Correcting the Record on Watson, Rayner and Little Albert:

Albert Barger as 'Psychology's Lost Boy'

Russell A. Powell and Nancy Digdon

Grant MacEwan University

Ben Harris

University of New Hampshire

Christopher Smithson

Darlington, MD

Russell A. Powell, Department of Psychology, Grant MacEwan University; Nancy Digdon, Department of Psychology, Grant MacEwan University; Ben Harris, Department of Psychology, University of New Hampshire; Christopher Smithson, Darlington, MD.

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Correspondence concerning this article should be addressed to Russell A. Powell, Department of Psychology, Grant MacEwan University, P.O. Box 1796, Edmonton, Alberta, Canada T5J 4S2. E-mail: PowellR@macewan.ca

Abstract

In 1920, John B. Watson and Rosalie Rayner (1920) attempted to condition a phobia in a young infant named "Albert B." In 2009, Beck and colleagues proposed that Little Albert, as he is now known, was actually an infant named Douglas Merritte. More recently, Fridlund, Beck, and others (2012) claimed that Little Albert (Douglas) was neurologically impaired at the time of the experiment. They also alleged that Watson, in a severe breach of ethics, probably knew of Little Albert's condition when selecting him for the study and then fraudulently hid this fact in his published accounts of the case. In this article, we present the discovery of another individual, Albert Barger, who appears to match the characteristics of Little Albert better than Douglas Merritte does. We examine the evidence for Albert Barger as having been Little Albert, and, where relevant, contrast it with the evidence for Douglas Merritte. As for the allegations of fraudulent activity by Watson, we offer comments at the end of this article. We also present evidence concerning whether Little Albert (Albert Barger) grew up with the fear of furry animals as Watson and Rayner speculated he might.

Keywords: Little Albert, John B. Watson, phobias, fear conditioning

Correcting the Record on Watson, Rayner and Little Albert : Albert Barger as 'Psychology's Lost Boy'

For almost a hundred years, John B. Watson and Rosalie Rayner's (1920) report of conditioning a phobia in a young infant has survived all attempts to characterize it as provocative but unconvincing. In that study, they exposed a young infant named "Albert B." to the presentation of a rat paired with a loud noise, following which he reportedly became afraid of the rat as well as other furry animals and objects. The results seemingly confirmed their hypothesis that conditioning was the basic process involved in the development of human fears. Despite several weaknesses in the study (Harris, 1979; Samelson, 1980), many behaviorists have since claimed it as their heritage and used it to support claims of clinical and theoretical relevance (e.g., Bolles, 1979; Seligman, 1971). Then, in 1979, this journal published Harris's argument that the study—poorly designed and uninterpretable—was best seen as a piece of "social science folklore" (p. 151).

When Harris (1979) titled his article "Whatever Happened to Little Albert?," he was being ironic. Gently prodding those fixated on a baby from 1920, he tried to shift the discussion from a biographical to a historical assessment of how Watsonian behaviorism came in and out of fashion (Harris, 1980). Psychologists, he said, should stop fussing over the fate of a baby who may or may not have developed a phobia. Rather, they should view the various tellings and retellings of the "Little Albert" story as reflecting the changing values and theories in the field.

Although historians of psychology often followed this suggestion (e.g., Todd, 1994), some psychologists continued to focus upon the fate of Little Albert (e.g., Weiten, 2001). This reached a climax thirty years later when Hall Beck and colleagues announced in this journal that they had used census records, family lore, and other evidence to find "psychology's lost boy," an infant named Douglas Merritte (Beck, Levinson, & Irons, 2009). Unfortunately for those

interested in his long-term development, Douglas died a few years following the experiment, developing hydrocephalus in 1922 and dying in 1925.

While Beck et al.'s (2009) discovery generated considerable interest (e.g., DeAngelis, 2010; Townsend, 2011), others questioned whether Douglas really was Albert (Harris, 2011; Powell, 2010, 2011; Reese, 2010). Beck and Irons, however, along with two new co-authors, not only defended their choice of Douglas, but also proclaimed that Albert, whom Watson described as healthy from birth, was in fact severely ill (Fridlund, Beck, Goldie, & Irons, 2012). Initiated by Fridlund's suspicion that Douglas may have had hydrocephalus from birth, they examined the film clips of Little Albert and observed numerous deficits suggestive of neurological impairment. Their observations were seemingly confirmed when newly unearthed medical documents revealed that Douglas began displaying symptoms of hydrocephalus soon after birth. Fridlund et al. also alleged that Watson very likely knew of Douglas's impairment when selecting him for the study and then fraudulently hid this fact in his published accounts of the case.

The resulting portrait of John B. Watson is, to say the least, troubling. As Fridlund explained in the APA's *Monitor on Psychology,* ". . . the Little Albert study has always led us to consider basic issues of experimental ethics. But now it forces us to confront deeper, more disturbing issues like the medical misogyny, the protection of the disabled and the likelihood of scientific fraud" (DeAngelis, 2012, p. 12). But we (the first three authors of this article) wondered if these accusations were justified. From a historical perspective, we were concerned about the plausibility of this new, revisionist view of Watson, his ethics and research. From an empirical perspective, we wondered if the data that Fridlund et al. (2012) marshaled were convincing. Additionally, with the assistance of a professional genealogist (the fourth author of this article), we searched for an alternate candidate for Little Albert.

In this article, we present the results of that investigation, principally the discovery of another infant, Albert Barger (later full name William Albert Martin, 1919-2007), who we believe matches the characteristics of Little Albert better than Douglas Merritte does. We examine the evidence for Albert Barger as Little Albert, and, where relevant, contrast it with the evidence for Douglas Merritte. We also question the allegation that Watson may have fraudulently misrepresented Albert's health status. Finally, we share details from Albert Barger's life that speak to the question of whether he (if he was Little Albert) grew up with a fear of furry animals as Watson and Rayner (1920) speculated he might.

