

Pluto behaving badly: False beliefs and their consequences

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We exposed college students to suggestive materials in order to lead them to believe that, as children, they had a negative experience at Disneyland involving the Pluto character. A sizable minority of subjects developed a false belief or memory that Pluto had uncomfortably licked their ear. Suggestions about a positive experience with Pluto led to even greater acceptance of a lovable ear-licking episode. False beliefs and memories had repercussions; those seduced by the bad suggestions were not willing to pay as much for a Pluto souvenir. These findings are among the first to demonstrate that false beliefs can have repercussions for people, meaning that they can influence their later thoughts, beliefs, and behaviors.

Negative experiences with others can have consequences. For example, preschool children rejected by their peers have poorer adjustment to school, socially victimized adolescents become more disruptive, depressed people feel worse after being misled, and young adults ostracized by complete strangers show brain activity mimicking signs of physical pain (Eisenberger, Lieberman, & Williams, 2003; Johnson, 2000; Prinstein, Boergers, & Vernberg, 2001). Sometimes negative social experiences with others in childhood have implications that stretch into adulthood. For instance, one study found that girls who have been physically or sexually abused by a family member or peer are also much more likely to have an unintended first pregnancy than girls with no such experiences (Hillis et al., 2004). These examples illustrate that real experiences have consequences. But what if people believed they had such an experience when they never actually did? Is it possible to lead people to falsely believe they had a mildly disturbing social interaction when they were children? What might be the consequences of such a belief? These are the questions we address in the current study.

We know that exposing a person to information about other people's

experiences can make him or her more confident that those experiences really happened. This effect can happen for both pleasant and unpleasant experiences. On the pleasant side, subjects who read phony Disney ads featuring Bugs Bunny came to believe that, as children, they had met Bugs at Disneyland (Braun, Ellis, & Loftus, 2002; Braun-LaTour, LaTour, Pickrell, & Loftus, 2004). Additionally, repeatedly exposing subjects to the fake Bugs ad led to even higher false memory rates (Grinley, 2002, described in Loftus, 2003). Because Bugs belongs to Warner Brothers, not Disney, these are impossible false memories. On the unpleasant side, Mazzoni, Loftus, and Kirsch (2001) convinced subjects that they had had an unpleasant childhood experience. They asked subjects to rate the plausibility of a list of childhood experiences and to report their belief that they had had experiences from that list. On the list were two critical events, both disturbing: nearly choking and witnessing a case of demonic possession. Three months later, subjects read short passages on different topics, including passages about one of the critical events but not the other. A week later, when Mazzoni et al. collected new plausibility and belief ratings, their subjects were more confident that they had experienced the disturbing critical event.

Taken together, these studies show that asking people to read about other people's experiences can increase their confidence that they themselves had those experiences. Yet one might argue that none of these studies misleads subjects about an unpleasant—and frankly inappropriate—social encounter, a criticism made about the past research by some commentators. For example, Freyd (2003) was particularly blunt in her criticisms that the Bugs Bunny studies (Braun et al., 2002; Braun-LaTour et al., 2004) have no bearing on real-life cases of, for example, inappropriate touching. She cautions visitors to her Web site that it is not all that important if subjects falsely believe that they met a cartoon character who never set foot at a Disney park.

I can remember my own children were hugged by some Disney employees in furry suits about a decade ago, but I cannot remember which characters/creatures did the hugging. So what? For me costume identity is not a central detail. (¶ 15)

What is important, Freyd insists, is her "children's experience and reactions to the big furry creatures." For instance, Freyd observes, "I monitored whether the hugging was appropriate." In short, Freyd asks us to keep in mind that there is no evidence that people can be led to falsely believe that they had an inappropriate encounter with a big furry creature. In our study, we set out to do just that: to cultivate a false belief or memory about an unpleasant experience with the beloved and trusted childhood cartoon character Pluto.

There are reasons to think that it would be difficult to plant a false belief or memory about a bad Pluto (see Pezdek, Finger, & Hodge, 1997). For instance, this false information would go against the stereotype of Pluto as the lovable, huggable Disney dog, and research suggests that stereotype-inconsistent information is recalled less well than stereotype-consistent information. In one study, Bodenhausen (1988) found that when people make judgments about a defendant, they elaborate on, rehearse, and pay more attention to evidence that fits with stereotypes of the defendant, largely ignoring evidence that does not fit. Perhaps most interestingly, Bodenhausen's data show that stereotype bias happens when people are exposed to evidence, not when they try to recall it. This study suggests that evidence about a badly behaving Pluto would be processed poorly or even ignored.

