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### A Preliminary Investigation into the Presence of Wozzles in Applied Behavior-Analytic Publications

Vanessa R. Hiley

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**A Preliminary Investigation into the Presence of Wozzles in Applied Behavior-Analytic**

**Publications**

by

Vanessa R. Hiley

A Thesis

Submitted to the Graduate Faculty of

St. Cloud State University

in Partial Fulfillment of the Requirements

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### Abstract

Inaccurate reporting of previous publications may seem innocuous in a publication that exhibits sound theories and results; however, consistent, inaccurate reporting of an original body of work runs the risk of establishing false conclusions. In publications, a *woozle* is a misguided or misrepresented belief or claim, which, if accumulated, can lead to an inaccurate theory or conclusion. Previous literature in other fields have noted the existence of wozzles and their effect. This study was a preliminary investigation into the presence of wozzles in current applied behavior analytic publications. The first phase of the study identified 20 experimental research articles from *The Journal of Applied Behavior Analysis* (JABA) and 25-75 citing research articles. Phase two consisted of examining articles and extracting relevant quotations. In the final phase of the study, quotations from applied behavior analytic (ABA) journals were examined to determine the presence of wozzles. Results from 242 ABA articles indicated more than 30% of articles and 20% of quotations were wozzles, and the presence of wozzles in the past ten publishing years exhibited an unclear trend. Data collected indicates that wozzles are present in ABA literature, and further research is warranted to examine this topic further.

*Keywords:* applied behavior analysis, wozzles, wozzling, publications

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## Chapter 1: Introduction

“Research is in fact the world’s biggest industry” (Booth et al., 2016, p.9). In 2018, the U.S. Research and development expenditures was \$580 billion. This included basic, applied, and developmental research in areas such as health, energy, space, and general science (Congressional Research Service, 2020). Research is conducted to produce knowledge of phenomena, solve practical issues, and create new products or processes to manufacture them (Congressional Research Service, 2020). Businesses or corporations might also conduct research; although, these findings might not be shared with the general public. For example, companies which manufacture food or beverages might conduct research to determine which combination of ingredients leads to better quality or shelf-life.

In academic research, ideas and innovation are cumulative. Le Treut et al. (2007) stated that in science, successful predictions lead to support of a theory, which keeps this theory circulating in a field; however, unsuccessful predictions demonstrate that the underlying theory is flawed and requires either modifications or abandonment. In Chapter 1, authors presented a historical overview of climate change science and provided examples on how our understanding of climate change has advanced throughout the years, specifically progress on how scientists understand climate processes, detect and attribute variables to climate change, and create records or models to reflect these changes (Le Treut et al, 2007). For example, it was stated that initial simulation models, which omitted changes in ocean dynamics, demonstrated a mean equilibrium surface temperature increase. Replacing the original models with fully coupled ocean-atmosphere models led to significant modifications in the patterns produced, especially in oceanic regions (Le Treut et al., 2007).

Zeigler (2012) provided another example that science is cumulative in referencing evolutionary biology. Zeigler argued that the fossil record is a representation of this process, as new fossils discovered help piece together a larger picture and increase our knowledge on the history of life. Fossil records illustrate transition of some vertebrates to marine life as well as morphological changes that have occurred in bird evolution. In addition, the discovery of a species believed to be extinct allows for modifications to the general knowledge of the field (Zeigler, 2012). Zeigler stated that the more data collected and discoveries made led to significantly better understanding on how the evolutionary process has and continues to work.

Past studies are the foundation on which articles base their methods, and scientific rigor relies on accurate reporting of these studies. In the American Psychological Association Publication Manual (APA, 2020, Section 8.1) it was stated that a researcher/writer must only cite works which they have read. A researcher and writer must credit the ideas and theories of others used to develop the study, and in doing so accurate reporting of those studies is essential. Although these guidelines are outlined in the APA manual, it is unknown how often past work is described and reported accurately by authors who use them, and furthermore it is unknown what effect inaccurate reports of past studies might have on a given field.

