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The Obedience Alibi: Milgram's Account of the Holocaust Reconsidered

David R. Mandel

University of Hertfordshire

Stanley Milgram's work on obedience to authority is social psychology's most influential contribution to theorizing about Holocaust perpetration. The gist of Milgram's claims is that Holocaust perpetrators were just following orders out of a sense of obligation to their superiors. Milgram, however, never undertook a scholarly analysis of how his obedience experiments related to the Holocaust. The author first discusses the major theoretical limitations of Milgram's position and then examines the implications of Milgram's (oft-ignored) experimental manipulations for Holocaust theorizing and contrasts a specific case of Holocaust perpetration by Reserve Police Battalion 101 of the German Order Police. It is concluded that Milgram's empirical findings, in fact, do not support his position--one that essentially constitutes an obedience alibi. The article ends with a discussion of some of the social dangers of the obedience alibi.

Unable to defy the authority of the experimenter, [participants] attribute all responsibility to him. It is the old story of "just doing one's duty," that was heard time and again in the defence statement of the accused at Nuremberg. But it would be wrong to think of it as a thin alibi concocted for the occasion. Rather, it is a fundamental mode of thinking for a great many people once they are locked into a subordinate position in a structure of authority. (Milgram, 1967, p. 6)

Nazi Germany's Solution to Their Jewish Question

Like the pestilence-stricken community of Oran described in Camus's (1948) novel, The Plague, thousands of European Jewish communities were destroyed by the Nazi regime from 1933-45. Early Nazi "solutions to the Jewish question" sought to extricate Jews from the social fabric of German life. The status and activities of Jews within the larger society were severely restricted. The Jews, with their so-called Semitenmoral (Semitic morality)--the evil antithesis of the völkisches Bewusstsein (Germanic people's consciousness)--were ideologically portrayed as the Völksfeind (enemy of the Germanic people; see Barkai, 1994; Goldhagen, 1996). Jews were easy targets of violence and they increasingly witnessed the vandalization and desecration of their cultural institutions and properties. These measures, however, were only a prelude to their entry

into a "triadic solution" that was to befall most of European Jewry: physical expulsion, concentration, and extermination (for notable accounts of the persecution of Jews by Germans under the Nazi regime, see Berenbaum, 1997; Davidowicz, 1975; Friedländer, 1997; Hillberg, 1961).

By May 1945, when Germany surrendered to the Allies, the Nazis had murdered approximately six million Jews, the majority of whom were killed from June 1941-45. Although the focus of this article is on the Holocaust--namely, the genocide of European Jewry--we must remember that the Nazis murdered another five million unarmed people who were deemed "enemies of the state" or "inferior people" and, therefore, according to Nazi logic, were not worthy of life. These groups included Poles, Russians, Gypsies, political opponents, and people with mental or physical disabilities or apparent genetic weakness. We also must remember, however, that no group was as zealously persecuted, targeted for total annihilation, or singled out as a target of disproportionate brutality and humiliation by the Nazis as were the Jews.

The Nazi extermination policy toward the Jews was euphemistically called "the Final Solution" and was formalized in January 1942 at the Wannsee Conference, though as Yehuda Bauer (1994) noted, "Wannsee was but a stage in the unfolding of the process of mass murder" (p. 308). In 1941, Einsatzgruppen (special mobile killing units) situated along the eastern front were lining up and shooting Jews in mass graves, which the Jews were often forced to dig for themselves. Jews also were forced into mobile killing vans that routed carbon monoxide exhaust back into sealed compartments in which the victims would slowly suffocate. In 1942, battalions of German Order Police were added to the extermination force and carried out mass shootings and deportations in Poland (Browning, 1992; Goldhagen, 1996)

To increase the efficiency of Jewish annihilation, Jews were forced into freight trains that ushered them without food or water to death camps. Upon arrival, they were forced to undress and hundreds at a time were crammed into shower rooms. Once sealed in, they were gassed with Zyklon B (prussic acid) and then burned in open pits and, later, in more efficient crematoria ovens. Many Jews were taken to combination labor-death camps, the largest of which was Auschwitz (see Gutman & Berenbaum, 1994). Those who were not gassed immediately were forced to live on a starvation diet and to endure harsh physical labor and unending brutality. Some were hanged, tortured to death, or killed in gruesome medical experiments (Kubica, 1994; Lifton, 1986; Lifton & Hackett, 1994). Most Jews who survived the initial selections for the gas chambers and the abominable conditions of the camp were killed eventually.

