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Have introductory psychology textbooks gotten better at representing psychological science?

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ABSTRACT

Recent scholarship has identified that factual errors have been common in introductory psychology textbooks. These errors tend to be in the direction of making psychological research appear more consistent than it is, as well as promoting viewpoints consistent with politically progressive ideologies. Some famous experiments in psychology have also seen serious questions raised about their validity. Given that these conversations have gone on for about a decade, it is worth considering whether identification of these issues resulted in improved coverage in introductory textbooks. Textbooks were sampled at two time points. Sixteen textbooks were sampled in 2018, and 18 in 2023. Although some improvements are seen from earlier studies, results indicated that errors in textbooks have remained common even after this issue had been clearly identified in the published literature. Misreporting of basic scientific information remains common in introductory textbooks, despite improvements in some areas. Textbook authors should be alert to potential misinformation, particularly related to controversial topics. Introductory psychology teachers may need to be aware that not all information presented in textbooks is true.

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Introductory psychology; textbooks; teaching of psychology

By the beginning of the 2010s, it had become apparent that the teaching of psychology had real flaws. Mainly these came in the form of repeating urban legends and myths about psychology, such as the notion that a woman had been murdered while 38 witnesses watched and did nothing (Manning et al., 2007) or exaggerating the consistency of research fields such as suggesting that media violence exposure was consistently linked to aggressive behavior, when that wasn't remotely the case (Savage & Yancey, 2008). Much of the early scholarship on this issue focused on widespread misrepresentation of specific issues in introductory textbooks. This included questions about the validity of the Stanford Prison Experiment (Griggs, 2014), whether Milgram had failed to report the suspicions of his

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participants (Perry et al., 2020), whether the changes in Phineas Gage's post-accident behaviors had been exaggerated (Griggs, 2015), etc.

However, by the latter part of that decade, research began to emerge that suggested errors. One such example was that these were not limited to only a few issues, but were widespread across coverage in introductory psychology textbooks. Ferguson et al. (2018) examined 24 leading introductory psychology textbooks and found errors were rampant among them. These errors tended to be of two major kinds: the repeating of psychological urban legends and myths (such as the Kitty Genovese parable), or exaggerations of the evidence for certain research fields (such as for media violence).

Subsequent studies have supported this widespread misrepresentation issue in introductory texts. For example, Warne et al. (2018) found misrepresentations of intelligence research to be common in undergraduate textbooks. Bartels and Schoenrade (2022) demonstrated that introductory textbooks often failed to represent the controversies over the Implicit Association Task, often used to measure "implicit racism" despite its questionable validity. Bartels (2019) also demonstrated that the efficacy of antidepressants were often exaggerated in introductory textbooks.

The issue of whether bias in psychology textbooks reflects the underlying overrepresentation of liberals/progressives within the field (Redding, 2001) is an old one (Brown & Brown, 1982). However, recent analysis of introductory textbooks has suggested that political bias continues apace (Bartels, in press).

Taken together, this evidence suggests that issues related to errors and even biases remain common in introductory psychology textbooks. We use the term "misinformation" henceforth to refer to all types of errors, biases, and urban legends in psychological textbooks. However, has there been any improvement over time? Direct comparisons between studies can be difficult given different issues examined and different methods. However, the current paper sought to examine this by examining textbooks in two studies several years apart. Below, we discuss a pilot study to identify core issues for potential misrepresentation, then two studies to examine how common misrepresentations were in introductory psychology textbooks.

Pilot study

The purpose of the pilot study was to identify areas of concern among psychology professors teaching introductory psychology - namely, topics that the professors felt were covered in misinformed ways in textbooks. This pilot testing was undertaken such that the topics considered did not merely reflect the observation of this study's authors.

Methods

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Participants

Participants in the pilot study were psychology professors teaching an introduction to psychology course at four-year colleges and universities in the United States. Participants were randomly selected using the following method. Eight professors were solicited from each of the 50 states. For each state, 8 universities were randomly selected, and from each university, a professor was randomly selected from among those who were ostensibly on the schedule to teach introductory psychology. A total of 393 solicitations were ultimately sent (several professors who were initially identified ultimately informed us that they did not teach introductory psychology). No incentive was offered. Ultimately, we received 34 responses. This recruitment took place in Spring, 2018.

Materials

Participants were sent a questionnaire asking them to identify up to ten areas that they felt were poorly covered in introductory textbooks and, as such, may be misinforming students. The purpose of the study was explained to all participants. Responses were open ended.