In preparing this article, we recognized the impossibility of addressing every uncertainty surrounding a poorly documented study conducted 95 years ago. Arguments and counterarguments can be raised for almost any historical possibility, as the prevalence and persistence of conspiracy theories readily demonstrate. Fortunately, Occam's razor, with its preference for explanations requiring the fewest assumptions, is often an effective antidote in such cases and may be highly applicable in the present case.

Searching for Little Albert

Finding the Son of a Wet Nurse

Watson and Rayner (1920) stated that Albert B.'s mother was a wet nurse in the Harriet Lane Home for Invalid Children, a pediatric facility attached to Johns Hopkins Hospital. It was also where wet nurses and their babies resided, several of whom participated in Watson's research program (Watson & Watson, 1921). Thus, our first step in finding a new candidate for Little Albert would be to find a child whose mother, like Douglas Merritte's, worked as a wet nurse in the Harriet Lane Home around the time of the Watson and Rayner experiment (1919-1920).

In conducting our search, we used as a starting point information uncovered by Beck and Levinson in their investigation (Beck et al., 2009). On January 2, 1920, a federal census taken of staff members living at Johns Hopkins Hospital listed three women working as "foster mothers" (U.S. Bureau of Census, 1920), a term which Levinson realized might encompass wet nurses. One of these was Arvilla Merritte, whose child, Douglas, became the focus of Beck et al.'s investigation. However, another foster mother, 16-year old Pearl Barger, also attracted interest because her last name began with "B", suggesting that Albert B. might have been Albert Barger. But despite an extensive search, Beck and colleagues were unable find any evidence that Pearl had a baby with her during her residence in the hospital.

In our own search for Albert, we decided to further investigate the possibility of Pearl's motherhood. Our first break came when we found a genealogical document posted on the internet on the history of the Martinek family in Baltimore (Orrell, 1997). It described a Charles Martinek marrying a Pearl Barger in 1921. Pearl was described as being born in 1903, which would almost certainly have been the birth year of the 16-year old Pearl Barger listed in the census record. The passage also indicated that Pearl and Charles had 3 children, one of whom was named "Albert (Bubbles) Martinek."

Needless to say, the name Albert piqued our interest. Unfortunately, the passage did not indicate when the children were born. But it did indicate that Charles preferred to use the name "Martin," from which we were able to determine that a Pearl Barger and a Charles Martin had been married in 1921. As well, a search of the Baltimore City birth index revealed that a Pearl and Charles Martin had given birth to a baby (no name indicated) in 1919—two years prior to the aforementioned marriage (Department of Health and Mental Hygiene, 1919). A search of the newly released 1940 U.S. census then revealed that a Charles Martin was living in Baltimore in

that year with three children, the oldest being "William A." (U.S. Bureau of Census, 1940). He was listed as 21 years old, the same age as the unnamed child born to Pearl and Charles Martin in 1919. Following this, we were able to determine that Pearl had died in 1939 (Obituary for Pearl F. Martin [nee Barger], 1939, November 21), that William A. stood for William Albert, and that he had died in 2007.

Next, we contacted William Albert Martin's niece and heir, Dorothy Parthree, and acquired copies of his birth and death certificates (Health Department City of Baltimore, Certificate of Birth, 1919; Department of Health and Mental Hygiene: Division of Vital Records, 2007). We also arranged for a search of the Alan Chesney Medical Archives at Johns Hopkins University, which revealed that his medical file from the hospital still existed. With Dorothy's support, the senior author of this article was granted permission by the Johns Hopkins Hospital Privacy Board to view this file (at which time he also viewed Douglas Merritte's medical file[1]). The file indicated that Pearl Barger was employed as a wet nurse in the Harriet Lane Home from May 14, 1919, to March 31, 1920 (Barger Medical File [BMF]). It also contained detailed records of her son's health status, and allowed us to track the period of their residence in the hospital.

Little Albert's Name

A difficulty that Beck et al. (2009) faced in proposing that Douglas Merrite was Little Albert was that his name does not match the name, "Albert B.," reported by Watson and Rayner (1920). They assumed that Watson typically did not use pseudonyms when referring to the infants he studied—such as "Thorne," "Lee," and "Nixon" (Watson, 1919b)—because it was not an ethical requirement to do so at that time, the first formal code of ethics not being adopted until the early 1950s (American Psychological Association, 1953). Thus, it was not uncommon in that

era for researchers to make little or no effort to hide the identities of their participants (Danziger, 1988; Stern & Stern, 1924). Watson (1925/1924) himself provided an explicit example of this practice when, in a discussion of jealousy, he described incidents involving what were almost certainly his two sons, William and James, referring to them as "B." (for Billie) and "Jimmie," respectively. Further evidence of this practice, with adult participants, can also be found in the 1920 volume of *Journal of Experimental Psychology*, in which the Watson and Rayner article appears. Out of 13 articles that discussed results for individual participants, five articles listed the participants' full names—two of which also used their initials—while another five articles used what appear to be initials or partial names (as in "Pow" for Powell). In only three articles were participants rendered clearly anonymous by the use of numbers or letters of the alphabet (A, B, C, etc.).

