: Assent process is an ongoing, interactive conversation between the research team and the child, young adult, typically developing adult, or adult lacking the capacity to give informed consent. This provides them with the opportunity to leave or terminate the research study. This does not include guardians that give or withdraw consent. This does not include participants that miss or reschedule or postpone a session due to illness, vacation, schedule conflicts, etc. This does not include taking a break, pausing, or any other delays allowed during the research study. Examples: “Ellis left the room after being presented with the task analysis.” “A single baseline session was conducted due to Ellis’s clear inability to ride a bicycle and his extreme emotional response to the demand.” “Ellis refused to practice bicycle riding unless he was assured that he would not fall, and in consequence the Kurt Kinetic Trainer was introduced.” “I don’t want to do this.” “I’m going home now.” Keywords: “terminate,” “refuse,” “leave,” “change”

Indicator		Record and/or Classify	Notes
25	Are there indicators that one of the purposes of the research is to teach skills to increase the participant's agency/self-determination? Note: Score based on the majority of change (at least 50% and above)	1. Find information about agency in the introduction, methods, and discussion section 2. Write *yes* if one of the research goals is to teach skills to improve the agency or self-determination of the participant; write *no* if the researchers did not teach skills to improve agency or self-determination; write *NI* if there is no information explicitly stated about if the researchers taught skills to improve the agency or self-determination of the participant	Definition: Self-Determination refers to acting volitionally, based on one's own mind or will, without external compulsion such as having a variety of available options and to be free from coercion when choosing between options. Examples: Skills such as decision making, problem solving, assertiveness, self-awareness, autonomy, choice-making, information-gathering, initiative, development and awareness of preferences, personal goal setting, self-advocacy, self-knowledge, self-regulation, self-efficacy, and persistence. Embedding choice within daily routines resulted in substantially increased task initiations and virtual elimination of challenging behavior.
26	Did the research effects generalize? Note: Score based on the majority of change (at least 50% and above)	1. Find information about generalization in the results and/or discussion section 2. Write *yes* if the research effects generalize; write *no* if the research effects do not generalize; write *NI* if there is no information explicitly stated about generalization	Definition: A behavior change that has not been explicitly trained and occurs outside of of the training conditions. This includes stimulus/setting generalization and response generalization; also called generalized outcome. Non-example: This does not include when a reinforcer is provided or a prompt is given for engaging in the trained behavior outside of the training conditions. Examples: After learning new baking skills, the teenager with autism obtains a job at a bakery making cakes. After learning to ride a bike, Ellis participates in a charity bike riding event in his neighborhood.
27	Did the research effects maintain? Note: Score based on the majority of change (at least 50% and above)	1. Find information about maintenance in the results and/or discussion section 2. Write *yes* if the research effects maintain; write *no* if the research effects do not maintain; write *NI* if there is no information explicitly stated about maintenance	Definition: The extent to which the learner continues to perform the target behavior after a portion or all of the intervention has been terminated (i.e., response maintenance), a dependent variable or characteristic of behavior. Example: After 1 year of follow-up the teenager with autism that learned independent baking skills is still baking independently.