The facts of the Holocaust must never be forgotten, but neither should an obvious counterfactual implication be ignored: Had the Nazis not been defeated, at a minimum, Europe's Jews would have been totally annihilated--as Hitler had prophesied. As it was, only about one-quarter of a million Jews survived the Nazi concentration camps and death marches, tens of thousands of whom died shortly after being liberated due to the Nazi atrocities to which they were subjected. And only about one and a half million European Jews who were alive in 1939 were still alive in

May 1945 (M. Gilbert, 1993): remnants of those once-vibrant Jewish communities that were brutally, intentionally, and systematically destroyed by Nazi Germany.

The Milgram Studies of Obedience to Authority

What interplay of personal and situational factors motivated "ordinary" German men to deport to death camps and murder innocent people, including women, children, babies, and the elderly, simply because they were Jewish--to become, as historian Daniel Goldhagen (1996) put it, Hitler's willing executioners? My focus here is on analyzing the most influential social psychological account of the Holocaust, which Stanley Milgram proposed on the basis of his (1963, 1965b, 1974) seminal research on obedience to authority (see also Elms, 1995; Miller, 1986). Milgram demonstrated that the majority of his participants--average citizens from New Haven, Connecticut, who had volunteered for a Yale University psychology experiment on learning--would administer extremely painful and potentially dangerous electric shocks as high as 450 volts to another volunteer as a form of punishment, despite the latter's protests that the shocks were painful and that he no longer consented to be shocked.

Milgram's basic procedure ran as follows: Two participants who arrived at about the same time for the study were greeted by the experimenter, who explained that the purpose of the study is to examine the effects of punishment on learning. The participants drew slips of paper to determine who would become the "teacher" and who would become the "learner." The draw was rigged such that the naive participant always became the teacher and the other ostensible participant, who in fact was Milgram's accomplice, became the learner. The teacher's task in the basic studies was to test the learner's ability to recognize a series of word pairs. Each time the learner made an error, the teacher was required to administer a shock to the learner by pressing a switch on a shock panel. Moreover, with each subsequent mistake, the teacher was to increase the shock intensity by 15 volts, starting with 15 volts (shock level 1) and going as high as 450 volts (shock level 30). In fact, the only shock that was ever delivered was a 45-volt sample shock to the teacher's arm, which served to strengthen belief in the authenticity of the procedure.

As noted earlier, Milgram found that the majority of participants administered the shocks up to the maximum level despite the presence of several factors that one might expect to have militated against obedience. First, the learner responded to the more intense shocks with agonizing screams and protested that he no longer consented to be shocked (because the learner was strapped to a chair he could not simply free himself). Second, the labels on the shock generator indicated that the higher-level shocks were dangerous: The last switches were ominously labeled "Intense Shock," "Extreme Intensity Shock," "Danger: Severe Shock," and "XXX." Third, the experimenter had no means of enforcing his request other than simply telling a dissenting participant "please continue" or "you must continue, the experiment require that you go on." Despite the presence of these presumably countervailing factors, even when the learner reported having a heart condition, as many as 65 percent of participants obeyed the experimenter and administered the entire series of 30 shocks.

Milgram's research revealed some startlingly nonobvious findings. Not even Milgram anticipated such high levels of destructive obedience, and psychologists and laypersons alike predicted that not a single participant would administer the maximum shock (Milgram, 1974). His studies spotlighted the power that subtle situational forces can exert on behavior and they exposed the human tendency to underestimate the power of the situation and instead attribute an actor's behavior to his dispositions or character. Despite the value of these lessons, had Milgram's studies lacked far-reaching social and moral relevance, they would not have become, as Lee Ross described, "part of our society's shared intellectual legacy--that small body of historical incidents, biblical parables, and classic literature that serious thinkers feel free to draw on when they debate about human nature or contemplate human history" (1988, p. 101).