Results

From the responses, 11 areas were identified as having high frequency in the responses. These were: (1) The Stanford Prison Experiment, (2) The Tongue Map, (3) Little Albert, (4) Evolutionary Psychology, (5) Repressed/ Recovered Memories, (6) Stereotype Threat, (7) Brain Plasticity, (8) Corporal Punishment, (9) Video Game/Media Violence, (10) Kitty Genovese, and (11) Phineas Gage. These became the topics for consideration in the two main studies. A full detailing of the controversies in each of these areas is presented in Appendix A.

These topics fall into two broad categories. The first is scientific debates such as those for video game violence or stereotype threat, where scholars and empirical evidence disagree. The second is scientific urban legends, such as Kitty Genovese or Phineas Gage, often presented as an illustration of a scientific concept, even though the actual truth of the underlying story may be more nuanced or complex (e.g., the murder of Kitty Genovese was not, in fact, witnessed by dozens of unhelpful witnesses; Manning et al., 2007).

2018. study

Methods

Most recent editions (as of 2018) of 16 textbooks were obtained. An appendix of included textbooks is provided in Appendix B. Attempts were made

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198 199 200 to obtain all relevant textbooks currently in press with major publishers (e.g., Pearson, Worth), although success was dependent upon publisher's advertising and desk copy policies. Two authors rated each of the textbooks for their inclusion of the 11 topics noted above. Topics were rated on a 4-point scale: 1 = highly misinformed, 2 = partially misinformed, 3 = notmisinformed, 4 = not included. Misinformation ratings were assessed in the following manner. For controversial topics (video game violence, evolutionary psychology, etc.) the following metric was used:

- The textbook included only one-sided coverage of a controversial issue. No coverage of the debate was included, and one side was presented as fact.
- The textbook noted the debate in the area, but only peripherally, focusing mainly on one side of the debate. Both sides were acknowledged but the advantage was clearly given to one side of the debate.
- The textbook provided fair, comprehensive and accurate coverage of both sides of the debate.

For scientific urban legends (Kitty Genovese, Phineas Gage) the following metric was used:

- The scientific urban legend was presented as fact.
- The textbook raised some doubts about the authenticity of the story but leant toward presenting it as fact.
- The urban legend was acknowledged as false.

The scientific urban legends differ from controversial topics in that a definitive answer about the truthfulness of the story is known. These metrics are similar to those used by Ferguson et al. (2018).

Differences from Ferguson et al. (2018)

Given the similarities in purpose between the current studies and that of Ferguson et al. (2018), we wished to highlight some major differences. First, the books examined in Ferguson et al. (2018) ranged in publication dates from 2008 to 2013. Whereas, for this first earlier study in the current article, the publication dates ranged from 2014 to 2019. This allowed us to examine changes over time in psychology publishing, particularly as some concerns about accuracy in textbooks came to light, the replication crisis hit psychology, and some fields such as media violence became more contested. The use of a pretest in the current article also allowed for sampling a greater range of potential problem areas than had been possible in Ferguson et al. (2018). Naturally, the pool of available textbooks can change over time, as some authors retire and new authors begin writing. As such, our analysis allows for

a comparison of trends over time in textbook publishing, rather than a direct comparison of specific authors over time.

Results

Interrater reliability for coded responses was .756. Discrepancies were resolved by discussion. Most discrepancies occurred when one rater had difficulty finding discussion of a topic (this was most prevalent for the Kitty Genovese and Phineas Gage urban legends as well as stereotype threat and evolutionary psychology topics, which weren't always in the same chapter or clearly delineated in the index of some books).

Table 1 presents the descriptive data on the quality of coverage in introductory textbooks. As can be seen, results vary by topic, but overall they suggest a fairly high degree of misinformation in introductory psychology textbooks on some topics. Textbooks tended to be best performing on straightforward biological issues such as the Tongue Map, Phineas Gage (albeit often by simply ignoring these topics), evolutionary psychology, and repressed memories. By contrast, textbooks were often poorer in relaying "classic" experiments, such as Little Albert, as well as hot-button social psychology phenomenon, such as stereotype threat and video game violence. Several topics (video game violence, stereotype threat, corporal punishment, evolutionary psychology and Kitty Genovese) carried over from the earlier Ferguson et al. (2018) study using textbooks from 2012. And examination of outcomes suggests modest improvements in these areas over six years, though there is still considerable misinformation.