In arguing that Douglas Merritte was Little Albert, Beck et al. (2009) assumed that Watson had uncharacteristically used a pseudonym in this case, which they proposed was based on Albert Broadus, a famous minister after whom Watson had been given his middle name. But no such speculation is required for our new candidate for Little Albert. William Albert Barger (later, William Albert Martin) was, according to his niece, called "Albert" by most people who knew him. Most important, his name was recorded in his Harriet Lane Home medical file as Albert Barger, the only indication of William occurring on the intake form where his name was written as "Albert (W) Barger" (BMF, May 14, 1919). Thus, in contrast to Douglas Merritte, Albert Barger's name is consistent with the name, Albert B., reported by Watson and Rayner (1920) . (To avoid confusion, throughout the remainder of this paper, we will refer to him as "Albert Barger" as an infant and "Albert Barger/Martin" as an adult, and refer to the infant in Watson and Rayner's study as "Little Albert," "Albert," or "Albert B.")

Little Albert's Age

A critical piece of information that Beck et al. (2009) used in their investigation was the apparent start date for the Watson and Rayner (1920) study. On December 5, 1919, Watson (1919a) wrote a memo indicating that he would soon begin filming his research with infants, presumably including the Albert study. Significantly, Douglas Merritte was born on March 9, 1919, which means that on December 5 (the date of Watson's memo), he was 8 months 26 days old—the exact reported age of Little Albert at the time of the baseline session.[2] For this reason, Beck et al. first came to regard Douglas as a strong candidate for having been Albert, noting that such a close correspondence to Albert in age as well as in gender (male) and mother's occupation (wet nurse) was extremely unlikely to have been duplicated by another infant living in the hospital at that time.

One lesson we learned during the course of this investigation is that it is often wise to expect the unexpected when conducting historical research. Albert Barger's birth certificate lists his birth date as March 9, 1919, the same birth date as Douglas Merritte's. However, the birth date on his death certificate is March 10, 1919, which, according to his niece, is also the one assumed to have been his birth date by family members. Most important, this is also the birth date recorded in his medical file (BMF, May 14, 1919), and therefore the date most likely to have been used by Watson and Rayner to calculate his age. We will therefore, for the purposes of this discussion, assume March 10, 1919, to have been Albert Barger's birth date. This in turn means that his baseline session would have occurred on December 6, 1919, the day following the date on Watson's memo.[3]

Although both Douglas and Albert Barger were the correct age to have been Little Albert around the time the study likely began, this is not the case for when the study ended. According

to Watson and Rayner (1920), Little Albert was "taken from the hospital" (p. 12) on the day of the final session when he was 12 months 21 days old. Douglas Merritte, however, was discharged from the hospital on March 24,1920, when he was only 12 months 15 days old: "Mother took child away against advice . . . . The child was to have been discharged in a week's time" (Merritte Medical File [MMF]). By contrast, Albert Barger left the hospital on March 31, 1920—"Mother suddenly decided to leave the hospital" (BMF)—when he was exactly 12 months 21 days old, the same age as Little Albert when he left the hospital.

In summary, if we assume that the baseline session was filmed in early December, 1919, then both Albert Barger and Douglas Merritte were the correct age to have been Little Albert. However, Albert Barger's age at time of discharge from the hospital precisely matches the reported age at which Little Albert left the hospital, whereas Douglas's age at time of discharge does not.[4]

Physical Comparisons

Facial Similarities. Beck et al. (2009) were able to obtain a portrait photograph of Douglas Merritte, taken as an infant, that they compared to stills of Little Albert taken from the film (Watson, 1923; comparison images of Douglas and Little Albert have been posted on the web at http://www.littlealbertactivity.com/Biometric%20analys(9B77D9F6).html). After noting certain similarities, which were confirmed through a biometric analysis, they concluded that "no features were so different as to indicate that Douglas and Albert could not be the same individual" (p. 612). In a somewhat stronger statement, however, Fridlund et al. (2012) argued that any alternative candidate for Little Albert must "have also looked like Douglas" (p. 29).

The proposed similarities between Douglas and Little Albert include similar shaped eyebrows, an upturned nose, and a 'Cupid's bow mouth'" (Beck et al., 2009, p. 611). The latter

two, however, are relatively common features in babies (Morris, 2005; Stool, Vig, Petrone, & Hymer, 2003), while the similarity in eyebrows is, in our opinion, debatable. More significant is the fact that Douglas appears to have had a chin dimple (or cleft chin). Chin dimples are typically inherited, and vary widely in prominence and in prevalence across populations (McDonald, 2011). Consistent with this, Beck et al. noticed a dark vertical line near the center of Albert's chin in certain stills they examined. But they also acknowledged that this might simply be the result of shadowing. In keeping with this possibility, other stills of Albert reveal a noticeable lack of a chin dimple (see Figure 1).

Beck et al. (2009) did not mention differences in their comparison of the Albert and Douglas facial images. In our opinion, the most notable difference is in the eyes, with Douglas displaying an unusual wide-eyed stare. An explanation is provided by Douglas's medical condition, which Beck et al. were unaware of when they first examined the photo. Protruding eyes with a downward rotation (known as "sunset eyes," with the sclera being visible above the cornea) is a common symptom of hydrocephalic swelling of the anterior frontalis (Smith & Martin, 2009). Mention of this symptom can be found in Douglas's medical records on April 17, April 19 and June 25, 1919, as well as on August 27, 1920, when he was brought back to the hospital for further treatment. The records also indicate that continued bulging of the anterior frontalis had occurred from late November, 1919, onward (Fridlund et al., 2012) and that an X-ray in early December—around the time of the baseline session—had revealed "very marked hydrocephalus" (MMF, December 6, 1919). Although Douglas's age at the time of the portrait is unknown, if sunset eyes usually accompanied hydrocephalic swelling of his head, this symptom would likely have been evident during the time of the experiment. By contrast, Little Albert's eyes, as seen in the film, are if anything relatively small.