Indicator		Record and/or Classify	Notes
28	Was social significance measured? <u>Note: Score based on the majority of change (at least 50% and above)</u>	1. Find information about social significance in the results and/or discussion section 2. Write *yes* if social significance was measured; write *no* if social significance was not measured; write *NI* if there is no information explicitly stated about measurement of social significance 3. Fill in how social significance was measured	Definition: Social significance includes systems and measures for asking for participant feedback about how the research goals, procedures, and/or outcomes related to their values and reinforcers. Examples: This can be measured through asking about participants to tell the researchers about their opinions about the entire research experience. This can be measured through asking other people (e.g. community members, outside experts, advisors, other researchers, family members, etc.) for feedback about the research goals, procedures, and/or outcomes. Information can be gathered through satisfaction questionnaires, verbal reports, direct observations, etc.
29	Is there a statement in the article about how the lives of participants were improved as a result of the research? In other words, did the changes have any reported effects on the lives of the participants? Do the authors state any impact the results of the experiment produced on the participants' quality of life? <u>Note 1: Score based on the majority of change (at least 50% and above)</u> <u>Note 2: Score based on the participant(s) you listed in #7</u>	1. Find information about improvement in quality of life in the results and/or discussion section 2. Write *yes* if the author's explicitly stated important improvements in the participant's life; write *no* if the participant's quality of life was not improved or worsened; write *NI* if there is no information explicitly stated about important improvements in the participant's life.	Example: By teaching Ellis to learn how to ride a bike he was able to experience natural reinforcers, increase his access to the community, spend time with his family, and ride his bicycle 8 km for a fundraiser. "According to a report from the mother six months after the child's return home, 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." Non-example: Results that indicate a clinically important reduction or increase in behavior Non-examples: A 3rd grade student stops engaging in self-injurious behaviors (SIB) (behavior decrease). The teenager with autism learns new cooking skills (behavior increase).

APPENDIX B

DATA SHEET

Your initials: Article: Date:

#	Indicator	Score	Notes
1	Funding Source		
2	What identity categories do the researchers and participants share? Identity Categories: • Race • Ethnicity • Religion • Disability • Sexual Orientation • Occupation • Education • Economic Status • Gender		
3	Are the researchers also stakeholders in the community?		
4	Setting		
5	Participant Dependent Measures/Variables		
6	Total Number of Participants		
7	Participant Information		
8	Age		
9	Race		
10	Ethnicity		
11	Religion		
12	Sex		
13	Gender		
14	Household Income		
15	Education Level		
16	Diagnosis		
17	Language/Communication		
18	Marital Status		
19	Occupation		
#	Indicator	Score	Notes
20	Did the researcher ask for volunteers? <u>Note: Score based on the majority of volunteers (at least 50% and above)</u>		
21	Was consent obtained?		
22	Who developed the research goals?	(Circle One)	

#	Indicator	Score	Notes
		Researcher Participant Both	
23	Who implemented the interventions?		
24	Did the researchers provide participants opportunities for assent?		
25	Are there indicators that one of the purposes of the research is to teach skills to increase the participant’s agency/self-determination? <u>Note: Score based on the majority of change (at least 50% and above)</u>		
#	Indicator	Score	Notes
26	Did the research effects generalize? <u>Note: Score based on the majority of change (at least 50% and above)</u>		
27	Did the research effects maintain? <u>Note: Score based on the majority of change (at least 50% and above)</u>		
28	Was social significance measured? <u>Note: Score based on the majority of change (at least 50% and above)</u>		
29	Are the lives of participants improved by research? <u>Note 1: Score based on the majority of change (at least 50% and above)</u> <u>Note 2: Score based on the participant(s) you listed in #7</u>		

REFERENCES

Ala'i-Rosales, S., Cihon, J. H., Currier, T. D., Ferguson, J. L., Leaf, J. B., Leaf, R., McEachin, J., & Weinkauf, S. M. (2019). The big four: Functional assessment research informs preventative behavior analysis. *Behavior analysis in practice*, *12*(1), 222-234. https://doi.org/10.1007/s40617-018-00291-9.

Assembly, U. G. (1948). Universal declaration of human rights. *UN General Assembly, 302*(2).

Baer, D. M., Wolf, M. M., & Risley, T. R. (1968). Some current dimensions of applied behavior analysis. *Journal of Applied Behavior Analysis, 1*(1), 91-97. https://doi.org/10.1901/jaba.1968.1-91.

Baer, D. M., Wolf, M. M., & Risley, T. R. (1987). Some still-current dimensions of applied behavior analysis. *Journal of Applied Behavior Analysis, 20*(4), 313-327. https://doi.org/10.1901/jaba.1987.20-313.