Other research suggests that stereotype-inconsistent information is imagined less often than stereotype-consistent information. For instance, Slusher and Anderson (1987) asked subjects to rate how well certain traits were associated with certain occupations. Then subjects read sentences about specific people who held different occupations. They imagined the behaviors of these people and wrote about the traits they had imagined. Subjects were far more likely to generate traits that fit with stereotypes than traits that did not. This research suggests that subjects would be unlikely to generate information about an unsavory Pluto character because it goes against the prevailing positive view of Pluto.

On the other hand, Bodenhausen's (1988) and Slusher and Anderson's (1987) work suggests that it should be possible to cultivate a false childhood memory or belief for stereotype-consistent information, such as an appropriately affectionate Pluto. Research that is particularly pertinent to this topic has been conducted on children. For example, Leichtman and Ceci's (1995) research supports such a hypothesis. In their study, a man named Sam Stone visited children (ages 3–6) at their day care centers. Children were exposed to one of four suggestive conditions about Sam. Before he came to visit, the "stereotype" children had been told that Sam was a caring but clumsy man. The "suggestion" children heard nothing about Sam before he came to visit but afterwards heard misleading information that Sam had done some silly things during his visit. The "stereotype plus suggestion" children heard both the previsit stereotype and the postevent information about Sam. Finally, a control group heard nothing about Sam or his visit. When Sam came to visit, he stayed for a brief time, behaved perfectly well, and then left. Yet when children were interviewed about Sam's visit, the children who were subjected to the negative stereotype and the misleading postevent suggestion reported the most false information. This study shows that when existing stereotypes are accompanied by stereotype-consistent suggestions, children can come

to report those suggestions more than when they are exposed to the suggestions alone.

Even if we could lead people to falsely believe that they had a childhood experience with a bad Pluto, we do not know whether these false beliefs would have consequences. We do know from real-life cases that wholly false beliefs can have social and economic consequences. For instance, former winery executive Gary Ramona lost everything—his family, his friends, his job, and his home—when his daughter came to “remember” that he had abused her for more than a decade, and his wife merely believed that he probably had (Johnston, 1997). Later, Ramona sued his daughter’s therapist for malpractice and prevailed. In several countries, families, health care systems, and insurance companies have spent untold sums of money to cope with the effects of false memories and false beliefs.

We also know from laboratory research that people can be led to believe or remember that they had a bad childhood experience with a certain food; later, they sometimes report consequences of that bad experience. For example, Bernstein, Laney, Morris, and Loftus (2005b) planted false beliefs into the minds of subjects with personalized “computer profiles.” These subjects came to believe that as young children, they had become sick after eating dill pickles or hard-boiled eggs. Later, when subjects were asked to imagine that they were at a barbecue and to rate the likelihood that they would eat certain foods, they indicated less interest in wanting to eat the offending food. A similar result was obtained with a fattening food, strawberry ice cream (Bernstein, Laney, Morris, & Loftus, 2005a). Taken together, these false food memory studies show that people who came to believe that they had a negative childhood experience with a certain food will claim that, as adults, they would avoid it.

Yet the research has not yet addressed whether leading people to falsely believe or remember a negative social experience in childhood can also lead to consequences. To address these issues, we asked subjects a number of questions about Pluto and Disneyland, including whether Pluto had ever licked their ear. We also asked them about their attitudes and likely spending patterns at Disneyland. Then we fed some of them information about Pluto behaving inappropriately at Disneyland, and we fed other subjects information about Pluto behaving appropriately at Disneyland. We suggested to both groups that they probably had an encounter with Pluto in childhood. Then we gathered new responses to our original questions. We predicted that some subjects would come to believe or remember that they had a negative childhood experience with Pluto, contrary to the expectations of critics of earlier false memory research. Moreover, we explored whether, as a result of that belief, subjects would report different attitudes and likely spending patterns at Disneyland.

EXPERIMENT

METHOD

Subjects

The subjects were 404 undergraduates at the University of California, Irvine who received course credit for their participation. To participate, subjects had to be between the ages of 18 and 30 and had to have been to Disneyland at least once. To fulfill an institutional review board requirement, subjects who did not meet the criteria were not excluded until after they had participated; of the original 404 subjects, 72 did not meet those requirements and were excluded, leaving 332 subjects.

Subjects were randomly assigned to one of three conditions. In the experimental conditions, subjects were exposed to information that Pluto had licked their ear in either an unpleasant manner (the Bad Pluto condition, $n = 107$) or a pleasant manner (the Good Pluto condition, $n = 112$). Control subjects received no information about Pluto ($n = 113$). These subjects had a mean age of 20 ($SD = 1.81$) and were mostly female (74%).

Materials and procedure

Subjects signed up for what they thought was a “Disneyland Nostalgia” research study that took place over two sessions, approximately 1 week apart.