Extrapolations from the Laboratory to the Holocaust

Milgram was the first to relate his research to human history, especially the Holocaust. In the first paragraph of his first article on obedience, he wrote:

Obedience, as a determinant of behavior, is of particular relevance to our time. It has been reliably established that from 1933-45 millions of innocent persons were systematically slaughtered on command. Gas chambers were built, death camps were guarded, daily quotas of corpses were produced with the same efficiency as the manufacture of appliances. (1963, p. 371)

Stating his views on the role of obedience in the Holocaust more directly, Milgram wrote:

The Nazi extermination of European Jews is the most extreme instance of abhorrent immoral acts carried out by thousands of people in the name of obedience. (1967, p. 3 or 1974, p. 2, my emphasis)

Milgram repeatedly suggested in his writings that the Holocaust was primarily the result of situational pressures that compelled Holocaust perpetrators to act obediently toward their Nazi leaders out of a sense of obligation. He purported this view in emphatic terms, as the opening quote of this article illustrates, despite the fact that he never undertook a scholarly comparative analysis of the Holocaust and his obedience studies. Rather, it appears that Milgram assumed that if the experimenter in some of his studies could get a majority of volunteers to administer agonizing shocks to another volunteer in the name of duty, then certainly the mighty Nazi regime could have made German men do anything in the name of duty--even kill innocent, unarmed people.

Milgram's statements about the Holocaust have had an enduring impact within social psychology and outside the field as well (e.g., Browning, 1992), and have become the most widespread "situationist" account of Holocaust perpetration and social acts of evil (for reviews, see Miller, 1986, 1995). Philip Zimbardo, whose Stanford Prison Study (Zimbardo, Banks, Haney, & Jaffe, 1973) also has had an impact on Holocaust theorizing (e.g., Browning, 1992), illustrated the

modal social psychology "textbook response" to the Holocaust and to social acts of evil when he claimed that "evil deeds are rarely the product of evil people acting from evil motives, but are the product of good bureaucrats simply doing their job (1974, p. 566). According to this view, which "challenges the myth that evil lurks in the minds of evil people" (Zimbardo, 1992, p. 592), the Holocaust's perpetrators, by and large, did not harbor evil motives, they merely excelled as efficient and effective technicians of genocide. In essence, the perpetrators were dutiful bureaucrats first, genocidal killers second.

Given the impact of Milgram's work on Holocaust theorizing, it is important to examine the relevance of his findings and the validity of his basic argument. Though Milgram's research has been influential and revealing, his obedience explanation of the Holocaust is oversimplified, misleading, and of potential social danger. In the next section, I outline some of the primary theoretical limitations of Milgram's extrapolations to the Holocaust. In the subsequent section, I examine many of the situational manipulations that Milgram carried out and argue that his findings do not support his basic premise that Germans were just following orders. Finally, after briefly discussing social psychology's response to Milgram's statements, I conclude by specifying what, I believe, are some of the social dangers of Milgram's account.

Primary Theoretical Limitations

Monocausal Emphasis

Perhaps the most obvious problem is that Milgram stated his views on the role of obedience to authority in bringing about the Holocaust in strictly monocausal terms, despite the need for a multicausal account, which would articulate the ways in which the relevant causal factors might have interacted over time (Staub, 1989). Milgram conveyed in his writings a sense that obedience to authority was <u>sufficient</u> on its own to explain the motivations of Holocaust perpetrators at all levels (except for Hitler himself). For instance, this position is revealed in his claim (quoted at the outset of the article) that it is wrong to think of the "just--that is, <u>only-following orders"</u> defense as a weak alibi. Milgram does not consider other motivational factors that may have operated in addition to obedience, such as the self-bolstering function that is served by derogating an outgroup and by having the exciting freedom to exert unlimited power over that group (Staub, 1989).

Nor did Milgram acknowledge that many Germans were motivated to collaborate because of the potential for increased social status and professional advancement. For instance, Adolf Eichmann's boredom with his job as a traveling salesman for the Vacuum Oil Company led him to apply successfully for a job in the Security Service of the Reichsführer SS, where, as Arendt (1965) put it, "to his greatest 'grief and sorrow,' he never advanced beyond the grade of SS Obersturmbannführer (a rank equivalent to lieutenant colonel)" (p. 33). Another notorious example of professional opportunism fostering complicity is the case of Dr. Carl Clauberg, who was an esteemed professor from the University of Kiel. Clauberg proposed to Himmler at their first meeting in 1940 his intention to establish a research institute for reproductive technology and convinced Himmler (who had suggested an alternative site) that Auschwitz would be the best

location (Lifton & Hackett, 1994). Clauberg experimented with methods for mass sterilization in Auschwitz's hellish block 10 (nicknamed "Clauberg's block"), where he enjoyed access to a virtually limitless pool of Jewish women. As Lifton and Hackett (1994) noted, "Clauberg was very much the white-coated scientist" who "was so dedicated to his research that as Soviet troops approached Auschwitz, he fled to Ravensbrück and even arranged that some of his subjects be sent there" (p. 307).