Inaccurate reporting might seem innocuous given a good research question and sound results, but as science is cumulative, consistent inaccurate reporting of the same body of work runs the risk of establishing false conclusions. For example, say Study 1 examined differences of comforting (praise) and discomforting (reprimand) statements vocalized to infants in a “sing-song” manner during five minute sessions. In the study, comforting remarks included phrases such as “You are such a sweet baby” while discomforting remarks included statements such as

“Don’t cry so much”. The pitch and “sing-song” tone of these remarks remained consistent throughout the study, and researchers wanted to determine if infant behaviors associated with discomfort (e.g., crying, whining) would vary depending on if the message was delivered as a praise or reprimand. Results demonstrated that comforting or discomforting statements vocalized in a “sing-song” tone, with the same pitch, did not produce differences in infant behavior, as neither types of statements caused infants to cry or whine. Following the publication of Study 1, Study 2 referenced this article and stated that “Study 1 determined that negative/reprimand statements have no immediate ill effects on infants.” Study 3 follows Study 2’s lead, and reports the same finding. For argument’s sake, this “finding” is repeatedly referenced in the literature; thus, a false conclusion was drawn which stated that vocalizing discomforting/reprimand remarks to infants is essentially harmless. The act of misrepresentation, often in the form of exaggerating results in referencing work, and its effects on consumers has been studied for some time under the playful name *the woozle effect*.

### **Woozles and the Woozle Effect**

Woozles first appeared in the A. A. Milne 1926 classic *Winnie the Pooh*. In the story the little bear, Pooh, was seen by his friend Piglet walking in a circle. When Piglet inquired of his actions, Pooh stated that he was hunting something (as tracks in the snow showed a creature had been there). Piglet joined Pooh, and together they continued their hunt for the mysterious creature they called a woozle. Although they never saw the woozle, they believed in its presence, as well as the possibility of multiple woozles, as the tracks in the snow began to grow in number. From a big oak tree came a whistle, and Piglet and Pooh looked up to see their friend Christopher Robin. Christopher Robin came down from the tree, and asked why they walking



around in a circle. After contemplation, Pooh stated how foolish he had been, as he realized the tracks that had grown in number were not in fact a woozle or multiple woozles, but a creature of their own making.

Much like in *Winnie the Pooh*, inaccurate claims or references can lead readers, even writers, into believing that something is true. In publications, a *wooze* is a misguided or misrepresented belief or claim. A wooze is not supported, or only partially supported, by empirical evidence (Nielsen, 2015). Gelles (1980) stated that one way a wooze may be formed is when a secondary publication cites a paper yet does not include specific qualifications or findings mentioned in the original article. Another way a wooze could be formed is when a citing article fails to mention limitations not listed by the original authors, and the claim stated is misguided. Ultimately, the second author inflates or strengthens the value of the original study when citing it. The process of misrepresenting data has been referred to as *woozling* (Nielsen, 2015).

Gelles (1980) noted that the “Wooze Effect” was first introduced to the public during a presentation by Houghton (1979) at the American Society of Criminology Conference in Philadelphia. A wooze effect occurs when a woozed citation is repeatedly referenced by others in the scientific community. It is probable that there are different paths to create a wooze effect; one way being the repeated woozling of a primary source in the literature. This effect might occur by numerous, different authors creating similar woozles from an original work. For example, Publications X, Y, Z might wooze Publication A (primary source) in the same or similar manner. Another probable path to a wooze effect is authors citing a woozed secondary source. If the secondary source, perhaps a review paper, woozles a primary source, citing authors

may reference the secondary source's claim despite the fact it had been woozled. For example, a woozled claim in a secondary source may be "(publication) proves that X cures ADHD". The statement in this instance, not indicating limitations of the study cited, is then circulated through countless papers in the same manner. Regardless the path to a woozle effect, the original woozled claim is given much more strength and value than the data and limitations indicate. Eventually the public believes the distorted claim is a generalizable truth (Gelles, 1980).

As a real-world example, take Witts et al. (2015), which misrepresented Côté et al. (2003) as being a robust example of a near-miss effect in slot machine gambling due to prolonged play when near-misses were present in extinction conditions following a near-miss plus win condition compared to a group with no near-misses during extinction (i.e., a no-win condition). However, as Pisklak et al. (2019) noted, these slot conditions are not typically found in the natural environment, a limitation overlooked by Witts et al.<sup>1</sup> Thus Witts et al. woozled, which produced a woozle. If others were to follow suite and cite Côté et al. without reference to the study's limitations, the cumulative woozling would produce a woozle effect.

