

# History of Psychology

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## Correcting some Pavloviana regarding "Pavlov's bell" and Pavlov's "mugging"

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Recently, three investigators questioned whether Pavlov ever used a bell. Pavlov's use of a bell in salivary conditioning was reported in *Science* in 1906, and similar use of a bell was shown in a film produced in Pavlov's laboratory in 1925–26. In 1923, Pavlov visited the United States and described using a bell in Larmarkian research that was published in *Science*, *The Scientific Monthly*, and in the *Quarterly Journal of Experimental Physiology*. During this 1923 visit, Pavlov was robbed in New York's Grand Central Station in a manner that may be described aptly as a mugging. Published accounts have differed significantly, and some appear fabricated. This article tries to set the record straight on "Pavlov's bell" and Pavlov's "mugging."

Historical anecdotes, such as Pavlov's being robbed in New York City, enrich lectures and textbooks and, indeed, they are often best remembered. So, it is important that they be reported accurately. Further, when the authenticity of such historical symbols as "Pavlov's bell" is wrongly questioned, and given that the questioners believed they had a reasonable basis on which to doubt whether Pavlov had ever used a bell, it is important that documentation confirming Pavlov's use of a bell be clearly on record in readily available sources. I have reported evidence pertaining to both Pavlov's mugging and Pavlov's bell, but it was done in sources that do not have conventional archival status (Thomas, 1994a, b, c) and it seems important to place the information on record where retrieval by future scholars is more likely to occur. Since the two items being considered here are minimally connected, they will be addressed separately.

### PAVLOV'S BELL

Littman (1994) pursued Catania's (1994) challenge to find evidence among Pavlov's writings to confirm whether Pavlov had used a bell.

Neither Catania nor Littman found such evidence. Given that neither found evidence to confirm Pavlov's use of a bell, it was reasonable for Littman to ask who was responsible for the proverbial "Pavlov's bell" that became so associated with Pavlov's research. Littman argued that Bekhterev and Watson were responsible for the popular view of Pavlov's bell. More recently, in his textbook, *The Essentials of Conditioning and Learning*, Domjan (1996) began his chapter "Pavlovian Excitatory Conditioning" with a series of tantalizing statements, the first of which was, "Did you know that: Pavlov never rang a bell in his experiments" (p. 37). Domjan did not document this assertion, although several times in succeeding pages he referred to the "proverbial Pavlov's bell."

Pavlov did use a bell, and this was well reported in English-language scholarly journals and in the popular press. Perhaps the first report in an English-language journal was that of his October 1, 1906, Huxley lecture at Charing Cross Hospital in London. The lecture was published in the November 16, 1906, issue of *Science* (Pavlov, 1906) based on a prior report in the *British Medical Journal*. Regarding a bell as a conditioned stimulus (CS), the following was included in the *Science* article:

From our experiments it is very evident that the intensity of the stimulation is of essential importance. In contradistinction to this, we must state with regard to acoustic impressions that very powerful stimuli, such as the violent *ringing of a bell* were not, in comparison to weaker stimuli quick to produce conditioned increase of function in the salivary glands. (p. 616; emphasis added)

Standing alone, this is not a strong recommendation to use a bell as a CS since there was no explicit account of the bell's effectiveness at lower intensities. However, Pavlov's continued and effective use of the bell as a CS was reported to American readers in the July 23, 1923, issue of *Time* magazine. The *Time* article gave an overview of Pavlov's research, including the following:

At regular feeding times a bell was rung, and after several repetitions it was found that the sound of the bell alone, without the food, stimulated the saliva. This process known as a "conditioned reflex" has been repeated in scores of forms by physiologists and psychologists on both animal and human subjects. (p.21)

Thus, it would appear that the successful use of a bell as CS had continued after 1906 and was well established by 1923.