Baer, R. A., Detrich, R., & Weninger, J. M. (1988). On the functional role of the verbalization in correspondence training procedures. *Journal of Applied Behavior Analysis*, *21*(4), 345-356. https://doi.org/10.1901/jaba.1988.21-345

Bannerman, D. J., Sheldon, J. B., Sherman, J. A., & Harchik, A. E. (1990). Balancing the right to habilitation with the right to personal liberties: The rights of people with developmental disabilities to eat too many doughnuts and take a nap. *Journal of Applied Behavior Analysis*, *23*(1), 79-89. https://doi.org/10.1901/jaba.1990.23-79

Barrera, I., & Kramer, L. (2009). *Using skilled dialogue to transform challenging interactions: Honoring identity, voice, & connection*. Paul H. Brookes.

Becraft, J. L., Borrero, J. C., Davis, B. J., Mendres-Smith, A. E., & Castillo, M. I. (2018). The role of signals in two variations of differential-reinforcement-of-low-rate procedures. *Journal of Applied Behavior Analysis*, *51*(1), 3-24. https://doi.org/10.1002/jaba.431

Benjamin, R. (2013). *People's science: Bodies and rights on the stem cell frontier*. Stanford University Press.

Benjamin, R. (2019). Assessing risk, automating racism. *Science*, *366*(6464), 421-422. https://doi.org/10.1126/science.aaz3873

Biglan, A. (2015). *The nurture effect: How the science of human behavior can improve our lives and our world*. New Harbinger Publications.

Binder, C. (2016). Integrating organizational-cultural values with performance management. *Journal of Organizational Behavior Management, 36*(2-3), 185-201. https://doi.org/10.1080/01608061.2016.1200512.

Chapin, D., Krost, B. (Producers), & Gibson, B. (Director). (1993). *What's love got to do with it* [Motion picture]. United States: Touchstone Pictures.

Chapman, G. D. (2015). *The 5 love languages: The secret to love that lasts*. Northfield Publishing.

Chavis, D. M., Stucky, P. E., & Wandersman, A. (1983). Returning basic research to the community: A relationship between scientist and citizen. *American Psychologist*, *38*(4), 424. https://doi.org/10.1037/0003-066x.38.4.424.

Critchfield, T. S., & Reed, D. D. (2017). The fuzzy concept of applied behavior analysis research. *The Behavior Analyst*, *40*(1), 123-159. https://doi.org/10.1007/s40614-017-0093-x

Committee on Bioethics. (1995). Informed consent, parental permission, and assent in pediatric practice. *Pediatrics*, *95*(2), 314-317.

Commodity (n.d.) In *Merriam-Webster's collegiate dictionary*. https://www.merriam-webster.com/dictionary/commodity

Cooper, J. O., Heron, T. E., & Heward, W. L. (2019). *Applied behavior analysis* (3rd ed.). Pearson Education.

Crenshaw, K. (1991). Mapping the margins: Intersectionality, identity politics, and violence against women of color. *Stanford Law Review*, *43,* 1241-1299. https://doi.org/10.2307/1229039

Cuvo, A. J., Leaf, R. B., & Borakove, L. S. (1978). Teaching janitorial skills to the mentally retarded: Acquisition, generalization, and maintenance. *Journal of Applied Behavior Analysis*, *11*(3), 345-355. https://doi.org/10.1901/jaba.1978.11-345

Delprato, D. J. (2002). Countercontrol in behavior analysis. *The Behavior Analyst*, *25*(2), 191-200. https://doi.org/10.1007/bf03392057.

DiAngelo, R. (2011). White fragility. *International Journal of Critical Pedagogy*, *3*(3), 54-70.