2023. study

Methods

The methods of Study 1 were repeated with 18 textbooks available in the Spring of 2023. Methods were otherwise identical, allowing for a

Table 1. Percentages of introductory textbooks with highly misinformed, partially misinformed, or not misinformed reporting on controversial issues and scientific urban legends (2018 study).

| Issue | Not Covered | Highly Misl | Partially Misl | Not Misl |
|-------------------------|-------------|-------------|----------------|----------|
| Stanford Prison Exp. | 18.8% | 18.8% | 18.6% | 43.8% |
| Tongue Map | 93.8% | 0% | 0% | 6.3% |
| Little Albert | 0% | 68.8% | 25% | 6.3% |
| Evolutionary Psychology | 0% | 0% | 18.8% | 81.3% |
| Repressed Memories | 6.3% | 0% | 0% | 93.8% |
| Stereotype Threat | 18.8% | 25% | 50% | 6.3% |
| Brain Plasticity | 12.5% | 0% | 0% | 87.5% |
| Corporal Punishment | 12.5% | 18.8% | 37.5% | 31.3% |
| Video Game Violence | 12.5% | 12.5% | 50% | 25% |
| Kitty Genovese | 43.8% | 25% | 6.3% | 25% |
| Phineas Gage | 43.8% | 0% | 0% | 56.3% |

Note: Due to rounding, percentages may not add up to exactly 100%.

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comparison across this 5-year period from 2018 to 2023. Many of the texts were updated versions of textbooks used in the 2018 study, although retired authors, new authors, and changing publisher policies regarding desk copies inevitably had some impact.

Results

Interrater reliability for the second study was .836. As with the first, most discrepancies were related to locating material.

Frequencies for all topics from the 2023 study are presented as Table 2. As with the 2018 study, results varied by topic. With the exception of video game violence and Kitty Genovese, there was a general movement toward covering topics less. This may reflect both a tendency for introductory textbooks to become sleeker to adjust to market trends, as well as recognition that some topics (e.g., Stanford Prison Experiment and Phineas Gage) are no longer the clear illustration of the topics it was hoped they'd illustrate. As for misinformation in coverage, some topics saw marked improvement (e.g., video game violence, stereotype threat, Kitty Genovese), whereas some topics actually got worse in terms of misinformation (e.g., corporal punishment, brain plasticity). Overall results indicated that misinformation in introductory textbooks remains very common, however.

We also provide a table of general trends across the original Ferguson et al. (2018) dataset dating from roughly 2013 through our 2018 set of textbooks and 2023 set. These trends are generally positive from 2013 to 2018, though with mixed findings from 2018 to 2023. Surprisingly, coverage of many topics worsened from 2018 to 2023. In some cases, such as with Phineas Gage, this appeared primarily due to the topic dropping out of textbook coverage altogether, but in other cases, misinformation did appear to worsen.

Discussion

Following our 2018 article detailing misrepresentation of various topics and myths in Introduction to Psychology textbooks, we set out to see if these misrepresentations and myths persist in textbooks from 2023. Moreover, we set out to examine how these same textbooks cover controversial topics such as the effects of media violence. To improve upon our 2018 study, we surveyed a broad swath of Introduction to Psychology educators to solicit their feedback on misrepresentations, biases, and myths in Introduction to Psychology textbooks. Our results indicate a modest improvement since 2018 in some areas, but decline in others. However, it is worth noting that in many instances authors simply avoided the topics, which led to a decline

Table 2. Percentages of introductory textbooks with highly misinformed, partially misinformed, or not misinformed reporting on controversial issues and scientific urban legends (2023 study).

| Issue | Not Covered | Highly Misl | Partially Misl | Not Misl |
|-------------------------|-------------|-------------|----------------|----------|
| Stanford Prison Exp. | 44.4% | 5.6% | 0% | 50% |
| Tongue Map | 88.9% | 0% | 5.6% | 5.6% |
| Little Albert | 22.2% | 72.2% | 5.6% | 0% |
| Evolutionary Psychology | 27.8% | 0% | 5.56% | 66.7% |
| Repressed Memories | 9% | 0% | 22.2% | 77.8% |
| Stereotype Threat | 22.2% | 27.8% | 22.2% | 27.8% |
| Brain Plasticity | 16.7% | 5.6% | 22.2% | 55.6% |
| Corporal Punishment | 16.7% | 38.9% | 27.8% | 16.7% |
| Video Game Violence | 0% | 16.7% | 38.9% | 44.4% |
| Kitty Genovese | 27.8% | 11.1% | 16.7% | 44.4% |
| Phineas Gage | 61.1% | 0% | 16.7% | 22.2% |

Note: Due to rounding, percentages may not add up to exactly 100%.