Further dissemination of information regarding Pavlov's use of the bell as CS resulted from a film, *Mechanics of the Brain*, that was produced in Pavlov's laboratory in 1925–1926 by the well-known film artist Vsevolod Pudovkin (see Nichtenhauser, 1953, p. 46). Regarding this film and the

effectiveness of a bell as CS, another article about Pavlov and his work in the March 28, 1928 issue of *Time* magazine included the following:

The process of changing an unconditioned reflex into a conditioned reflex was clearly demonstrated to an audience of psychiatrists at the Academy of Medicine last week in a cinema entitled "The Mechanics of the Brain." The cinema showed *dogs which dripped saliva at the sound of a bell . . .* (Conditioned reflexes, p. 20; emphasis added)

In 1970, this film was listed as being available from the British Film Institute, the Canadian Film Institute, and from Brandon Films, Inc., New York City (Schneider, 1970). According to Nichtenhauser (1953), the original film was silent and was otherwise deemed unsatisfactory for scientific purposes, and another film, *The Nervous System*, was produced under the guidance of Pavlov himself in 1934–1935.

A more "notorious" use of a bell as CS by Pavlov was reported in three well-known English-language journals in 1923 as well as in a fourth less-known one, namely, the *Bulletin of the Battle Creek Sanitarium* (for reference to the latter, see Razran, 1958). Three of the four were published versions of two lectures that Pavlov gave in 1923 in the United States. One lecture was given at the Battle Creek (Michigan) Sanitarium, and, in addition to being published in the Sanitarium's *Bulletin*, it was also published in *Science* (Pawlow, 1923a). The other American address was given at the University of Chicago and was published in *The Scientific Monthly* (Pawlow, 1923b). A fourth published English account (1923) of this Lamarckian research was Pavlov's address at the closing session of the International Congress in Physiology at Edinburgh, Scotland. This address was published in a supplement to the *Quarterly Journal of Experimental Physiology* (Pavlov, 1923). This particular and repeated reference to a bell CS is intrinsically interesting and is worth repeating. The most complete account was published in *Science*, and it is quoted here in full.

The latest experiments (which are not yet finished) show that the conditioned reflexes, *i.e.*, the highest nervous activity, are inherited. At present some experiments on white mice have been completed. Conditioned reflexes to electric bells are formed, so that the animals are trained to run to their feeding place on the ringing of the bell. The following results have been obtained: The first generation of white mice required 300 lessons. Three hundred times it was necessary to combine the feeding of the mice with the ringing of the bell in order to accustom them to run to the feeding place on hearing the bell ring. The second generation required, for the same result, only 100 lessons. The third generation learned to do it after 30 lessons. The fourth generation required only 10 lessons. The last generation which I saw before leaving Petrograd learned the lesson after 5 repetitions. The sixth generation will be tested after my return. I think

it very probable that after some time a new generation of mice will run to the feeding place on hearing the bell with no previous lesson. (Pavlov, 1923, pp. 360–361)

Pavlov later doubted this research, and he essentially retracted it in a footnote that he apparently authorized (see McClearn, 1963) for the Anrep translation of *Conditioned Reflexes* (Pavlov, 1927; p. 285). See Razran (1958) for further evidence of Pavlov's attempts to dissociate himself from this misadventure into Lamarckianism.

To summarize, Pavlov's use of a bell CS was reported in English-language journals as early as 1906, and the bell's effectiveness as a CS was reported widely in well-known English-language publications in the 1920s. No doubt Watson, Bekhterev, and others helped to popularize the symbolic status of "Pavlov's bell," but clearly their contribution was based on Pavlov himself having used a bell.

### PAVLOV WAS "MUGGED"

Ivan Pavlov and his son, Vladimir, were robbed of all their funds (apparently between \$1,500 and \$2,000 in cash) soon after they boarded a train in Grand Central Station sometime between July 7 and 14, 1923. Reports of this robbery in popular and scholarly literature have varied significantly, and obvious fabrication occurred in one of the most-cited accounts (Gerow's 1988 reprinted collection of articles about psychology that had appeared in *Time* magazine from 1923 to 1988). Hence, Pavlov was "mugged" literally and figuratively.