Questionable research practices may occur with or without intent to deceive, but nonetheless could be harmful to the development of evidence-based practice (Banks et al., 2016). As woozling fails to account for a study's limitations when reporting on that study, it might be classified as a questionable form of research practice; a practice that by itself might not be completely unethical, but is also not one that will produce high quality scholarly work.

### **Literature on Woozles and the Woozle Effect**

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<sup>1</sup> It was Pisklak who brought this to our attention, and credit is due to him and his team for catching this.

Coney and MacKey (1999) found that articles in the domestic violence literature tended to focus on women, rather than men, being the recipient of violent behavior, despite epidemiological studies depicting a much different reality. The authors argued that different forms of surveys and terminology can alter conclusions drawn. Coney and MacKey stated that in many instances, categorization of co-residents and husbands were not separated in studies or statistical analyses. Thus, merging of these categories could remove analytical precision. The woosle effect may be present when these words are misinterpreted when cited, leading to the actual evidence on the topic becoming warped. Coney and MacKey argued that there is a disjunction between demographic data of domestic violence and the imagery aligned with it; thus, a popular held belief is that men engage in more instances of domestic violence (which might also coincide with higher instances of child abuse). With this common image and belief in the public, unfair and harmful consequences can be prevalent for men accused of both domestic violence and child abuse (Coney & MacKey, 1999).

Straus (2007) argued along a similar line as Coney and MacKey (1999). Straus outlined methods (woozling techniques) used to conceal and even distort evidence concerning the topic of partner violence. Straus stated that methods include suppressing evidence, avoiding gathering data from both genders, and obstructing research which might contradict popular beliefs. Straus argued that due to the abundance of articles referencing and stating partner violence is a result of male offenders, this “fiction” transforms into faulty scientific evidence (a woosle effect; Straus, 2007).

Within the field of psychiatry and medicine, Kelly (2019) found evidence of woosling. Kelly examined research on lithium and its appearance as a viable form of treatment of bipolar

affective disorder depressive type (BPADD). In the article, it was stated that the woozle effect, reference inflation, and belief perseverance can all interfere with a reader's or researcher's ability to understand evidence. In the article, 16 guidelines were examined which reference the utility of lithium for BPADD. An analysis was then conducted to examine references used to support these recommendations, and it was found that many citations fell short, as they included flawed research designs or lacked sufficient detail/evidence (e.g., used crossover designs, did not state dropout rates of participants). These misreported findings (woozles) led to some guidelines (a woozle effect) stating that lithium was a viable form of treatment for BPADD.

Given the potential for woozles to develop into widely-held beliefs, it is worthwhile to examine if woozling occurs in applied behavior analytic (ABA) publications. To be clear, the existence of woozling would not therefore conclude a woozle effect has occurred, but documenting of woozles would be the first step in this process. The purpose of this thesis was to determine if woozles, as they pertain to published ABA experimental studies, exist. Given that woozle effects can create false beliefs and harm a field, determining the presence of woozles in ABA literature may be key in determining if this questionable form of research practice is an issue that needs to be addressed.

## Chapter 2: Method

The method used in the current study was separated into three phases. Included in the following method section is a description of how articles from *The Journal of Applied Behavior Analysis* (JABA) were identified, how studies included in the analysis were selected for inclusion, how quotations from citing articles were extracted, and how a wozzle was identified within a single quotation.

### Phase 1: Article Selection and Inclusion/Exclusion Criteria

Twenty experimental research articles (see Appendix) were selected from JABA and forward-referenced in Google Scholar. The first five articles from every decade that met inclusion criteria were analyzed. Each JABA article were labeled numerically once they met the criteria (e.g., JABA 1 was the first article to meet inclusion criteria). The article examination process was determined a-priori to diminish any bias that could have occurred if articles were selected based on specific qualities (e.g., topic, length). Selection started by examining the Spring 1970 issue of JABA and progressed to the Winter 2005 issue. To be included in the analysis, each article must have been referenced a minimum of 25 times in other published journal papers between the years 2010-2019. Exclusion criteria was in place that dismissed articles referenced more than 75 times between these years (to ensure feasibility of the analysis for the author/coder). The range of years was determined to assess the presence of wozzles in current literature. For the study, other types of publications (e.g., books, handbooks) and articles not published in English were dismissed from the total count. All articles referencing the target JABA publication were included regardless of content, purpose, or journal. A list of all citing articles was created for each target JABA article following completion of this phase.