Donlin, W. D., Knealing, T. W., Needham, M., Wong, C. J., & Silverman, K. (2008). Attendance rates in a workplace predict subsequent outcome of employment-based reinforcement of cocaine abstinence in methadone patients. *Journal of Applied Behavior Analysis*, *41*(4), 499-516. https://doi.org/10.1901/jaba.2008.41-499

Drescher, J. (2015). Out of DSM: Depathologizing homosexuality. *Behavioral Sciences*, *5*(4), 565-575. https://doi.org/10.3390/bs5040565

Drug & Alcohol Rehab: Hazelden Betty Ford Foundation. (n.d.). Retrieved from https://hope.hazeldenbettyford.org/ga-ca/?gclid=EAIaIQobChMIr_T09_yh6AIVUr7ACh3OuQqlEAAYASAAEgKK1_D_BwE

Dunlap, G., Clarke, S., & Reyes, L. (1998). An analysis of trends in JABA authorship. *Journal of Applied Behavior Analysis*, *31*(3), 497-500. https://doi.org/10.1901/jaba.1998.31-497

Ervin, R. A., DuPaul, G. J., Kern, L., & Friman, P. C. (1998). Classroom-based functional and adjunctive assessments: Proactive approaches to intervention selection for adolescents with attention deficit hyperactivity disorder. *Journal of Applied Behavior Analysis*, *31*(1), 65-78. https://doi.org/10.1901/jaba.1998.31-65

Fawcett, S. B. (1991). Some values guiding community research and action. *Journal of Applied Behavior Analysis, 24*(4), 621-636. https://doi.org/10.1901/jaba.1991.24-621.

Fawcett, S.B., Schultz, J., Collie-Akers, V., Holt, C. and Watson-Thompson, J. (2016). Community development for population health and health equity. (pp. 443-460). In P. Erwin and R. Brownson (Eds.), *Scutchfield and Keck's principles of public health practice* (4th ed.) Cengage Learning.

Fisher, W. W., Adelinis, J. D., Thompson, R. H., Worsdell, A. S., & Zarcone, J. R. (1998). Functional analysis and treatment of destructive behavior maintained by termination of "don't" (and symmetrical "do") requests. *Journal of Applied Behavior Analysis*, *31*(3), 339-356. https://doi.org/10.1901/jaba.1998.31-339

Foucault, M. (1997). *Il faut défendre la société.* Gallimard/Seuil.

Fuller, P. R. (1949). Operant conditioning of a vegetative human organism. *The American Journal of Psychology*, *62*(4), 587-590. https://doi.org/10.2307/1418565

Geertz, C. (1973). *The interpretation of cultures* (Vol. 5019). Basic Books.

Gilbert, T. F. (2013). *Human competence: Engineering worthy performance*. John Wiley & Sons.

Glenn, S. S., & Malagodi, E. F. (1991). Process and content in behavioral and cultural phenomena. *Behavior and Social Issues*, *1*(2), 1-14. https://doi.org/10.5210/bsi.v1i2.163

Goldiamond, I. (1976). Protection of human subjects and patients: A social contingency analysis of distinctions between research and practice, and its implications. *Behaviorism*, *4*(1), 1-41.

Goldiamond, I. (1978). The professional as a double-agent. *Journal of Applied Behavior Analysis*, *11*(1), 178. https://doi.org/10.1901/jaba.1978.11-178

Goldiamond, I. (1984). Training parent trainers and ethicists in nonlinear analysis of behavior. In R. F. Dangel & R. A. Polster (Eds.), *Parent training: Foundations of research and practice* (pp. 504-546). The Guilford Press**.**

Goodman, D. J. (2011). *Promoting diversity and social justice: Educating people from privileged groups*. Routledge.

Gould, S. J. (1996). *The mismeasure of man*. WW Norton & company.

Hart, B. M., & Risley, T. R. (1968). Establishing use of descriptive adjectives in the spontaneous speech of disadvantaged preschool children. *Journal of Applied Behavior Analysis, 1*(2), 109-120. https://doi.org/10.1901/jaba.1968.1-109

Hayes, S. C., Barnes-Holmes, D., & Biglan, A. (2016). *The Wiley handbook of contextual behavioral science*. R. D. Zettle (Ed.). Wiley Blackwell.

Henrich, J., Heine, S. J., & Norenzayan, A. (2010). The weirdest people in the world? *Behavioral and Brain Sciences*, *33*(2-3), 61-83. https://doi.org/10.1017/s0140525x0999152x

Hilts, P. J. (1974). *Behavior mod*. Harper's Magazine Press.