A related motivational factor was the opportunity for lucrative personal gains by plundering Jews and their corpses. As historical researcher at the Auschwitz-Birkenau State Museum, Andrzej Strzelecki, stated

Clothes, money, food, medicine, gold teeth, even hair were taken by the victims and recycled for use by Germans. The gathering of these properties also posed a significant temptation for members of the <u>Schutzstaffel</u> (SS) to violate their discipline and avail themselves of the loot. Few scholars have considered the decision to plunder the victims in terms of its psychological function (1994, p. 246).

In fact, contrary to Milgram's view of the Nazi subordinate acting in blind obedience to authority, Rudolf Höss, SS Kommandant of Auschwitz, stated in his trial memoirs that

The newly arriving [Jewish] treasure was demoralizing for the SS, who were not always strong enough to resist the temptation of these valuables which lay within such easy reach. Not even the death penalty or a severe prison sentence was enough to stop them. (1992, p. 41)

Instead of acknowledging the range of factors that motivated Germans to enter into the machinery of the Holocaust, Milgram chose to focus on just one: obligatory obedience.

Uniformity of Influence

Not only did Milgram offer a monocausal account, he also assumed that the process of obedience to authority operates uniformly across levels of a social hierarchy, even one as complicated as the entire Nazi apparatus. I was surprised to read his assertion that

the psychology of obedience does not depend on the placement of the module [i.e., the subordinate-superordinate unit] within the larger hierarchy: the psychological adjustments of a Wehrmacht General to Adolf Hitler parallel those of the lowest infantryman to his superior, and so forth, throughout the system. Only the psychology of the ultimate leader demands a different set of explanatory principles. (1974, p. 130)

To say that these psychological adjustments, as Milgram put it, may have some common aspects across levels may be somewhat plausible. To state, as he did, that these processes are <u>identical</u> at <u>any</u> two levels is empirically unsubstantiated and ludicrous.

Unidirectionality of Influence

Milgram's (1974) model of influence in a hierarchical structure is also rigidly unidirectional rather than bidirectional (e.g., see his diagram on p. 129). Accordingly, an authority has influence on the subordinates directly below him. In turn, these subordinates influence the subordinates directly below them, and so forth. There is no provision in Milgram's model for subordinates, either as individuals or as a group, to influence their superiors. Nor is there any provision in his model for influence or communication between individuals within a level, in spite of the fact that Milgram (1974) empirically demonstrated some potent group effects (see Experiments 17 and 18). Milgram's theoretical account of obedience and hierarchical structuring clearly shaped his views on the Holocaust--views that fail to address the fact that many acts of Holocaust perpetration were forged from below rather than, as his model dictates, the result of top-down directives (Lutsky, 1995).

All-or-None Quality and Reversibility of The Agentic State

Central to the obedience account is what Milgram (1974) termed the <u>agentic state</u>, by which he meant "the condition a person is in when he sees himself as an agent for carrying out another person's wishes" (p. 133). Milgram argued that people shift back and forth between an agentic state and an <u>autonomous state</u>, the latter referring to the state a person is in when he "sees himself acting on his own" (p. 133). As Darley (1992) noted, there is an all-or-none, either-or quality to the manner in which Milgram described the state of the individual and the transition from one state to the other. For instance, Milgram rhetorically asked "Where in the human being shall we find the switch that controls the transition from an autonomous to a systemic mode?" (p. 133). For Milgram, the answer lies in human neurobiology. However, even when providing a phenomenological account, Milgram displayed an either-or way of thinking; for instance: "The person entering an authority system no longer views himself as acting out of his own purposes but rather comes to see himself as an agent for executing the wishes of another person....The agentic state is the master attitude from which the observed behavior flows" (p. 133).

Milgram's conception of rapidly shifting discrete states fails to describe the type of gradual and irreversible conversion process that, as Lifton (1986) argued in his analysis of German doctors stationed at Auschwitz, transformed basically ordinary medical professionals into autonomously evil actors. Lifton's account and others (e.g., Darley, 1992; Kelman & Hamilton, 1989; Staub, 1989) all emphasize (albeit in different ways) what may be viewed as a social-developmental perspective, whereby the very act of perpetration, especially in situations that require recurrent acts of evil over a considerable length of time, changes the manner in which the individual thinks and behaves even when he is <u>not</u> acting under authority. Milgram's account misses this point and reads as if his experimental situation was an appropriate model for most, perhaps even all, crimes of obedience (to use Kelman & Hamilton's phrase). But, in fact, his experimental situation is not representative of the situations most Holocaust perpetrators faced because his participants were

thrown into conflict within minutes of testing the learner. Their experience in the situation lasted no longer than a half hour and entailed constant pressures (Milgram, 1963), coupled with subtle situational features such as the gradated nature of the shocks (S. J. Gilbert, 1981) and ambiguous cues concerning the potential danger to the learner (Orne & Holland, 1986), which offered them no legitimate channel for defiance (see Ross, 1988), nor even the time likely required to reconceptualize the situation (Nissani, 1990).