Session 1. During Session 1, subjects completed five questionnaires. We told subjects that our computer system would analyze their responses to these questionnaires and produce an individual profile of their results (see Bernstein et al., 2005b, for a description of the use of the false feedback profile method to plant suggestions).

First, subjects completed a demographic questionnaire, which collected demographic as well as Disneyland-specific information (e.g., the age at which they first attended Disneyland and whether they were ever employed by Disneyland). The second questionnaire was the “Disneyland Questionnaire,” which asked about their experiences at and feelings about Disneyland. Specifically, subjects rated their preferences for certain Disneyland rides and characters (including Pluto) on an 8-point scale, with 1 = *hate* and 8 = *love*. Subjects reported a positive view of Pluto, with a mean rating of 5.71 (1.53). Subjects also rated their confidence that certain events happened to them at Disneyland (on an 8-point scale, anchored at 1 = *definitely did not happen* and 8 = *definitely did happen*; intermediate points were not labeled). Embedded in this list of events was the critical item, “You had your ear licked by Pluto.” Subjects also rated their willingness to pay for various Disney souvenirs, ranging from nothing to an expensive amount. Our two critical items here were the most they were willing to pay for a Pluto stuffed animal and the most they were willing to pay for a ticket to Disneyland. In particular, the Pluto stuffed animal ranged in 5-dollar increments from \$0 to \$35, and the Disneyland ticket ranged in 10-dollar increments from \$0 to \$70.

Only these first two questionnaires contained critical items for our analyses. However, to distract subjects from the true purpose of the study, the remaining

three questionnaires were filler questionnaires that asked subjects about their vacation preferences, personality characteristics, and childhood fears.

Session 2. Approximately 1 week later, subjects returned for Session 2. During this session, subjects received their "computer profile," which we said contained unique, personalized information. They also received a Disneyland-related excerpt tied to information in the profile. Subjects' randomly assigned conditions determined which set of materials they would receive (Bad Pluto, Good Pluto, or control).

For Bad Pluto subjects, the profile first described a number of likely childhood fears (loud noises, receiving public displays of affection, and getting into trouble) and then informed subjects that on the basis of their profile, the following excerpt might be relevant to them. The excerpt was in the form of a newspaper article that told of a Pluto character who abused hallucinogenic drugs and "developed a habit of inappropriately licking the ears of many young visitors with his large fabric tongue" in the 1980s and 1990s.

For Good Pluto subjects, the profile described a number of likely enjoyable childhood activities (spending time with a best friend, watching cartoons, and playing board games). The excerpt they read was in the form of a booklet called "Inside Disneyland's Magic," which described a lovable Pluto character who had licked the ears of children, much to the children's delight, from 1984 to 1995.

For control subjects, the profile described their current personality characteristics (emotional depth, joviality and enthusiasm about life, and overprotectiveness of loved ones). The excerpt they read was a newspaper article that discussed an outdated area of Disneyland; it did not mention the Pluto character.

To assess changes from premanipulation to postmanipulation, we gave subjects the "Disneyland Questionnaire 2," which contained the same critical questions from the "Disneyland Questionnaire" in the first session. The only significant change was that instead of asking whether subjects had ever had certain experiences, we asked them to report only experiences that had happened before the age of 12. Again, we also asked subjects to report their willingness to pay for certain Disney items.

Finally, subjects completed a "Memory or Belief?" Questionnaire, which questioned subjects about their recollection of three childhood experiences at Disneyland, including the critical ear-licking event. More specifically, the questionnaire asked subjects whether they remembered, from before the age of 12, that they "Fell into the pond in front of Cinderella's magic castle," "Had your ear licked by Pluto," and "Bought a souvenir while shopping in the stores on Main Street." If subjects did not have a specific memory for each of the events, they were instructed to indicate whether they had a mere belief that the events happened to them or whether they were positive the events had not happened. Subjects were also instructed to write two or three sentences describing their recollections of the events or describing why they were sure such events had not happened.

At the end of Session 2, subjects were debriefed.

RESULTS

The primary question in this study was whether subjects would come to report a positive or negative false childhood encounter with Pluto. To

address this question, we first wanted to exclude subjects who entered the study indicating that they may have experienced an ear-licking event. To accomplish this, we excluded from data analysis subjects across all conditions who entered Session 1 with high confidence that they had experienced the ear-licking event (these were subjects who provided a rating of 5–8 on the Disneyland Questionnaire that Pluto had licked their ear). Of the 332 eligible subjects who provided pretest Disneyland Questionnaire responses, only 16 (5%) rated their confidence between 5 and 8. By contrast, 95% rated their confidence low, and within that group the mean confidence rating was 1.33 (0.80). Most of these subjects rated their confidence as a 1 (82%) or a 2 (9%), indicating that most subjects claimed that the Pluto event definitely did not happen. This was the case for subjects in all three conditions: 110 of the 113 control subjects (97%) rated their initial confidence between 1 and 4, as did 105 of the 112 Good Pluto subjects (94%) and 101 of the 107 Bad Pluto subjects (94%). Figure 1 displays pretest and posttest confidence means; we confine our subsequent analyses to these 316 subjects. Unless otherwise stated, these analyses were conducted using paired-samples *t*-tests and chi squares; when means are reported in the text, they are generally followed by parentheses containing the standard deviation for that mean.