## **Phase 2: Identification and Extraction**

The second phase began by gaining access to full-text pdfs of all citing articles. The first author underwent this process by downloading accessible pdfs and requesting all non-accessible pdfs through St. Cloud State University's interlibrary loan. Each individual citing article was then examined and exact quotes referencing the target JABA article were extracted. A systematic way of extracting quotes was created to ensure consistency across all articles. First, all quotes referencing the target JABA article were exact; including the entire quotation regardless of if it stated other sources or references. In addition, all quotations were separated if the reference of the JABA article occurred in consecutive sentences or later on in the paper. For example, if an article stated "(X) publication used...", then immediately stated after "(X) publication defined elopement as..." these were counted as two separate quotations. Additionally, if an article stated "(X) publication used..." then later in the paper stated "(X) publication defined elopement as..." these were counted as two separate quotations. Finally, if the author(s) continued to elaborate on the reference(s) following a statement, these sentences were included as well. For example, if the author(s) of a citing article stated "(X) study demonstrated Y. Despite this, authors did not take into consideration..." the following sentence(s) were also included in the final quotation.

## **Phases 3: Woozle Identification**

The final phase of the study consisted of analyzing all 20 JABA articles and constructing a detailed article analysis. Of importance in this review was overall purpose of the research, participants, methods, results, and limitations. Key elements of JABA articles were identified as they were used to determine if citing articles had created woozles. For a woozle to be present, the citing article must (a) misreport/misrepresent an article and its findings and (b) strengthen the

original JABA article by failing to report limitations listed by the original authors. While wozzles may also occur by failing to note limitations that were not listed by the original author(s) (e.g., Witts et al., 2015), the current analysis precluded such judgment calls, relying instead on limitation exclusions that can be verified by other researchers.

### **Chapter 3: Results**

The search conducted found 760 research papers between the years 2010-2019 that cited the target 20 JABA articles. Of these publications, 80 articles found using this search method were excluded from Phase 2. Exclusions occurred as 45 articles found through forward-referencing did not in fact have the target JABA article within their references. In JABA 8 specifically, 25 citing references were listed as open peer commentary, and did not reference the target JABA article at all. In addition to this, 27 of the articles were excluded as they did not include in-text citations and either depicted the original JABA article in a table/graph or had the article listed solely in the references. Finally, eight articles could not be obtained through the interlibrary loan process.

Citing articles from ABA specific journals were then separated and analyzed. To be labeled as an ABA journal, the journal must have reflected its focus on applied behavior analysis in their aims and scope. A total of fourteen journals (reporting as twelve due to changes in the journal name) were examined to determine number of articles that wozzled, number of quotations that wozzled, and differences in wozzling across publication years.

#### **Data Analysis**

In total, 242 articles published in ABA journals were included in the analysis. Results of this analysis appear in Table 1. One JABA article, number six, published by Dowrick and Dove (1980) was excluded from the analysis as only two citing articles met the final criteria and neither article had a corresponding in-text citations. Citing articles per target JABA article ranged from 3-41 with an average of 12.70 articles per JABA article. Out of these 242 articles, 75 were deemed to be wozzled (averaging 31.00% of articles). In total, 389 quotes were



extracted with 91 quotes woozling (averaging 23.29%). Of the remaining nineteen JABA articles analyzed, JABA articles one, two, and sixteen were not woozled by any citing article quotations. JABA articles ten and eight had the most woozles (40.00-50.00%), yet also had ten or less quotations examined.

Results of the remaining analyses appear in Table 2 and 3. Of the 12 applied behavior analytic journals analyzed, *The Analysis of Verbal Behavior* (TAVB), *Education and Treatment of Children* (ETC), and *Behavior Modification* (BM) produced the most woozles per quotations (50.00-57.14%). Citing articles published in *Behavioural Processes* (BP) did not produce woozles, yet only three quotations were examined from this journal. Woozles per yearly publishing increments were analyzed to determine if any trends appeared. Through 2010-2019, percent of quotations per woozles per journal varied from 0.00-100% when excluding years in which journals did not publish analyzed articles. Although no clear trend appeared, journals often varied greatly in number of woozles identified across years. For example, in *Behavior Analysis in Practice* (BAP), twenty-five journals were evaluated and quotations woozled varied depending on publication year (0.00% in 2010, 20.00% in 2011, 37.50% in 2012, 0.00% in 2013, etc.). Results indicate that journal publication year was not an indicator of percent of woozles identified, and further analysis is required to make more accurate conclusions on this topic (see Discussion section). It is important to note that data in Table 2 and 3 do not isolate individual authors and no analyses were conducted to examine author trends across journals. The goal of analyzing data by journal and yearly increments was to identify how often woozling happened and when, not to shine a spotlight on specific author(s).