Before presenting some of the accounts believed to be erroneous, the two accounts deemed to be most reliable will be presented. They provide the standard against which the accuracy of other accounts may be assessed. The first report of the robbery appeared in *The New York Times* on July 14, 1923. *The New York Times* did not specify the date of the robbery, but presumably it was between July 7 and July 14 because Pavlov was in Chicago on July 5 (see footnote in Pawlow, 1923b) and in Battle Creek, Michigan, on July 7 (see footnote in Pawlow, 1923a). According to *The New York Times*:

He [Ivan Pavlov] and his son [Vladimir] had hardly taken their seats on the train in the Grand Central Station when three men set upon the old man and snatched from him his pocketbook containing all their funds, \$2,000. The porter and the son attempted to catch them but were unsuccessful, and the old man and his son left the train perplexed as to what they should do in their predicament. They finally got in touch with Dr. P. A. Levene of the Rockefeller Institute, and since then have been the guests of the institute. ("Russian scientist," 1923, p. 3)

*The New York Times* article was reprinted verbatim in *Science* on July 23, 1923 (see "Professor Pavlov's," 1923), and the July 23, 1923, issue of *Time* magazine briefly reported that Pavlov "was robbed at the Grand Central Terminal of \$2,000" (see "Pavloff," 1923, p. 20).

Apparently, at the time of the robbery, the Pavlovs were boarding the train to New Haven, Connecticut, en route to visit Walter B. Cannon in Cambridge, MA. They did visit Cannon within a few days after the robbery and described it to him. Subsequently, in his autobiography, Cannon (1945/1968) wrote about Pavlov's robbery.

At the Grand Central Station they entered an empty coach of the New Haven train and were followed by three rough-looking men. One stood at the door as a guard. While the son was lifting the luggage up toward the rack, the other two seized Pavlov and quickly searched him. They snatched the wallet from a coat pocket of the defenseless man—he was near his seventy-fourth birthday—and before anything could be done, made their escape. In the wallet was over fifteen hundred dollars, possibly the remnant of the American contribution. (p. 185)

The probable sources of the money stolen from Pavlov will be discussed below; apparently, the money stolen was *not* this particular "remnant of the American contribution."

*The New York Times's* and Cannon's (1945/1968) accounts are complementary and consistent, including details not quoted here. The former was a contemporary news report, and Cannon heard the story from Ivan and Vladimir Pavlov within days of the incident. The apparent slight discrepancy between the two reports regarding whether the Pavlovs were standing or seated (assuming Vladimir was standing to place the luggage on the rack) can be reconciled by a reasonable, nonliteral interpretation of *The New York Times* having reported that they "had hardly taken their seats." Thus, it is suggested that *The New York Times's* and Cannon's accounts were contemporary and corroborative and that they provide the standard against which the reliability of other reports should be evaluated.

Further pertaining to the reliability of *The New York Times's* and Cannon's accounts, it is useful to note that according to Cannon, Vladimir [who at that time had a doctorate in physics] "spoke excellent English" (p. 185) and that according to Babkin (1949), Pavlov's student, colleague, and biographer, "Vladimir acted as his father's interpreter" (p. 107). It is reasonable to assume that Vladimir helped provide the reports to the New York police and/or to *The New York Times* as well as to Cannon about the robbery.

Before considering other accounts, a last point that bears on the time of the robbery and the time of the visit with Cannon should be men-

tioned. As noted earlier, Pavlov was in Battle Creek, Michigan, on July 7, and *The New York Times* report of the robbery appeared on July 14. *The New York Times* also reported that Pavlov was sailing for France that same day (July 14). However, Windholz and Koppers (1988; see p. 109) reported that Pavlov actually sailed on July 19. In either case, the visit with Cannon appears to have occurred close to July 14.

Some recent textbooks addressing the history of psychology (e.g., Hothersall, 1995; Schultz & Schultz, 1996) relied on Gerow (1986, 1988) for information regarding the robbery of Pavlov. Gerow (1988) had organized a retrospective issue of *Time* magazine that was a compilation of articles about psychology that had appeared in *Time* from 1923 to 1988. Thus, although the textbooks might cite Gerow, the source of the information was the reprint of a March 19, 1928 article in *Time* magazine. *Time's* 1928 report of Pavlov's robbery is quoted fully below. Written five years after the robbery, it begins with a 2-year error and appears to worsen from there. None of the circumstances described in the *Time* article, except that the robbery occurred within the confines of Grand Central Station in New York City, appear to be related to the circumstances and events described in *The New York Times's* and Cannon's reports of the robbery. Furthermore, the oral statements attributed to Pavlov in the 1928 *Time* article appear to be outright fabrications.