As Figure 1 shows, Bad Pluto subjects who were exposed to the manipulation about a badly behaving Pluto became more confident that Pluto had licked their ear, increasing on average from 1.40 (0.93) to 1.76 (1.38), $t(100) = 2.88$, $p < .01$, $d = 0.31$. Good Pluto subjects who were exposed to the manipulation about a well-behaving Pluto also became more confident that Pluto had licked their ear, increasing from 1.25 (0.65) to 2.37

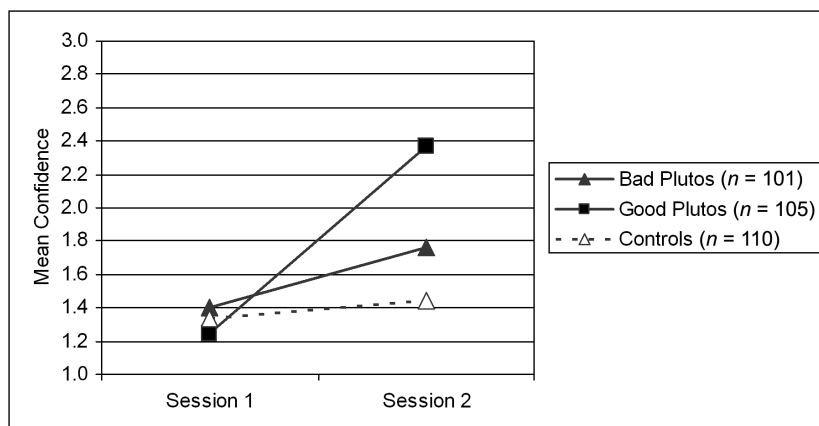


Figure 1. Mean confidence ratings of the critical item ("You had your ear licked by Pluto") on the "Disneyland Questionnaire," before and after manipulation

(1.82), $t(104) = 6.39$, $p < .01$, $d = 0.82$. Control subjects who were not exposed to any manipulation about Pluto remained confident that Pluto had not licked their ear, showing no significant increase, 1.34 (0.79) to 1.44 (1.05), $t(109) = 1.11$, *ns*. Thus, both Bad Pluto and Good Pluto subjects became significantly more confident that Pluto had licked their ear, whereas control subjects did not. Moreover, an independent samples *t* test revealed that after being exposed to the manipulation, Good Pluto subjects were more confident that Pluto had licked their ear than were Bad Pluto subjects, 2.37 (1.82) to 1.76 (1.38), $t(193.76) = 2.72$, $p < .01$, $d = 0.38$. As determined by Levene's test for equality of the variances, we used the corrected degrees of freedom due to unequal group variances.

Was Pluto perceived as badly behaving?

One might ask whether Bad Pluto subjects actually perceived the ear-licking event as negative. One way to answer this question is to examine how much Bad Pluto subjects liked Pluto after being exposed to the manipulation. Recall that subjects rated how much they liked Pluto on an 8-point scale, with 1 = *hate* and 8 = *love*. Did Bad Pluto subjects like Pluto less than controls? The answer is yes; an independent samples *t*-test revealed that subjects exposed to information about a badly behaving Pluto liked Pluto significantly less than controls, 5.22 (1.68) to 5.79 (1.42), $t(209) = 2.68$, $p < .01$, $d = 0.37$. There was no difference between Good Pluto subjects and controls, 5.46 (1.70) to 5.79 (1.42), $t(213) = 1.56$, *ns*. These results suggest that Bad Pluto subjects judged Pluto's ear-licking behavior as negative.

Who was seduced?