## Chapter 4: Discussion

A number of publications have reported wozzles and wozzle effects being present in various fields; however, questions remained if wozzles were present in applied behavior analytic publications. This study examined the current literature citing JABA experimental research articles to determine if wozzles were present. The results demonstrated that wozzles were identified in quotations examined, and their presence varied by journal and across yearly publication increments. Data show that over 30% of articles contained a wozzle, and 20% of all quotations examined (389) were wozzles. Although it is difficult to speculate if these wozzles are harmful, it is important to note that data collected actually underestimate the presence of wozzles. As the analysis did not examine wozzling that occurred when authors stated limitations not listed by the original authors, these wozzles may still be present in the literature and would add to the total number of wozzles appearing in publications. These findings should urge others in the applied behavior analytic field to further examine this phenomena.

Further support of the continued evaluation of this topic stems from data gathered while analyzing quotations for wozzles. Although not the focus of the study, some wozzles appeared to occur in a similar manner for specific JABA articles (potentially exhibiting a wozzle effect). For example, in JABA article nineteen (Iwata et al., 2000), undergraduate students were trained using a treatment package to implement functional analysis procedures. Authors reported that this training package included group training, individual training, and a written quiz. In addition, Iwata and colleagues stated that results should be considered tentatively, as training produced criteria outcomes but participants were never directly assessed to determine if they could implement these procedures with children/clients. Numerous wozzles occurred when the

quotations centered on training used and generalization of the results. Woozles included misrepresenting the training used (primarily being coined strictly as behavior-skills training) and stating that results demonstrated participants could adequately conduct functional analyses in non-analogue settings. The appearance of these similar woozles may be harmless, but further research is needed to determine if and how they impact future publications on these topics.

### **Limitations and Future Considerations**

A limitation to the current study is no intercoder agreement could be obtained. Prior to analyzing the data for woozles, the primary author constructed training materials and delivered them to two ABA graduate student classes at St. Cloud State University. The training materials constructed were either too ambiguous or too arduous, as only one student was able to complete an examination on it and receive 100% accuracy. Obtaining intercoder agreement scores is important in studies, and appears common in the literature (Carr et al., 2014; Heinicke & Carr, 2014; Jones et al., 2020). As such, intercoder agreement scores should be obtained (i.e., coders in 80% or higher agreement throughout phases) prior to readers making conclusive arguments about the percentage of woozles identified in ABA literature.

In the current study, barriers occurred when attempting to retrieve articles that cited the target JABA article. Not all articles identified in Google Scholar actually met inclusion criteria, as some articles found through this searching process did not cite the target JABA article at all in their paper. In addition, although the target JABA article appeared in the references, no in-text citations were available (e.g., only appeared tabularly). Finally, full-text pdfs of some articles could not be obtained. Future research seeking to replicate and/or expand these results may want to evaluate a more reliable method to gathering citing articles.

Another avenue for exploration is the categorization of quotations based on specific qualities. Although not demonstrated in this study, categorization of quotations could lead to a fuller understanding on how quotations are being woozled and which types of quotations are more likely to be woozled. For example, quotations may be categorized as mentioning specific characteristics of the original study (i.e., participants, setting, training implemented, data collection procedure). Systematic categorization of quotations in some way could lead to a deeper understanding of how woozles occur and may be helpful for those looking to identify a woozle effect.

Future research should examine if the way quotations were extracted was a sufficient method for the purposes of identifying woozles. In the current study, quotations were separated if the target reference occurred in consecutive or latter sentences (with the exception of an author elaborating on the reference(s) following a statement). With this criteria in place, a woozle may have occurred and may not have occurred in two separate similar quotations. For example, an author may have stated in their publication that “Behavior skills trianing (BST) is the best method for teaching school personnel behavior-analytic procedures (X, Y, Z).” For the sake of explanation, this was determined a woozle. Authors then state a similar sentence later in the paper such as “(X) study demonstrated that BST was sufficient in teaching school personnel behavior-analytic procedures, yet maintenance data determined effectiveness of training was not withstanding.” Extracting quotations in the manner used in the current study could be viewed as strict and inflexible, as authors initially create a woozle then “unwooze” it later in the paper. Despite this, an argument could be made that a woozle was created regardless, as each quotation appears to claim different findings.