Holland, J. G. (1978). Behaviorism: Part of the problem or part of the solution. *Journal of Applied Behavior Analysis*, *11*(1), 163-174. https://doi.org/10.1901/jaba.1978.11-163

Hollandsworth, J. G., Glazeski, R. C., & Dressel, M. E. (1978). Use of social-skills training in the treatment of extreme anxiety and deficient verbal skills in the job-interview setting. *Journal of Applied Behavior Analysis*, *11*(2), 259-269. https://doi.org/10.1901/jaba.1978.11-259

Hopkins, B. L. (1987). Comments on the future of applied behavior analysis. *Journal of Applied Behavior Analysis*, *20*(4), 339. https://doi.org/10.1901/jaba.1987.20-339

Hull, D. L. (1978). Altruism in science: A sociobiological model of co-operative behaviour among scientists. *Animal Behaviour*, *26*, 685-697. https://doi.org/10.1016/0003-3472(78)90135-5

Israel, A. C., & O'Leary, K. D. (1973). Developing correspondence between children's words and deeds. *Child Development*, 575-581. https://doi.org/10.2307/1128015

Karlberg, M., & Farhoumand-Simms, C. (2006). Global citizenship and humanities scholarship. *International Journal of the Humanities, 2*(3), 2189-2198.

Kantorowitz, D. A. (1978). An experimental investigation of preorgasmic reconditioning and postorgasmic deconditioning. *Journal of Applied Behavior Analysis*, *11*(1), 23-24. https://doi.org/10.1901/jaba.1978.11-23

Kazdin, A. E. (1977). Assessing the clinical or applied importance of behavior change through social validation. *Behavior Modification*, *1*(4), 427-452. https://doi.org/10.1177/014544557714001

Kohr, M. A., Parrish, J. M., Neef, N. A., Driessen, J. R., & Hallinan, P. C. (1988). Communication skills training for parents: Experimental and social validation. *Journal of Applied Behavior Analysis, 21*(1), 21-30. https://doi.org/10.1901/jaba.1988.21-21

Lattal, K. A., & Laipple, J. S. (2003). Pragmatism and behavior analysis. In *Behavior theory and philosophy* (pp. 41-61). Springer.

Lee, V. L. (2016). *Beyond behaviorism*. Routledge.

Leaf, J. B., Leaf, R., McEachin, J., Taubman, M., Ala'i-Rosales, S., Ross, R. K., Smith, T., & Weiss, M. J. (2016). Applied behavior analysis is a science and, therefore, progressive. *Journal of Autism and Developmental Disorders*, *46*(2), 720-731. https://doi.org/10.1007/s10803-015-2591-6

Leigland, S. (Ed.). (1992). *Radical behaviorism: Willard Day on psychology and philosophy*. New Harbinger Publications.

Leitenberg, H., Agras, W. S., Thompson, L. E., & Wright, D. E. (1968). Feedback in behavior modification: An experimental analysis in two phobic cases. *Journal of Applied Behavior Analysis*, *1*(2), 131-137. https://doi.org/10.1901/jaba.1968.1-131

Ledgerwood, D. M., Alessi, S. M., Hanson, T., Godley, M. D., & Petry, N. M. (2008). Contingency management for attendance to group substance abuse treatment administered by clinicians in community clinics. *Journal of Applied Behavior Analysis, 41*(4), 517-526. https://doi.org/10.1901/jaba.2008.41-517

Luciano, M. C., Herruzo, J., & Barnes-Holmes, D. (2001). Generalization of say-do correspondence. *The Psychological Record*, *51*(1), 111-130. https://doi.org/10.1007/bf03395389

Maldonado-Torres, N. (2007). On the coloniality of being: Contributions to the development of a concept. *Cultural Studies*, *21*(2-3), 240-270. https://doi.org/10.1080/09502380601162548

Malott, R. W. (2002). Notes from a radical behaviorist: Is it morally defensible to use the developmentally disabled as guinea pigs? *Behavior and Social Issues*, *11*, 105-106. https://doi.org/10.5210/bsi.v11i2.90

Maprayan, L. (2012). *The womanist idea: Contemporary sociological perspectives*. Milton Park. https://doi.org/10.4324/9780203135938

Marr, J. (2003). Empiricism. In *Behavior theory and philosophy* (pp. 63-81). Springer.