We know of no surviving photographs of Albert Barger as a child. His niece, Dorothy, reported that all such photographs may have been lost in a house fire. But she did have six photographs of him as an adult, three of which are shown in Figure 1. Unfortunately, facial features can change considerably as one ages from infancy to adulthood, to the point where it is often impossible to recognize an adult from a baby picture (Stool et al., 2003). Hence, any apparent similarities or differences between the facial images of Albert Barger/Martin and Little Albert must be treated with extreme caution. An exception is the fact that both Little Albert and Albert Barger/Martin appear to have attached earlobes, an inherited feature that one typically retains throughout life (McDonald, 2011). However, the prevalence of attached earlobes in "Caucasoids" is estimated to lie between 20% and 35% (Williams & Hughes, 1987). Therefore, its presence in both Albert Barger/Martin and Little Albert does not constitute particularly strong evidence that they were the same individual. (Douglas is wearing a bonnet in his portrait such that his ears are not visible.)

In conclusion, the images of both Douglas Merritte and Albert Barger/Martin share certain similarities with the film images of Little Albert. One difference not previously noted is the appearance of Douglas's eyes, which was likely symptomatic of his hydrocephalus (bearing in mind, though, that there is no direct evidence that he displayed this symptom during the time of the experiment). Beyond this, the limited number of photographs for Douglas and Albert Barger/Martin, the poor quality of the Little Albert images, and large difference in age between Little Albert and Albert Barger/Martin at the time of the photos, in our opinion, undermines the usefulness of any photographic comparison for establishing Little Albert's identity.

Head Circumference. As further evidence of similarities between Douglas and Albert, Fridlund et al. (2012) estimated Albert's head circumference by comparing the width and length

of his head to objects of a known size in the same film images, and then entering the figures into the formula for an ellipse. This resulted in an estimated circumference of 46.1 cm for Albert at the time of the baseline session (at 8 months 26 days of age) compared to a recorded circumference of 46.5 cm for Douglas at 12 days prior to baseline (at 8 months 14 days of age; MMF, November 23, 1919). Fridlund et al. noted that the two measurements are "remarkably similar" (p. 20) with a difference of less than 1%. However, head circumference in infants can also be usefully compared in terms of percentiles. Using modern growth charts (World Health Organization, 2006), Albert's estimated circumference at baseline is at the 80th percentile, while Douglas's reported circumference, 12 days prior to baseline, exceeds the 90th percentile. Moreover, by December 14, at only 9 days past baseline, Douglas's head circumference had increased to 48 cm (MMF), which is a 3% difference from Albert's and at the 99th percentile. Add to this the questionable assumption that head circumference can be accurately assessed from film images in this manner—which Fridlund et al. acknowledged—and this analysis, in our opinion, provides no substantive evidence that Douglas was Little Albert. (There is no record of Albert Barger's head circumference during the time of the experiment. It was measured only on intake when he was 2 months 4 days of age, at which time it was recorded as being approximately ["~"] 15 inches [BMF, May 14, 1919]. Fifteen inches lies at the 15th percentile for that age, while 15.5 inches lies at the 50th percentile.)

Body Weights. Body weights were frequently recorded for both Albert Barger and Douglas Merritte throughout their stay in the hospital, which provide a potential point of comparison with Little Albert. Watson and Rayner (1920) reported that Albert weighed 21 pounds at *9 months* of age, while Watson (1925/1924) reported that he weighed 21 pounds at *11 months* of age. Despite the discrepancy, a recorded weight of around 21 pounds at either 9 or 11

months of age for either Douglas Merritte or Albert Barger would support the possibility of that infant being Little Albert. This would especially be the case if the match occurred at 9 months of age, given that this is the age reported in the original article. Additionally, a weight of 21 pounds at 9 months greatly exceeds the average weight for that era—for example, Baldwin (1921) reported a mean weight of 18.2 pounds (*SD* = 1.56 pounds) for a sample of 100 White American infants—and is just below the 75th percentile on modern growth charts (World Health Organization, 2006). It would thereby be consistent with Little Albert's appearance in the film, which even Fridlund et al. (2012) described as "obese [and] chubby" (p. 10).

Albert Barger's medical records indicate that he weighed 21 pounds 15 ounces at 8 months 25 days of age (BMF, December 5, 1919), which is the day before his baseline session would have occurred and conceivably when Watson and Rayner enquired about his weight. He weighed 22 pounds 6 ounces at exactly 9 months of age (BMF, December 10, 1919), and 24 pounds 8 ounces at 11 months of age (BMF, February 10, 1920). By contrast, Douglas Merritte weighed only 14 pounds 15 ounces at 8 months 26 days of age (MMF, December 5, 1919), 14 pounds 14 ounces at 9 months of age (MMF, December 10, 1919), and 16 pounds 8 ounces at just over 11 months of age (MMF, February 14, 1919). At no point during the time of the experiment did he weigh 21 pounds, his last recorded weight being 19 pounds 1 ounce at 12 months 15 days of age (MMF, March 24, 1919).

Thus, Albert Barger's weight at around 9 months of age is a much closer match to Little Albert's reported weight than is Douglas Merritte's. Douglas's weight is not only significantly different from Little Albert's, it is also well below what was considered a minimum healthy weight of 16 pounds in that era (Faber, 1920) and would be in the bottom one percentile on modern growth charts (World Health Organization, 2006). This severely low body weight—

likely the result of Douglas's frequent vomiting up to that time (Fridlund et al., 2012)—stands in stark contrast to Little Albert's chubby appearance in the film, making it difficult to reconcile these two infants as being the same individual. Conversely, Albert Barger's weight at 9 months exceeds the 85th percentile on modern charts and is very much consistent with Little Albert's chubby appearance.