Three years ago [a 2-year error] Pavlov came to America. Confused by rush and roar he sat for a moment on a seat in Grand Central Station, Manhattan. A small handbag containing much of his money lay on the seat beside him and with characteristic absorption in the seething human laboratory around him, he forgot his worldly goods completely. When he rose to go the handbag was gone. It had been taken from under his very nose. "Ah, well," sighed Pavlov gently, "one must not put temptation in the way of the needy." (Conditioned reflexes, p. 20)

None of the other references cited here has provided a clue regarding how this 1928 article in *Time* produced this version of the robbery. As noted earlier, an article in *Time* in 1923 had mentioned the robbery briefly, including \$2,000 as the amount stolen, but it had given none of the details cited in the 1928 article.

Another well-known account of the robbery is in Babkin's (1949) biography of Ivan Pavlov. Babkin erroneously reported the robbery as having occurred in August, 1923 and described it somewhat differently from *The New York Times's* and Cannon's accounts:

As they were boarding the train, several men surrounded Pavlov and began jostling him on the platform of the car. "Voila, [a footnote here stated that Voila was a diminutive for Vladimir] what are they doing to me?" cried Pavlov to his son. "Never mind, never mind—come inside quickly,"

Vladimir called back. When at last they recovered from the bustle, the heat, and the crowds, Pavlov put his hand in his inside jacket and found that the \$800 was missing [a footnote here explained that this was the amount that Babkin remembered, but he acknowledged Cannon's report of more than \$1,500]. [Babkin also noted that]. . . Pavlov had worn a light summer suit, through which his pocketbook could be clearly seen, bulging with money. (p. 107)

Babkin's account of the robbery bears some similarity to Fancher's account as presented in his history of psychology textbook (1979, 1990). However, there are differences, and Fancher's source is unclear. According to Fancher:

All of his money—more than \$800 in small bills—was jammed into a bulky wallet that protruded visibly from his jacket pocket. When Pavlov ventured onto the crowded New York subway, the predictable felony occurred. (1979, p. 300; modified slightly 1990, p. 279)

Except for locating the theft on a crowded subway, Fancher's account is reasonably consistent with Babkin's (1949). Hergenhahn (1992) quoted Fancher's (1990) slightly modified account.

Thus, based on an extensive, but not necessarily complete, survey of recent textbooks in the history of psychology, none of those that include the Pavlov robbery anecdote appears to have used *The New York Times* or Cannon as sources, and the best known source appears to be the interesting but completely flawed 1928 *Time* magazine account.

#### **Where did Pavlov obtain the money that was stolen?**

It may be recalled from the earlier quotation from Cannon that he had speculated that the money stolen from Pavlov was "possibly the remnant of the American contribution." Regarding this American contribution, Cannon (1945/1968) wrote:

At the time of the Russian Revolution, when it was reported that Pavlov was suffering from inability to get food, I was able to collect about two thousand dollars which was sent to Professor Robert Tigerstedt at Helsingfors to provide for Pavlov's needs. Pavlov's son, Vladimir, later testified to the great value of this aid sent by American colleagues. (pp. 184–185)

The Russian Revolution is usually considered to have spanned 1917–1921, and it is unclear precisely when Cannon meant, but other sources cited below show that Pavlov received financial assistance from America in 1921. Incidentally, Tigerstedt was the physiologist who nominated Pavlov for the Nobel Prize that he received in 1904 (Windholz & Kuppers, 1988).