Circularity of Logic

Milgram's obedience account also displays a tautological quality (Lutsky, 1995): On the one hand, Milgram used the term to <u>describe</u> a type of behavior: "At a point not known beforehand, the subject may refuse to carry out [the experimenter's] command, withdrawing from the experiment. Behavior prior to this rupture is termed <u>obedience</u>" (1974, pp. 13-14; also see 1963, p. 372). On the other hand, Milgram used the term to <u>explain</u> the behavior: "Obedience, as a determinant of behavior, is of particular relevance to our time. . . . Obedience is the psychological mechanism that links individual action to political purpose" (1963, p. 371). Thus, the implied "logic" is that people act obediently because of obedience pressures!

Nor does Milgram's recourse to the agentic-state construct solve the problem. In fact, it only adds another element of circularity. Consider his argument:

Is the agentic state just another word for obedience? No, it is that state of mental organization which enhances the likelihood of obedience. Obedience is the behavioral aspect of the state. A person may be in an agentic state--that is, in a state of openness to regulation from an authority--without ever being given a command and thus never having to obey. (1974, p. 148; my emphasis)

Note that Milgram's definition of the agentic state, as the emphasized clause indicates, amounts to a willingness to obey authority. Milgram was right that the willingness to obey is not exactly the same thing as the act of obedience, but what does his explanation really tell us?--that obedience results from a willingness to obey. This tells us nothing about why people are willing to obey, which brings us to the next issue.

Obligatory Obedience and the Transfer of Responsibility

Milgram (1974) argued that, because of evolutionary pressures favoring social coordination, humans developed a tendency to obey authority figures. In his view, they do so out of a sense of obligation or duty to authority, which cultural institutions instill in its members from an early age. Thus, people learn that it is their <u>role</u> to obey authority and they generally follow this expectation in an unthinking manner. As Lutsky (1995) noted, Milgram's "just following orders" account of the Holocaust derives from his general obedience account which emphasized <u>obligatory obedience</u>. As noted earlier, the <u>act</u> of obedience can be motivated by several distinct factors, of which a role-based sense of duty is just one.

A corollary of his obligatory obedience account is that a subordinate, upon shifting into the agentic state, transfers his sense of responsibility for his acts to an authority and, himself, feels responsibility only for properly carrying out his duty. This notion undoubtedly contributed to the ease with which Milgram defended the accused Nazis' alibi that they were "just following orders." But neither his findings nor those of other researchers (e.g., Mantell & Panzarella, 1976) support his contentions about the relinquishment of responsibility. For instance, his (1974) responsibility clock data indicate that obedient participants assigned virtually the same percentage of responsibility for the shocking of the learner to the experimenter (38.4 percent) than did defiant participants (38.8 percent).

On the other hand, and not predicted by his account, Milgram (1974) found that obedient participants assigned about twice as much responsibility to the learner/victim (25.3 percent) than did the defiant participants (12.8 percent). The findings clearly indicate that it is easier to obey an order to harm another person when the victim is viewed as responsible for the punishment. This is exactly what vast amounts of antisemitic propaganda disseminated by the Nazis (e.g., Julius Streicher's antisemitic newspaper Der Stürmer) suggested: that Jews deserved to die because they alone were responsible for their vileness and their criminal actions against the Volk. As Rudolf Höss declared, "I want to emphasize here that I personally never hated the Jews. I considered them to be the enemy of our nation" (1992, p. 142). Torturing, looting, and killing Jews could easily be justified as retribution, as giving Jews their "just deserts" (Goldhagen, 1996). Forcing Jews literally to work to death could be justified by their so-called tendency to be lazy and to make non-Jews work for them (After all, the infamous phase Arbeit macht frei, meaning "work brings freedom," did not appear over the entrance gate to Auschwitz coincidentally.)