Physical Health. Watson and Rayner (1920) claimed that Little Albert was "healthy from birth and one of the best developed youngsters ever brought to the hospital" (p.1). Consistent with this description, Albert Barger's medical record at time of intake describes him as child who "had always been well" and who was "very well developed, very well nourished" (BMF, May 14, 1919). He remained healthy over the next several months, but contracted diarrhea in early October (BMF, October 3, 1919). He fully recovered, though, by early November (BMF, November 5, 1919), with his records including such comments as "quite vigorous" (BMF, November 24, 1919), "condition excellent" (BMF, December 8, 1919), and "active and bright" (BMF, December 20, 1919). Then, in late January, he contracted measles and an inner ear infection ("otitis media;" BMF, January 24-29, 1920), which was followed by a "persistent cough" (BMF, February 6 and 14, 1920). Finally, in mid-March, he contracted a cold ("rhino-pharyngitis;" BMF, March 14, 1920). A few weeks later, however, at time of discharge, he was judged to be in "excellent condition" (BMF, March 31, 1920).

In general, the medical records portray Albert Barger as a relatively healthy and robust child who nevertheless experienced some common childhood illnesses during his stay in the hospital.[5] Significantly, none of these illnesses overlapped with the dates on which experimental sessions were likely to have occurred, with the possible exception of the persistent cough. In that regard, visual evidence that Little Albert may have been less than completely healthy around that

time can be found in the film segment of what was probably the third test session, which likely occurred in late February, 1920. At various points in the film, Albert's head bobs up and down as though he is either coughing or sneezing. This suggests that he may have been experiencing some respiratory difficulties at that time, which would be consistent with the respiratory symptoms ("persistent cough") noted in Albert Barger's medical records just prior to that time.

Similar to Albert Barger, Douglas Merritte was described as a "well nourished and well developed" child when first admitted to the hospital on April 19, 1919 (MMF). Unlike Albert Barger, however, he had been referred to the hospital with symptoms of hydrocephalus, from which he eventually died a few years later (Fridlund et al., 2012). At first glance, Douglas's medical condition appears to contradict Watson and Rayner's description of Little Albert as a healthy child, thereby refuting the possibility that he was Albert. As noted earlier, however, Fridlund et al. reported finding evidence of neurological impairment in Albert, especially in the film (Watson, 1923), that is consistent with Douglas's condition. If their assessment is accurate, then Douglas's medical condition actually provides evidence that he was Albert. But our own analysis of the film, which is presented below, does not support that conclusion.

Neurological Impairment. The film Fridlund et al. (2012) used to assess Albert's neurological impairment—*Experimental Investigation of Babies* (Watson (1923)—is silent, shot from a single camera angle, and somewhat blurry. Little Albert appears in the film for a total of five minutes, with the footage being comprised of 34 brief clips, varying in duration from 2 to 31 seconds (M = 9 seconds, SD = 6 seconds). The clips are spliced together and organized into 3 episodes. The first shows his motor development at 8 months 26 days of age, including his handling of crayons, blocks, and a marble, and crawling on hands and feet. The second features his emotional reactions to stimuli he had not previously seen, such as fire, a dog, and a rat. The

third, filmed a few months later, portrays his post-conditioning reactions to the rat as well as other furry animals and objects. No indication is given of what Albert did before or after each clip. A reasonable assumption is that off-task behavior was generally omitted from the film, which, given the choppiness of the film and the brevity of the clips, may have been frequent. More important, no footage shows how Albert behaved in his typical day-to-day interactions when not in the artificial setting of the study. Thus, the first concern is the extent to which the film provides a representative sampling of Albert's behavior, without which, any appraisal of neurological status is highly speculative.

In particular, the film's compilation of extremely short clips, presumably selected to illustrate his interactions with the stimuli being shown to him, may help explain Fridlund et al.'s (2012) observation that Albert appeared "stimulus bound," focused only on the stimuli in front of him with little or no attention paid to the people around him. On this basis, Fridlund et al. concluded that Albert shows a complete lack of "social referencing," which is looking toward adults when confronted with a novel or feared stimulus (Campos & Stenberg, 1981). And although there are instances in the film where Albert appears to look toward Watson (see Figure 2), Fridlund et al. dismissed these because "no evidence is provided of mutual gaze, or that Albert sees Watson" (p. 8). But the use of such a stringent criterion for determining where Albert is looking seems unjustified given the limited camera angle and the poor quality of the film. It is also problematic for Fridlund et al.'s own conclusion; if one cannot say with certainty that Albert is gazing into Watson's eyes, neither can one say with certainty that he is not gazing into his eyes.

Another concern is that Fridlund et al.'s (2012) interpretations of Albert's filmed behavior failed to adequately consider the context. They claimed that Albert appears abnormally

passive, showing “no startle to animals” (p.10) and being “less reactive to both the flame and the dog than you’d expect” (p. 27). But Watson (1919b) reported that other children of wet nurses were also noticeably unresponsive when shown stimuli they had never before seen, including animals, both in the laboratory and at a zoo. “Our results seem to show conclusively that when children are brought up in an extremely sheltered environment … [such] fears are not present” (Watson & Watson, 1921, p. 509). Unless one also questions the accuracy of these reports, then Albert`s muted reactions to stimuli were typical of other infants in his cohort, and in comparison to them, would be considered normal.

Fridlund et al. (2012) also claimed that Albert was significantly language delayed. This conclusion was based on a failure to find any sign of Albert using language in the film, and the fact that Watson and Rayner (1920) mentioned only a single instance of Albert talking. But aside from the obvious difficulties of assessing language use from a silent film—which Fridlund et al. acknowledged—both the film and Watson and Rayner’s report were intended to document Albert’s interactions with the stimuli being presented to him. There would be no reason to document Albert’s use of language—a largely social behavior—unless it was somehow relevant to his reactions to the stimuli. The lack of language in the film and the report is therefore not sufficient grounds for concluding that language was missing from Albert’s behavioral repertoire. Furthermore, the criteria that Fridlund et al. used for normal language development—that Albert, by that age, should have been “chattering and already possess a several word vocabulary” (p.7)—seems far too stringent when compared to Gesell’s (1925) language norms for that era, as well as to Bridges’ (1933) study of language development in institutionally raised infants.