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in "not misinformed" scores. As such, not all negative scores in Table 3 necessarily indicate an increase in misinformed coverage, though for the case of corporal punishment in particular, a true increase in misinformation was noted. On a positive note, we did find a handful of instances in which authors actually discussed the myths and misrepresentations.

The highest misrepresentations tends to be for items that are usually canonical to the history of psychology (Little Albert) or biases that touch upon sensitive topics for which there may be cultural or political divides (e.g., spanking). Although not the focus of our analyses, given the largely monolithic nature of progressive politics in psychology, there is a risk textbook misinformation may also reflect political biases (Bartels, in press).

In many cases, textbook authors simply avoided potential myths (e.g., the tongue map). We would encourage textbook authors to not ignore these myths and misrepresentations; rather we encourage them to see these as teaching opportunities, wherein they can discuss the myths and controversial topics within the context of how science evolves over time.

Although we use the term misinformation to indicate misleading content in psychology textbooks, we are careful to note that this is not meant to imply intention. Misinformation could originate from many sources. For instance, for media violence, authors were likely reflecting not their own bias, but an ideological bias among primary sources for which citation bias had been remarkably common for a time (Ferguson, 2020; Savage & Yancey, 2008). Authors may simplify matters to generate excitement from students, or merely to not get bogged down in methodological controversies. These can all reflect various cognitive biases on the part of textbook authors without implying any intent to engage in political indoctrination (though Bartels, in press, has alleged precisely this in other analyses).

Compared with Ferguson et al. (2018) there are reasons for optimism. Overall, misinformation seemed to have decreased in many areas. For example, related to media/video game violence, outright misinformation was reported at 50% in Ferguson et al. (2018). In our study that had

Table 3. Percentage change in not misinformed estimates across 2013, 2018, and

| Issue | 2013 to 2018 | 2018 to 2023 |
|---------------------------|--------------|--------------|
| Stanford Prison Exp. | | 6.2% |
| Tongue Map | | 7% |
| Little Albert | | -6.3% |
| Evolutionary Psychology | | -14.6% |
| Repressed Memories | | -16% |
| Stereotype Threat | 6.3% | 21.5% |
| Brain Plasticity | | -31.9% |
| Corporal Punishment | 18.8% | -14.6% |
| Media/Video Game Violence | 12.5% | 19.4% |
| Kitty Genovese | 12.5% | 19.4% |
| Phineas Gage | | -34.1% |

Note: Figures are reported for 2013 for those topics covered in Ferguson et al. (2018). Change scores represent changes to the "Not Misinformed" category.

dropped to 12.5% in our 2018 study and 16.7% in our 2023 study. Coverage of issues such as the Kitty Genovese urban legend showed a similar improving trend. This wasn't universal. For instance, coverage of corporal punishment did not markedly improve. However, this does suggest that textbook authors, in the main, are open to new information during the replication crisis era.

To the best of our knowledge, no formal psychology group or guild has any initiative specifically designed to address misinformation in textbooks. The closest may be the American Psychological Association's Introductory Psychology Initiative. However, these appear more focused on the structure of teaching of introductory psychology, such as developing the five pillars of psychology, than addressing misinformation in textbooks per se. It could be helpful for groups such as the APA or Society for Teaching of Psychology to take more direct interest in this matter.

For future research, it might be interesting to consider if it's possible to do some kind of blinded rater version of this study. However, it is not clear how to ask raters to assess for misinformation without the purpose of the study becoming clear. Nonetheless, we encourage scholars to consider novel solutions.

In conclusion, potential misinformation remains a problem for the teaching of psychology. Misinformation may come from several sources: a desire to make psychology seem exciting and important, political, and social advocacy biases, or failure to consider both sides of controversial research areas such as video game violence. However, our students deserve the full truth, even if it is muddy, politically inconvenient, or uncertain. Psychology should consider more deeply how to represent the often difficult and unclear nature of human behavior to students in an honest manner.

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No potential conflict of interest was reported by the author(s).



Informed consent

All research described within passed local IRB and was designed to comport with federal standards for human participants research included proper informed consent.

Funding

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Data availability statement

Data for this project does contain identifying information. All data are available from the authors by request.

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Appendix A

Stanford prison experiment

Philip Zimbardo's influential Stanford Prison study, took normal college-aged males and randomly assigned them to be "prisoners" or "guards" in his fictitious prison. As reported, within days, the prisoners were very submissive, and the guards were very sadistic. However, recent evidence shows that Zimbardo coached the "guards" to exert psychological control over the "prisoners." (Le Texier, 2019). Moreover, some of the participants reported that they changed their behavior to "help" the study. Griggs (2014), also detail other instances in which the facts do not fit the myth.