Mathews, R. M. (1997). Editors as authors: Publication trends of articles authored by JABA editors. *Journal of Applied Behavior Analysis, 30*(4), 717-721. https://doi.org/10.1901/jaba.1997.30-717

Matsuda, K., Garcia, Y., Catagnus, R., & Brandt, J. A. (2020). Can behavior analysis help us understand and reduce racism? A review of the current literature. *Behavior Analysis in Practice*, 1-12. https://doi.org/10.1007/s40617-020-00411-4

Mattaini, M. A. (2013). *Strategic nonviolent power: The science of satyagraha (global peace studies).* AU Press.

Mbembé, J. A. (2003). Necropolitics. *Public Culture*, *15*(1), 11-40. https://doi.org/10.1215/08992363-15-1-11

Miller, K. L., Cruz, A. R., & Ala'i-Rosales, S. (2019). Inherent tensions and possibilities: Behavior analysis and cultural responsiveness. *Behavior and Social Issues,* 1-21. https://doi.org/10.1007/s42822-019-00013-y

Mignolo, W. D. (2007). Introduction: Coloniality of power and de-colonial thinking. *Cultural Studies*, *21*(2-3), 155-167. https://doi.org/10.1080/09502380601162498

Moore, J. (2011). Behaviorism. *The Psychological Record, 61*(3), 449-463. https://doi.org/10.1007/bf03395771

Morris, E. K., Todd, J. T., Midgley, B. D., Schneider, S. M., & Johnson, L. M. (1990). The history of behavior analysis: Some historiography and a bibliography. *The Behavior Analyst*, *13*(2), 131-158. https://doi.org/10.1007/bf03392530

Morris, E. K. (1988). Contextualism: The world view of behavior analysis. *Journal of Experimental Child Psychology*, *46*, 289-323. https://doi.org/10.1016/0022-0965(88)90063-x

National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research. (1979). *The Belmont report: Ethical principles and guidelines for the protection of human subjects of research*. Retrieved from: https://www.hhs.gov/ohrp/regulations-and-policy/belmont-report/read-the-belmont-report/index.html

Neef, N. A., Iwata, B. A., & Page, T. J. (1978). Public transportation training: In vivo versus classroom instruction. *Journal of Applied Behavior Analysis, 11*(3), 331-344. https://doi.org/10.1901/jaba.1978.11-331

Nielsen, M., Haun, D., Kärtner, J., & Legare, C. H. (2017). The persistent sampling bias in developmental psychology: A call to action. *Journal of Experimental Child Psychology*, *162*, 31-38. https://doi.org/10.1016/j.jecp.2017.04.017

Northup, J., Vollmer, T. R., & Serrett, K. (1993). Publication trends in 25 years of the Journal of Applied Behavior Analysis. *Journal of Applied Behavior Analysis*, *26*(4), 527-537. https://doi.org/10.1901/jaba.1993.26-527

Osterhammel, J. (1997). *Colonialism: A theoretical overview*. Markus Wiener Publishers.

Petursdottir, A. I., Carr, J. E., Lechago, S. A., & Almason, S. M. (2008). An evaluation of intraverbal training and listener training for teaching categorization skills. *Journal of Applied Behavior Analysis, 41*(1), 53-68. https://doi.org/10.1901/jaba.2008.41-53

Phillips, E. L. (1968). Achievement place: Token reinforcement procedures for "predelinquent" boys. *Journal of Applied Behavior Analysis, 1*(3), 213-223.

Ponterotto, J. G. (2006). Brief note on the origins, evolution, and meaning of the qualitative research concept thick description. *The Qualitative Report*, *11*(3), 538-549.