Another difficulty concerns Fridlund et al.’s (2012) assessment of Albert’s motor skills, which was highly selective. For example, they noted that Albert “‘scooped at the [play] block….

very primitive scooping, normally there's pincer mid-line play by 8 months'" (Goldie quote, p. 10), and that "Albert's movements and responses suggest neurological abnormality [including] hand-scooping in lieu of pincer-grasp movements" (p. 11). As shown in Figure 3, however, Albert actually uses a variety of grasps, which is typical for infants of that age (Butterworth, Verweij, & Hopkins, 1997). Significantly, this includes a well-coordinated *pincer grasp* when handling a small marble. It also includes a *forearm supination grasp* (with right arm rotated palm up) when examining a dog's paw, which, according to the *Hawaii Early Learning Profile* (Parks, Celeste, Gold, Dannemiller, & Donaldson, 1992), typically develops at 11-12 months of age. This suggests that Albert's fine motor skills may, in some ways, have been advanced for his age.

Fridlund et al. (2012) also failed to note that Albert, at age 8 months 26 days, was already mobile—i.e., crawling on hands and feet (also shown in Figure 3)—which suggests that he was on the cusp of walking. This ability seems incongruent with Fridlund et al.'s report that Douglas Merritte's motor deficits were so severe that he never learned to walk. By contrast, Albert Barger's medical file, at 9 months 10 days old, describes how he "supports himself standing in the crib" (BMF, December 20, 1919).

Our re-examination of Albert's behavior on film—and especially his grasping of the small marble—also calls into question Fridlund et al.'s (2012) contention that Albert, like Douglas, was visually impaired. Moreover, Douglas's medical file indicates that he was not just visually impaired, but was instead, at least at certain times, completely blind. One week prior to when the baseline session would have occurred, the examining physician commented that he "does not appear to see, does not follow objects " (MMF, November 28, 1919). Similar comments were recorded 4 months earlier—"apparently does not see. No attention paid to surroundings" (MMF, June 23, 1919)—as well as 9 months later, when he was brought back to

the hospital for further treatment (MMF, August 27, 1920). Douglas at that time still had pupillary responses to light, which led Fridlund et al. to conclude that he probably had "blurred or double vision [or] difficulty in attending to and apprehending objects . . . which would produce behavior much like Albert exhibited on film" (p. 18). This conclusion, however, contradicts the findings of the examining physician who wrote: "He seems to be totally blind as he takes no notice of objects" (MMF, August 27, 1920). By contrast, Albert's behavior on film indicates that he does see and does take notice of objects.

Fridlund's co-author, Goldie, who is a pediatric neurologist, tentatively diagnosed Albert as having autism, retardation, or "leukodystrophy [a deterioration of myelin in the brain]" (Fridlund et al., 2012, p.11). But the problem of normal infants being misdiagnosed as having behavioral and neurological conditions has been well documented (see Valentine, 1965; Werner, Dawson, Osterling, & Dinno, 2000). In the Werner et al. study, a pediatrician with expertise in developmental disabilities viewed films of infants at 8 to 10 months of age and, on this basis, judged whether they had autism. The pediatrician accurately detected autism in 14 of 15 children later diagnosed with it, but also had a high false positive rate, incorrectly diagnosing autism in 8 of 15 normal children. Werner et al. cautioned that

> the period between 9 and 12 months is a time when many new behaviors are just beginning to develop. Many complex behaviors related to social, emotional, and communicative functioning begin to emerge around 8-9 months, but these behaviors, such as advanced use of joint attention and communicative vocalizations are not solidly in place until at least age 1. There may still be significant variation in the development of these skills in the normal population at this time, making it more difficult to detect group differences. (p. 161)

In accordance with this problem, the Diagnostic and Statistical Manual of Mental Disorders (DSM, version IV-TR) cautions that autism is difficult to diagnose in infants because "manifestations of this disorder in infancy are more subtle and difficult to define than those seen after age 2 years" (American Psychiatric Association, 2000, p. 73). The conditions under which Goldie was asked to evaluate Albert—viewing a poor quality film and with no initial awareness of the infant's sheltered upbringing—may have exacerbated these diagnostic difficulties. In conclusion, our own analysis of the film reveals no substantive evidence that the film displays anything other than what Watson and Rayner (1920) reported, which is that Albert was a well-developed, but emotionally stolid, child who, as Watson would have predicted, displayed little or no fear of objects and animals he had never before seen. As such, the film evidence more strongly supports the possibility of Albert Barger, rather than the seriously ill Douglas Merritte, as being Little Albert.

Discussion

As shown, considerable evidence supports the possibility that Albert Barger was the real Little Albert. The strongest consistencies between him and Little Albert are: (1) his mother's occupation as a wet nurse in the Harriet Lane Home around the time of the study, (2) his first name and last initial, which matches the name "Albert B." reported by Watson and Rayner (1920); (3) his age around the time the experiment likely began, (4) his precise age on the day he was discharged from the hospital, (5) his body weight at 9 months of age, which is consistent with Little Albert's chubby appearance in the film and a close approximation to the weight reported by Watson and Rayner, and (6) his medical records which indicate that he was a very well developed and generally healthy child, especially during the first part of his stay in the hospital.