In the context of assistance Pavlov received over the years (at least 1921–1934) from the Rockefeller Foundation and Institute, Windholz

and Koppers (1988) provided information regarding funds that Tigerstedt handled on Pavlov's behalf in 1921. Windholz and Koppers quoted the following from a letter written by Tigerstedt (to whom is unclear) that had been forwarded to the Director of the Rockefeller Institute, Simon Flexner. According to Windholz and Koppers, Flexner received the letter on October 21, 1921, and Tigerstedt's letter referred to his having received a letter from Pavlov on September 8, 1921. Tigerstedt wrote, "Thanks to the assistance from America, which I can fortunately deliver to him [Pavlov] in the form of food, he is doing very well in a material sense" (Windholz & Koppers, 1988, p. 108). Windholz and Koppers also reported that a letter written by Flexner on June 6, 1921 indicated that some money was being forwarded to Pavlov. It is unclear whether Cannon, the Rockefeller Institute, or both were instrumental in providing the "assistance from America" to which Tigerstedt referred.

However, it does not appear that these Cannon-Rockefeller funds were the funds stolen in the Grand Central Station robbery. In addition to Tigerstedt's reported disposition of the funds that he handled on Pavlov's behalf in 1921, Windholz and Koppers (1988) wrote that Ivan and Vladimir Pavlov received \$1,050 from the Soviet government in 1923 towards their American visit and that W. Horsley Gantt was instrumental in raising \$500 for Pavlov that was sent to the Rockefeller Institute and to which the Institute added \$250. According to Windholz and Koppers (1988), Pavlov dated the receipt for this \$750 as June 30, 1922, but they noted:

This receipt is erroneously dated June 30, 1922. It was on July 7, 1923, that the secretary of Dr. P. A. Levene [of Rockefeller Institute and to whom the receipt was signed] sent a memo to E. B. Smith at the Rockefeller Institute enclosing Pavlov's receipt for \$750. (p. 108)

Possibly Pavlov signed it on June 30, 1923. Presumably he did not sign it on July 7, 1923 because, as noted earlier, he was in Battle Creek, Michigan, giving an address (Pawlow, 1923a). In any case, it appears most likely that most of the money stolen from Pavlov in the Grand Central Station robbery was from the \$1,800 Soviet government and the Gantt-Rockefeller contributions. Finally, Windholz and Koppers reported that the Rockefeller Institute came to Pavlov's aid with \$1,000 immediately following the robbery.

#### **Other effects of the robbery**

Ivan and Vladimir Pavlovs' passports were also stolen, nearly preventing the presentation of Ivan Pavlov's address scheduled at the International Congress of Physiology in Edinburgh. (Vladimir actually presented it with Ivan seated animatedly nearby; see Razran, 1958.) At this

point, the July 14, 1923 article in *The New York Times* was premature in its column heading, "Russian Scientist Barred by Britain," as well as in reporting that due to his inability to get his visa renewed at the British consulate, Pavlov "will not be able to attend the Edinburgh Congress" ("Russian scientist," 1923, p. 3). *The New York Times* reporters could not have known on July 14, 1923, that the visa would be granted "while he [Pavlov] was on the high seas" (Razran, 1958, p. 760) and that Pavlov would attend and make a presentation at the International Congress of Physiology in Edinburgh after all.

#### Concluding comments

Anecdotes such as this one about the mugging of Ivan Pavlov are likely to appeal to students, teachers, and other scholars in the history of psychology for their human interest components. In addition, the variations in the mugging anecdote indicate the difficulty of doing historical research and the danger of relying on a single source. Published reports of the mugging anecdote revealed variations in all of its major elements. These are summarized as follows with the fact believed most likely to be correct being listed first: (a) *time*, between July 7 and 14, 1923 versus August, 1923 or some otherwise unspecified time in 1925; (b) *place*, inside the train car versus on the train car platform, in the waiting area of Grand Central station, or in a subway; (c) *mode of robbery*, being physically accosted by two men while a third acted as a lookout versus the robbery going undetected by Pavlov at the time; (d) *amount of money stolen*, from \$1,500 to \$2,000 versus \$800; and (e) *what, if anything, Ivan Pavlov said at the time of the robbery*; compare Babkin (1949) with "Conditioned reflexes" (1928). Such variations in the mugging anecdote cause one to wonder how other historical anecdotes might withstand close scrutiny.

#### Notes

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