Popov, L. K. (1997). *The family virtues guide: Simple ways to bring out the best in our children and ourselves.* Penguin Group.

Quijano, A. (2000). Coloniality of power and Eurocentrism in Latin America. *International Sociology*, *15*(2), 215-232. https://doi.org/10.1177/0268580900015002005

Quijano, A. (2007). Coloniality and modernity/rationality. *Cultural Studies*, *21*(2-3), 168-178. https://doi.org/10.1080/09502380601164353

Rice, T. W. (2008). The historical, ethical, and legal background of human-subjects research. *Respiratory Care*, *53*(10), 1325-1329.

Richardson, E. T. (2019). On the coloniality of global public health. *MAT*, *6*, 101-18. https://doi.org/10.17157/mat.6.4.761

Risley, T. R. (2001). Do good, take data. In W T. O'Donohue, D. A. Henderson, S. C. Hayes, J. E. Fisher, & L. J. Hayes (Eds.), *A history of the behavioral therapies: Founders' personal histories* (pp. 267-287). Reno, NV: Context Press.

Risley, T. R., & Hart, B. (1968). Developing correspondence between the non-verbal and verbal behavior of preschool children. *Journal of Applied Behavior Analysis*, *1*(4), 267-281.

Rivera, L. (2011). Harmful beneficence. *Journal of Moral Philosophy*, *8*(2), 197-222. https://doi.org/10.1163/174552411x563565

Rossi, W. C., Reynolds, W., & Nelson, R. M. (2003). Child assent and parental permission in pediatric research. *Theoretical Medicine and Bioethics*, *24*(2), 131-148.

Russell, D., Ingvarsson, E. T., Haggar, J. L., & Jessel, J. (2018). Using progressive ratio schedules to evaluate tokens as generalized conditioned reinforcers. *Journal of Applied Behavior Analysis*, *51*(1), 40-52. https://doi.org/10.1002/jaba.424

Ryan, D. (1999). Colonialism and hegemony in Latin America: An introduction. *The International History Review*, *21*(2), 287-296. https://doi.org/10.1080/07075332.1999.9640860

Sandelowski, M. (1991). Telling stories: Narrative approaches in qualitative research. *Image: The Journal of Nursing Scholarship*, *23*(3), 161-166. https://doi.org/10.1111/j.1547-5069.1991.tb00662.x

Schwartz, I. S., & Baer, D. M. (1991). Social validity assessments: Is current practice state of the art? *Journal of Applied Behavior Analysis, 24*(2), 189-204. https://doi.org/10.1901/jaba.1991.24-189

Schepis, M. M., Reid, D. H., Behrmann, M. M., & Sutton, K. A. (1998). Increasing communicative interactions of young children with autism using a voice output communication aid and naturalistic teaching. *Journal of Applied Behavior Analysis*, *31*(4), 561-578. https://doi.org/10.1901/jaba.1998.31-561

Schnelle, J. F., Kirchner, R. E., Macrae, J. W., McNees, M. P., Eck, R. H., Snodgrass, S., Casey, J.D., & Uselton Jr, P. H. (1978). Police evaluation research: An experimental and cost-benefit analysis of a helicopter patrol in a high crime area. *Journal of Applied Behavior Analysis*, *11*(1), 11-21. https://doi.org/10.1901/jaba.1978.11-11

Sidman, M. (2001). *Coercion and its fallout* (2nd ed.). Authors Cooperative.

Skinner, B. F. (1945). The operational analysis of psychological terms. *Psychological Review*, *52*(5), 270.

Skinner, B. F. (1953). *Science and human behavior*. Macmillan.

Skinner, B. F. (1957). *Verbal behavior*. Appleton-Century-Crofts.

Skinner, B. F. (1961). The design of cultures. *Daedalus*, *90*(3), 534-546.

Skinner, B. F. (1974). *About behaviorism.* Knopf.