Although Albert Barger appears to be a strong candidate for Little Albert, there nevertheless remain some inconsistencies. We have already discussed the fact that he had some common childhood illnesses during the latter part of his stay in the hospital, whereas Watson and Rayner (1920) claimed that he was healthy from birth. Another inconsistency concerns Watson's (1925/1924) comment that he and Rayner were unable to conduct further tests upon Albert after the final session because he was "shortly afterwards adopted by an out-of-town family" (p. 132). Both Powell (2010) and Reese (2010) noted this as a difficulty in the case for Douglas Merritte as Albert insofar as he remained with his mother after leaving the hospital (see also reply by Beck et al., 2010). But the adoption story is also a difficulty for Albert Barger insofar as he, like Douglas, appears to have grown up with his mother. Unlike Douglas, however, it remains possible that he was informally adopted for a time after he left the hospital and was later reunited with his mother, perhaps after she and Charles married. As Beck et al. noted, it was not unusual in that era for children to be placed with family or friends in times of difficulty. Nevertheless, although this inconsistency does not refute the possibility of Albert Barger having been Little Albert, it is important to recognize that inconsistencies exist and that the evidence for Albert Barger as Little Albert, though seemingly strong, is not conclusive.

As for Douglas Merritte, the only significant consistencies between him and Little Albert, in our opinion, are his mother's occupation as a wet nurse and his age around the time the experiment likely began. Major inconsistencies include (1) his name, which does not match the name Albert B., (2) his age at time of discharge from the hospital, which was 6 days younger than the age at which Little Albert reportedly left the hospital, (3) his extremely low body weight at 9 months of age, which is markedly different from Little Albert's reported weight and chubby appearance in the film, and (4) his severe illness which contradicts Watson and Rayner's (1920)

comment that Little Albert was healthy. Together, these inconsistencies cast serious doubt on the possibility that Douglas Merritte was Little Albert. Moreover, a key argument by Fridlund et al. (2012)—that their analysis of the film reveals that Little Albert, like Douglas, was neurologically impaired—does not, in our opinion, stand up to scrutiny.

If, as appears to be the case, Douglas Merritte was not Little Albert, then neither was Watson guilty of the fraudulent behavior alleged by Fridlund et al. (2012). It is true that Watson left Johns Hopkins University because of his extramarital affair with Rayner (Buckley, 1989), but there is no evidence that he committed fraud in his scientific endeavors. This is not to say that he was entirely accurate and objective when reporting on his scientific endeavors. As previously noted, Watson had a worrisome tendency to change details of the Little Albert experiment across his various accounts of it, and he and Rayner may have greatly exaggerated the effectiveness of their conditioning procedure (Harris, 1979; Samelson, 1980). Confirmation bias, however, is a common tendency and is a more plausible form of misrepresentation in Watson's case than that claimed by Fridlund et al.—that he deliberately chose a neurologically impaired child for his study and then explicitly lied by stating that he was healthy. In a radio interview (Coomes, 2013), Beck himself noted that, even in the 1920s, misreporting of one's research was considered a serious offense among scientists. Is it plausible that Watson would have taken such an extreme risk, including distributing a film (Watson, 1923) in which the child could easily have been identified and the lie potentially revealed?

Unfortunately, the Albert-as-neurologically-impaired story has been widely propagated, with psychology textbooks now starting to incorporate the story into their next editions (e.g., Kalat, 2014). Thus, even if our refutation of the impairment story becomes generally accepted, several cohorts of students are likely to be exposed to what is most likely a false rendition of the

Little Albert saga. What will be the long-term effect of this on their views of behaviorism and of psychology as a whole?

Ironically, Beck et al. (2009) claimed that they were able to dispel many of the myths surrounding Little Albert during their investigation. But it is quite possible that a new myth has now been established—that of Albert as a severely ill child and Watson as the recklessly unethical behaviorist who experimented upon him. If so, given the persistence with which such myths seem to survive (Harris, 2011)—no doubt assisted by the fertile ground laid by Watson's extramarital affair with Rayner (e.g., Buckley, 1989)—we suspect this new myth will be around for a considerable period of time.

Epilogue: Did Little Albert Grow Up with a Fear of Furry Animals?

Toward the end of their article, Watson and Rayner (1920) speculated about the possibility of Albert growing up with a fear of furry animals and objects. In doing so, they assumed that their conditioning procedure had been effective, which many writers over the years have likewise assumed (e.g., Seligman, 1971). As previously noted, however, there are reasons to believe that their conditioning procedure was not effective. Harris (1979), for example, pointed out that Albert's fear reactions to the rat and other animals were relatively weak and inconsistent, requiring additional pairings with the loud noise during later test sessions to maintain the conditioning. We predicted that, if we did find Little Albert, he would be unlikely to have acquired a lasting fear of animals as a result of the experiment.

Thus, we were greatly surprised when Albert Barger/Martin's niece reported that her uncle had an aversion to dogs and to animals in general. It does not appear to have been a particularly strong aversion—sometimes being the focus of good-natured teasing by his wife—but it was significant enough that family dogs would be kept in a separate room when he visited.

He also very much disliked the sound of barking and would sometimes clasp his hands over his ears when he heard it.

Although the aversion to animals appears, at first blush, to suggest that Watson and Rayner's (1920) conditioning procedure had been effective, the situation is more complicated. The aversion appears to have been more of a dislike of animals than a phobic-like fear. Dorothy also describes her uncle as being a very fastidious individual (e.g., always well dressed and well groomed), and perhaps animals represented a level of messiness that he disliked. She also remembers her uncle telling her that, as a child, he once had a pet dog and had acquired his dislike of dogs as a result of the distress he felt after witnessing the dog get killed in an accident. Thus, although one cannot rule out the possibility that his aversion to dogs and other animals might, at least partially, represent the residual effects of the conditioning procedure to which he had once been exposed, there exists no clear evidence in that regard.