We know that Bad Pluto and Good Pluto subjects became more confident that Pluto had licked their ear, but some of these subjects reported at the end of the experiment that Pluto had never actually licked their ear. Therefore, we needed to establish what criterion we should use to decide whether a subject was seduced by the manipulation. Of course, all subjects in the analysis had entered the study with a low rating on the "Disneyland Questionnaire" that Pluto licked their ear. But to be classified as "seduced," subjects had to later report that they had had a memory or belief of the ear-licking event on the final "Memory or Belief?" Questionnaire in Session 2 and to elaborate on their experience. Thus seduced subjects entered the study fairly confident that the event did not happen, but they later produced a belief or memory report indicating that it had. (One reason we chose this rather liberal definition as opposed to a more conservative one [see Morris, Laney, Bernstein, & Loftus, 2006] was to increase the number of seduced subjects for purposes of our qualitative analyses, which we discuss later). When we examined subjects' responses

on that final “Memory or Belief?” questionnaire, we found that 30% of Bad Pluto subjects reported a belief or a memory of the event, as did 39% of Good Pluto subjects. Both Bad and Good Pluto subjects were more likely to report a belief or memory that Pluto had licked their ear than were controls (17%), $\chi^2(1, N = 211) = 4.56, p = .03, w = .36$, and $\chi^2(1, N = 215) = 12.66, p < .01, w = .58$, respectively. More specifically, Bad Pluto subjects were more likely to report a belief that Pluto had licked their ear than a memory ($n = 27$ and $n = 3$, respectively). Likewise, Good Pluto subjects were more likely to report a belief for the critical event than a memory ($n = 39$ and $n = 2$, respectively). These results suggest that some subjects were seduced by the manipulation and that generally they developed false beliefs that Pluto had licked their ear.

Confidence

Thus far, we have seen that our manipulation increased the overall confidence of Bad Pluto subjects and Good Pluto subjects that Pluto had licked their ear. But here we ask about the confidence of those who were seduced by the manipulation. Did these subjects who reported a memory or belief on the “Memory or Belief?” questionnaire also become more confident that Pluto had really licked their ear? To answer this question, we compared pretest and posttest confidence scores for the critical Pluto item. In both conditions, subjects became more confident about the ear-licking episode. More specifically, subjects who were seduced by the Bad Pluto manipulation increased from 2.03 (1.33) to 3.07 (1.57), $t(29) = 3.35, p < .01, d = 0.72$; subjects who were seduced by the Good Pluto manipulation increased from 1.39 (0.80) to 3.54 (1.83), $t(40) = 7.17, p < .01, d = 1.52$. Therefore, subjects who reported a false belief or memory about Pluto on the “Memory or Belief?” questionnaire showed a significant increase in confidence that Pluto had licked their ear.

Consequences

Were there consequences to subjects’ false beliefs about Pluto? Recall that we asked subjects how much they liked various Disney characters and their willingness to pay for various Disney souvenirs. We had predicted that seduced subjects would change their feelings for Pluto and their willingness to pay for a Pluto souvenir. To address our prediction, we compared pretest and posttest means of subjects’ ratings of how much they liked Pluto and the maximum amount they would pay for a Pluto stuffed animal and for a Disneyland ticket.

There was some evidence that subjects’ false beliefs about Pluto affected their attitudes about him. Table 1 illustrates subjects’ mean ratings on the consequence measures, split by whether subjects were seduced by the manipulation. Consider the top portion of Table 1, which shows the Bad

Pluto data. As for the Pluto stuffed animal measure, subjects who were seduced by our manipulation (and therefore believed they had had an unpleasant childhood encounter with Pluto) were not willing to pay as much for the souvenir, \$12.67 to \$11.00, $t(29) = -1.78$, $p = .04$ (one tailed), $d = 0.21$. Figure 2 also illustrates this decrease in willingness to pay for a Pluto stuffed animal.

Table 1. Subjects' mean ratings of their preferences for Pluto and spending patterns at Disneyland, split by whether subjects were seduced by the manipulation

Measure	Pretest			Posttest		
	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>
Bad Plutos						
Liking						
Seduced	5.70	1.37	30	5.77	1.61	30
Nonseduced	5.39	1.65	71	4.99	1.67	71
Pluto stuffed animal						
Seduced	12.67	8.88	30	11.00	7.36	30
Nonseduced	10.57	8.91	70 ^a	10.14	7.98	70 ^a
Disneyland ticket						
Seduced	38.67	13.06	30	37.33	12.85	30
Nonseduced	34.08	10.90	71	34.51	10.53	71
Good Plutos						
Liking						
Seduced	5.88	1.56	40 ^a	5.63	1.46	40 ^a
Nonseduced	5.60	1.64	63 ^a	5.41	1.84	63 ^a
Pluto stuffed animal						
Seduced	13.54	9.95	41	14.15	8.65	41
Nonseduced	12.11	7.55	64	12.44	7.80	64
Disneyland ticket						
Seduced	36.59	12.96	41	36.59	13.34	41
Nonseduced	32.19	10.00	64	31.88	10.06	64
Controls						
Liking						
Nonexposed	5.88	1.45	110	5.79	1.42	110
Pluto stuffed animal						
Nonexposed	12.55	7.83	110	12.82	8.31	110
Disneyland ticket						
Nonexposed	36.70	10.89	109 ^a	36.38	10.93	109 ^a

Note. Pluto stuffed animal and Disneyland ticket means represent actual dollar values.