Overabstraction and Overextension

I started this section by commenting on what is perhaps the most obvious problem with Milgram's statements about the Holocaust and will end it with by commenting on what is perhaps the most serious problem with his statements: namely, the degree to which he overabstracted and overextended his analysis. In his attempts to articulate general social psychological processes that underlie social acts of evil, Milgram lost sight of the contextual specifics of the historical cases to which he extrapolated, notably the Holocaust. As Goldhagen (1996) correctly noted, the obedience explanation fails to give due consideration to the social relationships and social perceptions that existed between ordinary Germans, Jews, and the Nazi elite. I believe it was Milgram's overabstracted analysis that led him to overextend the analogy he drew between his studies and the Holocaust:

Yet the essence of obedience, as a psychological process, can be captured by studying the simple situation in which a man is told by a legitimate authority to act against a third individual. This situation confronted both our experimental subject and the German subject and evoked in each a set of parallel psychological adjustments. (1974, p. 177; my emphasis)

Milgram's statement illustrates the degree to which he conceptualized the perpetrators of the Holocaust as participants in a large-scale obedience experiment, and it demonstrates his conviction that not only similar, but parallel, psychological processes account for the "results" of both "experiments." Let us now take a closer look at Milgram's actual results.

Milgram's Situational Manipulations: What Do They Tell Us About the Holocaust?

Milgram (1974) reported 18 studies in which he systematically manipulated features of the situation, observing the effects on participants' obedience. Obedience was operationalized in two ways. His primary dependent measure was the obedience rate; namely, the percentage of participants who would administer the shocks up to the maximum voltage. A second measure was participants' mean maximum shock level (hereafter MMSL; with a possible range of 0-30). The obedience rate varied considerably with his situational manipulations but was at most 65 percent (see Experiments 1, 5, 8, and 16). At a minimum, then, 35 percent of Milgram's participants defied the experimenter at some point in the procedure. In the analysis that follows, we examine the factors that led to dramatic increases in the <u>defiance rate</u> (simply the obedience rate subtracted from 100%), showing how the presence of the same factors, by and large, did not lead to defiance in a well-documented, and not uncommon, case of Holocaust perpetration.

The Victim's Consent

One of nine key factors to which Milgram (1963) attributed his unexpectedly high obedience rate was the participant's perception "that the victim [had] voluntarily submitted to the authority system of the experimenter" (p. 377): thus, there was "an implicit social contract" (1974, p. 63). This condition may be contrasted with the total lack of consent by Holocaust victims. At no point did they agree to be sent to death camps, shot to death, or brutalized. Instead, they were forced to succumb to their persecutors wishes and desires.

Would the majority of Milgram's participants still have obeyed orders to shock the learner if limits on the conditions of his consent were made salient? Milgram (1974, Experiment 9) addressed this question by introducing a slight variation in his basic procedure. In the <u>heart-condition base-line</u> study (Experiment 5), the learner simply signed his consent form without expressing any concern. In Experiment 9, however, after carefully reading the consent form, the learner stated "I'll agree to be in it, but only on condition that you let me out when I say so; that's the only condition" (1974, p. 64). Given the learner's limited contract, defiance rates rose from 35 percent (MMSL = 24.55) to 60 percent (MMSL = 21.40). Clearly, had the learner objected outright after reading the consent form, at most, a miniscule percentage of participants would have obeyed a request by the experimenter to force the learner to succumb to the shocks.

The Victim's Proximity and the Requirement to Use Force Against the Victim

In Milgram's (1974, Experiment 2) <u>voice feedback</u> study, the learner was seated in another room away from the teacher. Although the teacher could hear the learner's protests through the wall that separated them, the teacher was not face to face with the learner. In contrast, in Milgram's <u>proximity</u> study (Experiment 3) the teacher and learner were seated in the same room, allowing the teacher to experience the learner's anguish more directly. Compared to the defiance rate of 37.5 percent (MMSL = 24.53) in the <u>voice feedback</u> study, the defiance rate was 60 percent (MMSL = 20.80) in the proximity study.

In an even more extreme variation of Milgram's experimental situation, not only is the learner physically proximal but the teacher is required to force the learner's hand onto a shock grid. In the touch-proximity study (Experiment 4), the defiance rate rose to 70 percent (MMSL = 17.88). The aforementioned findings demonstrate that the obedience rate rapidly declined as perpetrator-victim proximity increased and as the pain-inflicting quality of the perpetrated act became more salient. Under these conditions, the majority of participants were <u>not</u> willing to obey, despite the experimenter's assurances that "although the shocks can be extremely painful, they cause no permanent tissue damage" (Milgram, 1963, p. 373).