The question might also be asked whether the Watson and Rayner (1920) experiment had an adverse effect on Little Albert's personality. There again appears to be no clear evidence for this in Albert Barger/Martin. Despite his aversion to animals, his niece describes him as a generally easy going individual. For several years, he worked as a salesman for a major airline company, which presumably required good social skills. He loved reading and music, and was a good singer. Nevertheless, he also experienced some difficulties in life. Dorothy heard that he once had a "nervous breakdown," but this occurred around the time of a failed business venture as well as marital difficulties that resulted in a divorce. However, he and his former wife soon resolved their differences and remained best friends for the rest of their lives. Interestingly, Dorothy laments the fact that her uncle died before finding out that he may have been the famous Little Albert, as she is certain he would have found the whole affair fascinating. (So far as she

knows, he was unaware of being born out of wedlock and spending his first year in a hospital, Pearl and Charles apparently having kept this a secret from their children.)

Although Watson and Rayner (1920) ended their article by speculating that Albert might grow up to have a phobia of furry animals and objects, they also claimed that they chose Albert for the study because, given his stable personality, they would do him "relatively little harm by carrying out such experiments" (p. 2). From the descriptions we have of Albert Barger/Martin's life, this latter prediction appears to have been correct. On the other hand, we can neither confirm nor deny the possibility that his aversion to animals represented, to some extent, the lingering effects of the conditioning procedure to which he had once been exposed—which is perhaps a fittingly ambiguous outcome for a poorly designed and poorly reported experiment conducted almost a century ago.

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Footnotes

[1]Gary Irons, Douglas Merritte's next of kin, provided a letter to the Johns Hopkins Hospital Privacy Board granting permission for the senior author to view and make notes from Douglas's medical file (which was a copy of the original and small portions of which, it should be noted, were unreadable). In accordance with Mr. Irons' request, we hereby acknowledge that his granting us access to the file does not mean that he either concurs or disagrees with any statements or conclusions we make in publications utilizing this information. All information from Albert Barger's medical file, as well as personal information about him, that has been included in this article has been approved for publication by his niece and heir, Dorothy Parthree.

[2]According to Watson and Rayner (1920), the baseline session, which assessed Albert's reactions to various objects and animals he had never before seen, took place when he was 8 months 26 days old. The conditioning session, in which the presentation of a rat was first paired with a loud noise, took place when he was 11 months 3 days old. This was followed by four test sessions—at 11 months 10 days, 11 months 15 days, 11 months 20 days, and 12 months 21 days of age—that assessed Albert's fear of the rat as well as other furry animals and objects. The first test session included additional conditioning trials to the rat, while the third test session included conditioning trials to a rabbit and a dog.

[3]The later birth date may be significant. Watson's memo of December 5, 1919, indicated that he had not yet started filming and was waiting for the weather to warm, the laboratory being too cold for the babies. Powell (2011) confirmed that the weather was indeed cold on that day, which means that the baseline session likely occurred sometime after December 5. If so, Douglas Merritte would have been too old by that time to have been Albert. Fridlund et al. (2012), however, countered by pointing out that Albert was reported to have aged a month and a day in a 30-day period between the final two sessions (Watson & Rayner, 1920; Watson & Watson,

1921) and that this could only have happened if 1920 was a leap year (which it was). By calculation, this in turn means that the baseline session could have occurred no later than December 5. But this conclusion is incorrect. For example, in the case of Albert Barger, the baseline session would have occurred on December 6, 1919, the second-to-last session would have occurred on March 1, 1920 (at 11 months 20 days of age), and the final session would have occurred on March 31, 1920 (at 12 months 21 days of age). Hence, Albert Barger would have aged a month and a day in the 30-day period between the final two sessions, despite the baseline session occurring after December 5.

[4]Although Fridlund et al. (2012) speculated that Douglas's mother, Arvilla, might have continued to work as a wet nurse until the end of the month and kept Douglas with her in her room at the hospital, they presented no evidence to support that possibility. It also seems unlikely that Arvilla would have denied her son recommended medical care if she would be remaining in the hospital for another week.

[5]Diarrhea was especially prevalent in hospitalized infants at that time, due in part to the type of mixed diet (an early type of formula and breast feeding) that they were typically fed (Weaver, 2010).

FACIAL IMAGES OF LITTLE ALBERT AND ALBERT BARGER/MARTIN

Figure 1. From the left, three stills of Little Albert during the baseline session, and three photographs of Albert Barger/Martin. The far left still of Little Albert shows evidence of a chin dimple similar to Douglas Merritte's; the still next to it, however, shows no evidence of a dimple, suggesting that the dimple in the first still may have been the result of shadowing. There is no evidence of a chin dimple in Albert Barger/Martin's images; however, both Little Albert and Albert Barger/Martin appear to have attached earlobes. (All images of Little Albert are from Watson, J. B. (Writer/Director). (1923). *Studies upon the behavior of the human infant: Experimental investigation of babies.* University Park, PA: PennState Media Sales. Photographs of Albert Barger were provided courtesy of Dorothy Parthree.)

POSSIBLE EXAMPLES OF SOCIAL REFERENCING

Figure 2. During the baseline session, Albert repeatedly looks toward Watson and once toward Rayner. The middle still especially seems to suggest eye contact between Albert and Watson, but Fridlund et al. (2012) rejected it as too ambiguous.

EXAMPLES OF LITTLE ALBERT'S MOTOR SKILLS

Figure 3. At left, Albert using a "primitive" *scooping (palmar) grasp* as described by Fridlund et al. (2012). However, (continuing from left) he also uses more advanced grasps, including a *radial index grasp* when handling large play blocks, a *pincer grasp* when handling a small marble, and a *forearm supination grasp* (right hand rotated palm up) when examining a dog's paw. He also demonstrates an ability to *bear walk* (crawl on hands and feet), which suggests that he was on the verge of walking—whereas Douglas Merritte reportedly never walked.