^aOne subject did not respond to this question.

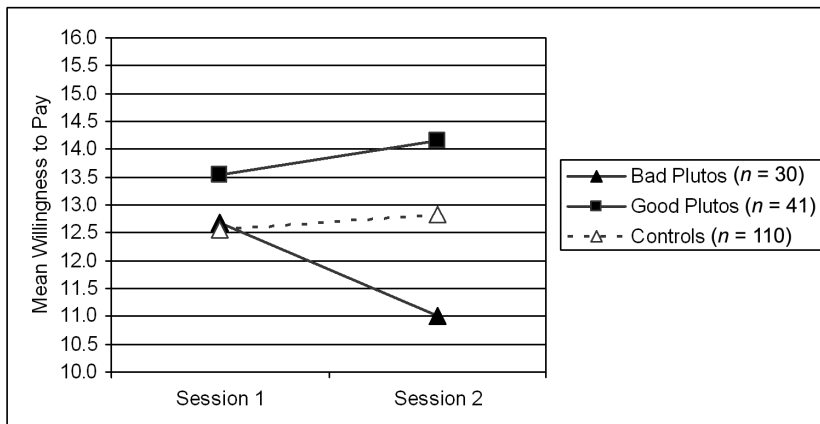


Figure 2. Mean willingness to pay ratings for a Pluto stuffed animal on the Disneyland Questionnaire, before and after manipulation

As the figure shows, Bad Pluto subjects were willing to pay less, whereas Good Pluto subjects were willing to pay slightly (albeit not significantly) more for a Pluto stuffed animal after the manipulation than they were before it.

We know that seduced Bad Pluto subjects wanted to pay less for a Pluto souvenir, but did the effect generalize to other Disney merchandise? In other words, were these subjects willing to pay less for other Disney souvenirs too?

As shown in Figure 3, the answer is no; the manipulation did not significantly reduce seduced Bad Pluto subjects' willingness to pay for any of the other Disney merchandise. In fact, subjects' willingness to pay for other Disney souvenirs remained stable over time. However, seduced Bad Pluto subjects wanted to pay significantly more for the Disneyland postcard, \$0.29 to \$0.73, $t(29) = 4.24$, $p < .01$, $d = 1.02$. Nonetheless, with the exception of the Pluto stuffed animal, seduced Bad Pluto subjects did not want to pay significantly less for the other Disney souvenirs.

Returning to the data in Table 1, it should be mentioned that both seduced Bad Pluto and seduced Good Pluto subjects showed no other significant shifts over time. That is, they did not reduce their willingness to pay for a Disneyland ticket, nor was their overall liking of Pluto affected by the manipulation.

What about subjects who were exposed to the manipulation but not seduced by it? The top portion of Table 1 shows that nonseduced Bad Pluto subjects liked Pluto less over time, 5.39 to 4.99, $t(71)$, $p = .02$ (one-tailed), $d = 0.24$. Again, no other items were significantly different. In fact, across the conditions, subjects' willingness to pay for a Disneyland ticket remained largely unaffected.

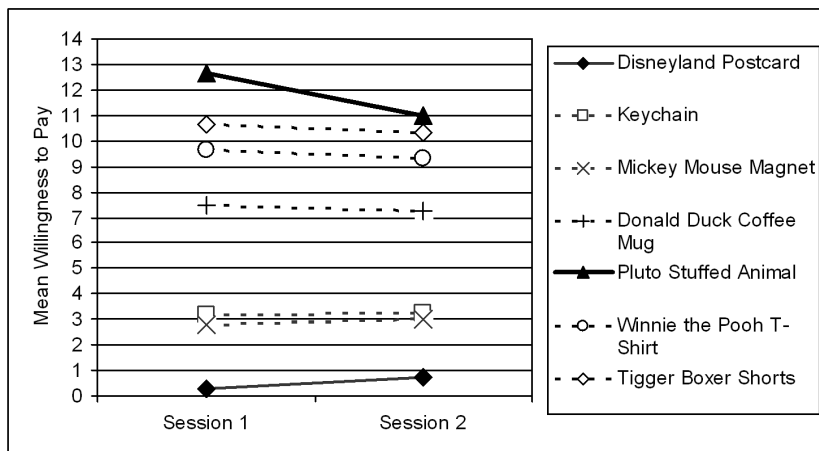


Figure 3. Seduced Bad Pluto subjects' ($n = 30$) mean willingness to pay ratings for all Disney souvenirs on the Disneyland Questionnaire, before and after manipulation

What did the seduced report?