In the current study, a woozle was defined as a citing author misreporting/misrepresenting the target JABA article and its findings by strengthening the original article and failing to note limitations listed by the authors. With this definition in mind, a woozle may also be present by failing to address limitations not stated by the original authors. Although this second criteria was not included in the current study, the addition of it could have led to more woozles being detected. Future research should consider this addition to get a more inclusive count on woozling happening in the ABA literature, as the degree of woozling occurring is likely to be underestimated through the current analysis. On a similar note, the current analysis allowed for examination of woozles in strictly applied behavior analytic literature. Further examination of this topic may be worthwhile to examine the presence of woozles in journals of other fields.

Although individual woozles themselves may be innocuous, their potential to develop into widely held beliefs (a woozle effect) could be damaging to the field. Given the presence of woozles in ABA publications, woozle effects may be occurring without our knowledge. These woozle effects could lead to authors spending resources and time further researching misguided or empirically unsound practices. Practitioners in applied settings may travel down the same route, compromising client progress in the guise of implementing “evidence-based treatment”. It is unclear how woozles are created and equally how woozle effects could impact service delivery and future research. An argument could be posed that replications of previous work might be a safeguard for woozles and woozle effects; however, Locey (2020) stated that despite behavioral science encouraging systematic and direct replication, factors such as failures to replicate, potentially stemming from publication bias towards positive results, may influence research

conducted and published. As a field which prides itself in being data-driven and evidence-based, it should therefore be a priority to examine this topic more completely and determine how this potentially questionable research practice is impacting the field of applied behavior analysis as a whole.

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**Table 1**

*Number of Woozles and Percentages Identified in JABA articles 1-20*

JABA article	# of citing articles	Articles that woozled	Percentage of Woozles	# of quotes	# of quotes that woozled	Percentage of Woozles
JABA 1	10	0	0.00%	17	0	0.00%
JABA 2	7	0	0.00%	9	0	0.00%
JABA 3	3	1	33.33%	7	2	28.57%
JABA 4	10	4	40.00%	10	4	40.00%
JABA 5	17	9	52.94%	36	13	36.11%
JABA 7	9	5	55.55%	16	5	31.25%
JABA 8	9	6	66.67%	15	7	46.66%
JABA 9	10	4	40.00%	18	6	33.33%
JABA 10	3	2	66.67%	4	2	50.00%
JABA 11	17	2	11.76%	22	3	13.64%
JABA 12	3	1	33.33%	6	1	16.67%
JABA 13	16	3	18.75%	25	3	12.00%
JABA 14	11	2	18.18%	16	2	12.50%
JABA 15	15	2	13.33%	26	2	7.69%
JABA 16	4	0	0.00%	4	0	0.00%
JABA 17	22	2	9.09%	29	2	6.90%
JABA 18	18	5	27.78%	25	7	28.00%
JABA 19	41	23	56.10%	73	27	36.99%
JABA 20	17	4	23.53%	31	5	16.13%

*Note.* This table depicts the number of articles and quotations identified, woozles present in articles and corresponding quotations, and percent of woozles rounded to the nearest hundredth in each of the 20 target *Journal of Applied Behavior Analysis (JABA)* articles selected for analysis.

**Table 2***Articles and Quotations That Woozled Across Journals*

Journal	Total Articles	Woozled	Percentage	Total Quotes	Woozled	Percentage
TAVB	5	4	80.00%	7	4	57.14%
ETC	7	3	42.86%	11	6	54.55%
BMO	16	7	43.75%	20	10	50.00%
BAP	25	9	36.00%	32	10	31.25%
JOBM	21	10	47.62%	44	11	25.00%
JABA	78	22	28.21%	121	25	20.66%
BI	34	10	29.41%	66	13	19.70%
JEAB	12	2	16.67%	20	3	15.00%
PR	12	3	25.00%	21	3	14.29%
BAT/BRP	16	3	18.75%%	28	4	14.29%
BA/PBS	13	2	15.38%%	16	2	12.50%
BP	3	0	0.00%	3	0	0.00%
Total	242	75	31.00%	389	91	23.39%