What percentage of Milgram's participants would have obeyed if they had to physically force the learner to succumb to shocks that clearly would cause him harm--perhaps even kill him? Once again, Milgram's data suggest that only a very small percentage would obey under such conditions. And yet more extreme conditions were commonplace during the Holocaust. In addition to the lack of consent already noted, the harm inflicted on the victims was obvious: they were being murdered. Moreover, the perpetrators who carried out the killings and deportations to death camps were proximal to their victims and used direct physical force against them. These perpetrators heard their victims' screams, saw their anguish, breathed in the stench of death that permeated the killing sites, and were often literally stained with their victims' blood. Despite these conditions, the overwhelming majority of Germans called on by the Nazis to kill Jews did not defy authority, they assented to murder.

A Contrasting Example: Reserve Police Battalion 101

Having just reflected on some of Milgram's key findings, let us now consider a concrete example of Holocaust perpetration; namely, the well-documented (Browning, 1992; Goldhagen, 1996) actions of Reserve Police Battalion 101, a unit of the German Order Police. At the time of their initiation to mass murder, the battalion consisted of 11 officers, 4 administrators, and 486 men. On July 13, 1942, in Józefów, Poland, Major Wilhelm Trapp, the battalion's commander, announced that he had received orders for the battalion to carry out a mass killing of Jews. His men were to "concentrate" the Jews in the market square and then to take them in smaller groups to the village outskirts and shoot them. Unlike Milgram's impassive experimenter, "Papa" Trapp, as his men fondly called him, was visibly distressed by the assignment and stated that it was not to his liking (Goldhagen, 1996). More significantly, unlike Milgram's experimenter, Trapp gave

his men a way out by making a remarkable offer: Those who did not "feel up to the task of killing Jews" could be assigned to other duties.

Despite Major Trapp's offer and the presence of all of the aforementioned mitigating factors (i.e., the victims' lack of consent, close physical proximity and use of physical force against the victims), only a dozen men out of roughly 500 (about 2 percent) stepped forward to be reassigned. Browning (1992) argued that, for many of the men caught in the immediacy of the situation, a full realization of what lay ahead may not have sunk in; many might not have envisioned themselves actually having to do the killing. How many, then, requested reassignment after they had murdered--for instance, as was commonplace, after having walked a little girl or an elderly woman into the woods and shot her in the back of her head? Browning estimated that 10-20 percent of the men "either sought to evade the shooting by less conspicuous methods or asked to be released from the firing squads once the killing began" (p. 74). Thus, even by Browning's most liberal estimate, "at least 80 percent of those called to shoot continued to do so until 1,500 Jews from Józefów had been killed" (Browning, 1992, p. 74; cf. Goldhagen, 1996). This fact runs entirely counter to what may be reasonably inferred on the basis of Milgram's findings.

Successful Noncompliance by Peers

If the men of Reserve Police Battalion 101 had viewed their killing task as a great moral transgression, then they would have tried to search for a way out, even if they were ultimately unsuccessful. They would have been motivated to take Major Trapp's offer, thereby extricating themselves from the killing without breaching their duty to their superior. Surely most of Milgram's participants would have jumped at such an opportunity if the experimenter had made a similar offer. Nor was this the last of such opportunities or offers: Sergeant Heinrich Steinmetz, one of the squad leaders, told his men that they did not have to kill and he repeated the offer after the killing had commenced; other squad leaders approved the reassignment of their men who did not wish to kill; and even Lieutenant Heinz Buchmann, a battalion officer, extricated himself from killing Jews (Goldhagen, 1996). In short, although the battalion's men were aware that several of their peers successfully extricated themselves from killing Jews, and that doing so was not seen as a violation of duty, the vast majority of those directly involved in the killing continued to do so until the massacre was completed.

What do Milgram's studies tell us about the effects of peer defiance on obedience? Consider the behavior of participants in Milgram's (1974, Experiment 17) two peers rebel study, in which three teachers shared the task of teaching the learner. Teacher 1 read the list of words, teacher 2 told the learner whether his answer was correct or not, and teacher 3 administered the shocks when required. Unrevealed to teacher 3 (the naive participant), teachers 1 and 2 were Milgram's accomplices who were soon to defy the experimenter. After the learner's first vehement protest at the 10th shock level, teacher 1 informed the experimenter that he wished to stop because of the learner's objections. The experimenter insisted that he continue but teacher 1 remained defiant. The experimenter then told teacher 3 to take over teacher 1's task in addition to continuing his own. After the 14th shock was given, teacher 2 joined in expressing concern for the learner and

refused to continue. Despite the experimenter's insistence, teacher 2 remained defiant. Teacher 1 was then instructed to take over the entire teaching function.