What did the 71 subjects (30 Bad Plutos and 41 Good Plutos) who reported that Pluto had licked their ear say about the episode? Recall that the "Memory or Belief?" questionnaire required subjects to write two or three sentences about their recollections of the Pluto-licking event. Two judges evaluated these 71 subjects' verbatim recollections on the "Memory or Belief?" questionnaire. These judges (who were blind to condition) categorized each response as describing a positive, negative, or neutral experience with Pluto. Judges agreed on 93% of the classifications and resolved disputes by discussion.

We expected that we would see primarily negative comments in the Bad Pluto condition and positive comments in the Good Pluto condition, but this is not what we observed. In particular, of the 71 manipulated subjects who reported a belief or memory that Pluto had licked their ear, most of their written comments were categorized as neutral (76%). In other words, if subjects recalled detailed, emotional experiences with Pluto, it was not expressed in their written comments. Examples of neutral comments included the following:

"I remember I took several pictures with Pluto and during that time, he may have licked my ear."

"I think it's fairly possible that a Pluto actor 'licked' my ear because it is, in my estimation, a fairly neutral yet 'in character' thing to do, and the characters are inherently spontaneous in their interaction with Disneyland patrons."

"It is hard to remember, but I was very young when I saw Pluto. I remember going up to him. This experience probably happen [sic] to a lot of the kids who saw Pluto."

"When I was younger I use [sic] to get all the characters [sic] autographs in my autograph book. I might have gotten Pluto's so he might have licked me."

But of the 71 responses from seduced Pluto subjects, there were also some colorful comments. To give a flavor of what these seduced subjects reported about their experience with Pluto, consider the response of one subject, who said this about a Bad Pluto: "I know I saw Pluto and I remember being scared of him, but I don't know why. He may have licked me." By contrast, one Good Pluto subject said, "I took a lot of pictures with the characters. Pluto may have pressed his fake-synthetic-cottony tongue onto my ear, and I might have laughed, but not to the point where I remember." Furthermore, 21 out of 71 subjects (30%) who falsely believed that Pluto had licked their ear mentioned childhood photographs with the character; awareness of these photographs may have promoted subjects' development of a false belief or memory for the incident (see Wade, Garry, Read, & Lindsay, 2002). In sum, few subjects who were seduced by our manipulation provided descriptive recollections of their ear-licking experiences with Pluto.

DISCUSSION

The primary questions in this experiment were whether it was possible to lead people to falsely believe that they had had an unpleasant social interaction with a Disneyland character when they were children, and if so, whether this belief would have consequences in adulthood. Our results indicate that the answer to the former question is "yes," but the answer to the latter question is less clear.

We found that suggesting to subjects that Pluto had licked their ear long ago led them, as a group, to become more confident that he had done so. Moreover, the suggestion also led a large minority of them to report a specific belief, and occasionally a memory, of the episode. These outcomes occurred regardless of whether we suggested that Pluto had behaved properly or badly, although subjects were more likely to adopt a false belief about a good Pluto character than they were a bad Pluto character. Good Pluto subjects were also significantly more confident that Pluto had licked their ear than were Bad Pluto subjects. Taken together, these results suggest that it was easier to lead subjects to (falsely) believe that they had had a positive experience with Pluto.

Such a result is well supported from the research on memory for stereotype-consistent information (Bodenhausen, 1988; Leichtman & Ceci, 1995; Slusher & Anderson, 1987), which shows that people are more likely

to accept suggestions that are stereotype consistent than those that are inconsistent. Thus, subjects might have been more easily seduced by the pleasant, lovable feedback about Pluto than the unpleasant, disturbing feedback. Although our results are consistent with the stereotype literature, we can still only speculate as to specific causes because there were slight differences in the manipulation of Good Pluto and Bad Pluto subjects. Likewise, we know little about the theoretical processes involved in the creation of subjects' false beliefs. It is possible that our manipulation differences may have activated different processes, which led subjects to falsely believe that Pluto had licked their ear (see Mazzoni & Vannucci, 2007, for more on the theoretical explanations of false autobiographical beliefs). However, despite these limitations, we have shown that it is indeed possible to plant false beliefs for stereotype-inconsistent events. Importantly, this study contributes to the social psychology literature about stereotypes and also provides one kind of answer to Freyd's (2003) criticism in that a proportion of our subjects came to falsely believe that they had an inappropriate encounter with Pluto. Moreover, the fact that 30% of Bad Pluto subjects came to falsely believe that Pluto had licked their ear is all the more remarkable because the manipulation described a single delinquent Pluto employee, as opposed to several badly behaving Plutos. In other words, had our adult subjects thought this through, perhaps they would have realized that several employees dress up as the Pluto character (thus making it unlikely that the subjects themselves had had a negative interaction). However, almost one in three Bad Pluto subjects accepted the suggestion that a disturbing Pluto character had licked their ear. Therefore, we find it intriguing that a substantial proportion of our subjects came to falsely believe that they encountered the sole bad Pluto employee at Disneyland.