Skinner, B. F. (1981). Selection by consequences. *Science*, *213*(4507), 501-504. https://doi.org/10.1126/science.7244649

Skinner, B. F. (1987). Why we are not acting to save the world. In B. F. Skinner, *Upon further reflection* (pp. 1-14). Englewood Cliffs, NJ: Prentice-Hall.

Skloot, R. (2011). *The immortal life of Henrietta Lacks*. Crown Publishers, an imprint of Crown Publishing Group, a division of Random House, Inc.

Slavicek, G., & Forsdahl, G. (2009). Ethics and regulatory aspects in medical research. *International Journal of Stomatology & Occlusion Medicine*, *2*(1), 45-49. https://doi.org/10.1007/s12548-009-0007-y

Smith, L. T. (2013). *Decolonizing methodologies: Research and indigenous peoples*. Zed Books Ltd.

Smithsonian (2018). *Science still bears the fingerprints of colonialism*. Retrieved from https://www.smithsonianmag.com/science-nature/science-bears-fingerprints-colonialism-180968709/

Solomon, R. C. (2008). *Introducing philosophy: A text with integrated readings* (9th ed.). Oxford University Press.

Stokes, T. F., Osnes, P. G., & Guevremont, D. C. (1987). Saying and doing: A commentary on a contingency-space analysis. *Journal of Applied Behavior Analysis*, *20*(2), 161-164. https://doi.org/10.1901/jaba.1987.20-161

Sturgis, E. T., Tollison, C. D., & Adams, H. E. (1978). Modification of combined migraine-muscle contraction headaches using BVP and EMG feedback. *Journal of Applied Behavior Analysis*, *11*(2), 215-223. https://doi.org/10.1901/jaba.1978.11-215

Tervalon, M., & Murray-Garcia, J. (1998). Cultural humility versus cultural competence: A critical distinction in defining physician training outcomes in multicultural education. *Journal of Health Care for the Poor and Underserved, 9*(2), 117-125. https://doi.org/10.1353/hpu.2010.0233

Thomas, N. (1997). Anthropological epistemologies. *International Social Science Journal, 49*(153), 333-343. https://doi.org/10.1111/j.1468-2451.1997.tb00027.x

Trosclair-Lasserre, N. M., Lerman, D. C., Call, N. A., Addison, L. R., & Kodak, T. (2008). Reinforcement magnitude: An evaluation of preference and reinforcer efficacy. *Journal of Applied Behavior Analysis, 41*(2), 203-220. https://doi.org/10.1901/jaba.2008.41-203

Tuskegee Study - Research Implications - CDC - NCHHSTP. (2020, March 2). Retrieved November 10, 2020, from https://www.cdc.gov/tuskegee/after.htm

Tuskegee University (n.d.). *About the USPHS syphilis study*. Retrieved from https://www.tuskegee.edu/about-us/centers-of-excellence/bioethics-center/about-the-usphs-syphilis-study

Wacker, D. P., Wiggins, B., Fowler, M., & Berg, W. K. (1988). Training students with profound or multiple handicaps to make requests via microswitches. *Journal of Applied Behavior Analysis*, *21*(4), 331-343. https://doi.org/10.1901/jaba.1988.21-331

Williams, B. A. (1994). Conditioned reinforcement: Experimental and theoretical issues. *The Behavior Analyst*, *17*(2), 261-285. https://doi.org/10.1007/bf03392675

Wolf, M. M. (1978). Social validity: The case for subjective measurement or how applied behavior analysis is finding its heart. *Journal of Applied Behavior Analysis, 11*(2), 203-214. https://doi.org/10.1901/jaba.1978.11-203

Wright, P. I. (2019). Cultural humility in the practice of applied behavior analysis. *Behavior Analysis in Practice*, *12*(4), 805-809. https://doi.org/10.1007/s40617-019-00343-8

Young, R. J. (2003). *Postcolonialism: A very short introduction*. OUP Oxford.

Zuriff, G. E. (1980). Radical behaviorist epistemology. *Psychological Bulletin, 87*(2), 337. https://doi.org/10.1037/0033-2909.87.2.337