Tongue map

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The misconception about there being a map of the tongue, with different parts of the tongue tasting different tastes, originated from an article in 1901 by Harvard professor Dirk Hanig. Although for many years this was taught in various disciplines, it has repeatedly been proven false. (O'Connor, 2008).

John Watson and Little Albert

The Little Albert study is a famous study wherein John Watson and Gloria Raynor use classical conditioning to teach Albert (an orphan) to fear small white objects. This story has been used repeatedly as an example of classical conditioning in a naturalistic setting. Many years later, Ben Harris attempted to track down Albert to see if he still feared white objects. As part of this process, Harris decided to read the original article by Watson and Raynor, and much to his disappointment, he discovered that Watson and Raynor were actually unsuccessful at training Albert to fear objects (Harris, 2011).

Evolution and mate choice

While most would agree that evolution played a role is shaping human behavior and thoughts, this area of psychology is not free from controversy (Geher, 2022). In 2014, Winegard, Winegard, and Deaner found eight different evolution-based errors in textbooks related to sex and gender. Given the controversy, some authors may shy away from the topic and rather focus on a more standard explanations of mate choice.

Repressed/recovered memories

One of the oldest concepts in psychology is Freud's concept of repressed memories. According to his theory, repeated exposure to trauma (e.g., childhood abuse) can lead to those memories being repressed into the unconscious mind, and thus cause no anxiety. There is a belief in the clinical community that these repressed memories can be recovered through therapy. However, this line of thinking has led some researchers to claim that these "recovered memories" could be fictitious and brought about via suggestions from the therapist. In the laboratory, it has been shown that researchers can create "false memories" of mildly traumatic events (Strange & Takarangi, 2012)

Stereotype threat

Stereotype threat is reduced performance due to your knowledge of a stereotype against your group. This phenomenon has been used to explain performance differences between high and low socio-economic population (Croizet & Claire, 1998). The concept of stereotype threat has been used to explain differences between genders, races, and individuals from different economic backgrounds. However, Walton et al. (2013) found that the typical

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finding in which Black students perform worse than White students disappeared when the questions were framed as being nonevaluative, as opposed to evaluative of verbal ability. Also see Jussim et al. (2016) for a review of some of the controversy surrounding stereotype threat research.

Brain plasticity

More than 100 years ago Spanish physician and Nobel Prize-winner posited the neuron doctrine, which stated that neurons do not regenerate. However, in the 1960s Joseph Altman and others found evidence for neural growth in brain regions associated with learning and memory (Altman & Das, 1966).

Corporal punishment

Larzelere and Kuhn's (2005) meta-analysis of 25 years of research found that conditional spanking was associated with better outcomes than 10 of the 13 alternative disciplinary strategies that they tested. There were no differences with the remaining three strategies. On the other hand, in a meta-analysis of 50 years of research on spanking, Gershoff and Grogan-Kaylor (2016), found that the more children are spanked the more they are aggressive, anti-social, and defiant. Clearly there are disagreements with the outcome of spanking. However, most textbooks do not show favorable outcomes when it comes to spanking.

Video game violence

Regularly, after tragic events such as the Sandy Hook shooting, the question of whether media violence contributes to the increased societal aggression arises. Scholarly opinion and scientific evidence on this topic are very divided (see Australian Government, Attorney Generals Department, 2010 for a comprehensive review of the topic). Although, early on, scholars often proclaimed a consensus on the impact of video game violence on aggression, later preregistered research suggested that this field was part of psychology's larger replication crisis, with preregistered studies generally failing to support effects (see Ferguson, 2020).

Kitty Genovese

Perhaps one of the most famous myths is the story of Kitty Genovese. As reported in many textbooks, Kitty was murdered in full view of various witnesses who did not try to help Kitty. This story is used as a demonstration of the bystander intervention effect. Unfortunately, this story has been proven wrong (Manning et al., 2007). The murder did occur; however, some of the witnesses who viewed the event did call the police and attempted to help Kitty. In addition, the number of actual witnesses was much smaller than reported in many textbooks. This myth may have originated from an inaccurate newspaper article that appeared days after the event.

Phineas Gage

Phineas Gage was a railroad foreman, who survived an accident in which a metal tamping rod was driven through his skull, destroying much of his left frontal lobe. Most accounts



report major changes in his personality and behavior, and friends reported that he was a totally different man. However, there is evidence that after the accident, Phineas traveled to a foreign country (Chile), to run a long-range six-horse stagecoach (Macmillan, 2000), clearly demonstrating that he was not as incapacitated as is depicted in many textbooks.

Appendix B

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