Although it is true that some Good Pluto and Bad Pluto subjects adopted false beliefs about the ear-licking event, the seduced subjects' *mean* posttest confidence ratings for the ear-licking episode were still not particularly high on an 8-point scale (3.54 and 3.07, respectively). Thus, despite the fact that seduced subjects became significantly more confident that Pluto had licked their ear after the manipulation, seduced subjects as a group did not report that the event definitely did happen. However, because intermediate points were not labeled on the 8-point confidence scale, we do not know how subjects labeled the intermediate points (see Garry, Sharman, Wade, Hunt, & Smith, 2001, and Sharman, Manning, & Garry, 2005, for more on labeling the scale). On one hand, subjects' posttest confidence ratings might indicate that subjects increased their confidence that they had experienced the ear-licking event. On the other hand, subjects' posttest confidence ratings might indicate that subjects decreased their confidence that they had *not* experienced the ear-licking event. Of course,

both interpretations might be relevant; indeed, a particular subject might interpret the scale in one way for one item and in a different way for the next. Future research might profitably examine the question of exactly how subjects interpret the confidence scale when midpoint labeling is or is not included.

Our findings may also have important implications for Disney. In 2004, a Disney World employee, Michael Chartrand, was arrested and prosecuted for molesting a young girl; our data were collected before the publicity about this incident (FOXNews.com, 2004a). Chartrand was dressed as Tigger during the alleged abuse incident. His accuser claimed that Tigger massaged her breasts while she was posing for a photo with him. Chartrand was later found not guilty and returned to work at Disney World after the defense proved that Chartrand's movements were greatly limited while he was in costume (FOXNews.com, 2004b). Would our results have implications for the effects on Disney of publicity about a bad Tigger? One educated speculation is that people's exposure to the bad publicity might lead them to become more confident that they too had an inappropriate experience with the Tigger character (Sharman, Garry, & Beuke, 2004). Thus unsurprisingly, after the allegation surfaced, 24 additional Disney visitors came forward to say that they too were abused by Tigger (FOXNews.com, 2004a).

Of particular interest in this experiment was whether false beliefs for a negative childhood social interaction would lead to consequences in subjects' adult lives. Our results indicate that false beliefs of an inappropriate childhood encounter with Pluto did affect some of our adult subjects' attitudes toward him. Specifically, subjects seduced about a badly behaving Pluto wanted to pay significantly less for a Pluto stuffed animal. Of course, such a finding is trivial; affecting a person's willingness to pay for an item does not compare to the severe consequences one might experience later in life from childhood sexual abuse. However, our findings do shed important insight on the possible impact that false beliefs might have on consumer behavior. Nonetheless, future research could profitably explore whether false beliefs about a childhood experience lead to broader, more severe consequences than altering adult subjects' economic preferences for a Pluto souvenir. Such consequences might include whether subjects feel depressed after seeing Pluto or physically shy away from Pluto at Disneyland. Further studies might examine what type of suggestive manipulation might lead to a broader range of consequences. We expect that a stronger manipulation, such as the "lost-in-the-mall" technique, wherein subjects are plied with false information ostensibly obtained from family members, might lead to more far-reaching consequences than the false feedback profile method (see Loftus, 2005, for more on the "lost-in-the-mall" technique). In addition, we are not suggesting that false beliefs of

negative social experiences are more consequential than false beliefs of negative nonsocial experiences. In fact, nonsocial false beliefs can also lead to serious consequences; for instance, they can contribute to the development of phobias. Despite the minor outcome of subjects' false beliefs about a badly behaving Pluto, our data suggest that there are sometimes real consequences for false childhood beliefs.

Ultimately, our results lead us to conclude that it is possible to plant false beliefs of an inappropriate childhood experience with a Disney character. In contrast to Freyd's (2003) criticism, we believe that having a disturbing ear-licking encounter with a drug-addled Pluto might be mildly aversive for some people. As McNally (2003) pointed out, it is hard to predict what events are traumatic: Fewer than 2% of people who lived near the World Trade Center during the events of September 11, 2001, suffer from post-traumatic stress disorder, whereas one woman accidentally killed a group of frogs with a lawn mower and developed symptoms of posttraumatic stress disorder. Thus, perhaps trauma is in the eye of the beholder. It is our hope that our study will aid in the understanding that false beliefs of negative childhood experiences are easily cultivated and may have consequences that stretch into adulthood.

Notes

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