*Note.* This table depicts total number of articles and quotes that woozled and percentage of woozled across journals analyzed. Journal abbreviations are as followed: *The Analysis of Verbal Behavior* (TAVB), *Education and Treatment of Children* (ETC), *Behavior Modification* (BMO), *Behavior Analysis in Practice* (BAP), *Organizational Journal of Behavior Management* (JOBM), *Journal of Applied Behavior Analysis* (JABA), *Behavioral Interventions* (BI), *Journal of the Experimental Analysis of Behavior* (JEAB), *The Psychological Record* (PR), *The Behavior Analyst Today/ Behavior Analysis: Research and Practice* (BAT/BRP), *The Behavior Analyst/ Perspectives on Behavioral Science* (BA/PBS), *Behavioural Processes* (BP).

**Table 3***Percent of Quotes that Woozled across Yearly Publishing Increments*

Journal	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
BAP	2	2	7	1	1	2	3	3	4	0
	2	5	8	1	2	2	5	3	4	0
	0.00%	20.00%	37.50%	0.00%	0.00%	0.00%	40.00%	66.66%	50.00%	0.00%
BMO	1	1	3	1	1	0	0	1	2	6
	1	1	3	1	1	0	0	1	2	10
	100%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	50.00%	70.00%
BI	2	3	4	2	3	5	1	6	3	5
	2	5	11	3	9	14	1	9	6	6
	0.00%	0.00%	0.00%	33.33%	22.22%	21.43%	0.00%	44.44%	0.00%	50.00%
BP	1	0	0	0	0	0	0	0	1	1
	1	0	0	0	0	0	0	0	1	1
	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ETC	2	0	0	2	2	0	0	0	1	0
	2	0	0	2	4	0	0	0	3	0
	50.00%	0.00%	0.00%	0.00%	50.00%	0.00%	0.00%	0.00%	100.00%	0.00%
TAVB	0	0	3	0	1	1	0	0	0	0
	0	0	5	0	1	1	0	0	0	0
	0.00%	0.00%	40.00%	0.00%	100.00%	100.00%	0.00%	0.00%	0.00%	0.00%
JABA	10	12	4	4	2	9	10	5	7	8
	24	16	4	4	2	17	13	9	14	8
	20.83%	31.25%	0.00%	0.00%	100.00%	17.65%	7.69%	22.22%	0.00%	25.00%

**Table 3 (continued)**

Journal	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
	1	1	1	1	4	1	2	3	0	3
	1	1	1	1	5	2	7	9	0	8
JOBM	0.00%	100.00%	0.00%	0.00%	60.00%	50.00%	14.28%	11.11%	0.00%	12.50%
	5	3	0	0	0	0	0	1	2	0
	12	4	0	0	0	0	0	1	2	0
JEAB	0.00%	50.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%
	4	0	0	0	0	1	3	1	2	5
	6	0	0	0	0	2	3	8	2	7
BAT/BRP	33.33%	0.00%	0.00%	0.00%	0.00%	0.00%	33.33%	0.00%	0.00%	14.29%
	4	2	0	0	0	1	0	2	1	2
	4	2	0	0	0	1	0	2	1	2
BA/PBS	50.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
	3	1	1	1	1	2	0	1	1	0
	3	1	1	1	5	4	0	1	3	0
PR	33.33%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%

*Note.* This table depicts number of articles (top) quotations (middle) and percentage of quotations that woozled rounded to the nearest hundredth (bottom) across different publishing journals in yearly increments. Journal abbreviations are as followed: *The Analysis of Verbal Behavior* (TAVB), *Education and Treatment of Children* (ETC), *Behavior Modification* (BMO), *Behavior Analysis in Practice* (BAP), *Organizational Journal of Behavior Management* (JOBM), *Journal of Applied Behavior Analysis* (JABA), *Behavioral Interventions* (BI), *Journal of the Experimental Analysis of Behavior* (JEAB), *The Psychological Record* (PR),



*The Behavior Analyst Today/ Behavior Analysis: Research and Practice (BAT/BRP), The Behavior Analyst/ Perspectives on Behavioral Science (BA/PBS), Behavioural Processes (BP).*