In stark contrast to the normative complicity of Trapp's men, the overwhelming majority of Milgram's participants (90 percent, MMSL = 16.45) seized the opportunity to extricate themselves from harming the victim and defied authority. The successful defiance by the participant's peers acted as a channel that facilitated the participant's own defiance. Of course, such defiance is unlikely to occur if a subordinate does not strongly desire to extricate himself from the task to which he is assigned.

The Authority's Proximity

In Milgram's (1974) <u>heart-condition base-line</u> study, which yielded a 65 percent obedience rate, the experimenter sat just a few feet away from the participant. The proximity of the attentive experimenter must have made participants <u>feel</u> like they were constantly being monitored. To explore the effect of an authority's proximity on obedience, Milgram (1974, Experiment 7) conducted a study that was like the <u>heart-condition base-line</u> study except that after giving the initial instructions, the experimenter left and gave his orders by telephone. In the <u>experimenter absent</u> study, the vast majority of participants (80 percent) defied the experimenter. Milgram also observed behaviors that were not exhibited in the physical presence of the experimenter: Several participants administered weaker shocks than were required; some went so far as to repeatedly administer the weakest shock even though they informed the experimenter that they were following the correct procedure (MMSL = 18.15 vs. 24.55 in the <u>base-line</u> study).

Holocaust perpetrators, too, were often faced with conditions of minimal supervision. How did they react under such conditions? Did they disobey orders or at least try, as did Milgram's participants, to lessen the burden of their victims? As already noted, among Reserve Police Battalion 101's <u>Völkermordkohorte</u> (genocidal cohort), obedience was very high, despite the presence of many countervailing factors. It is worth noting again that, at the Józefów massacre, the killers were <u>alone</u> with their victims as they walked them to a killing site and then shot them. Not only were they not in the physical presence of their superiors but also, as Goldhagen pointed out, "...each killer had a personalized, face-to-face relationship to his victim..." (1996, p. 218), which most social psychologists would agree should have militated against depersonalization and, correspondingly, engendered empathy for the victim.

Another example of a minimally supervised killing operation is the search-and-destroy missions that Reserve Police Battalion 101 and other Police Battalions routinely performed. How did the Germans view these missions, which involved ferreting out and killing the last remaining Jews who had tried to escape murder? The fact that the Germans called them "Jew-hunt operations" (Judenjagdeinsätze) is telling because the word Jagd carries a positive emotive valence, connoting an activity rich in adventure (Goldhagen, 1996). Indeed, even some children enjoyed Jew hunts; consider Jan Karski's description of a scene in which two Hitlerjugend (Hitler youth) hunt for a Jew in the Warsaw ghetto:

They chattered, laughed, pushed each other in spasms of merriment. At that moment, the younger one pulled a gun out of his hip pocket and then I first realized what I was witnessing. His eyes roamed about seeking something. A target. He was looking for a target with the casual, gay absorption of a boy at a carnival....The gaze of the boy with the gun came to rest on a spot out of my line of vision. He raised his arm and took careful aim. The shot rang out followed by the noise of breaking glass and then the terrible cry of a man in agony. (Karski, 1944, as quoted in Staub, 1989, p. 139)

Concerning Reserve Police Battalion 101 (and other battalions), the perpetrators' own accounts indicated that the number of volunteers for such missions always exceeded the actual requirements. Moreover, the perpetrators were meticulous in their search to leave no Jew unshot and exacted severe brutality on those they "caught" (Goldhagen, 1996; Krakowski, 1984). The facts do not indicate that the perpetrators tried to lessen their victims' burden--let alone allow Jews to escape persecution--even when they had every chance to do so. To the contrary, and unlike the overwhelming majority of Milgram's participants, these killers seemed to often enjoy the opportunities they had to exert complete power over their victims.

Increasing the Subordinate's Discretion

The zealous and brutal manner in which Germans conducted Jew hunts also is telling given the fact that there were no specific killing quotas for these missions. Consequently, the perpetrators had considerable discretion in deciding how rigorously or lethargically to apply themselves to their killing task (Goldhagen, 1996). Would it have been correspondingly common for Milgram's participants to punish the learner with severe shocks if the choice of the shock level was left to their discretion? The answer is <u>no</u>. Milgram (1974) conducted just such a study (Experiment 11) and found that when left to the participants' discretion, only one participant out of 40 (2.5 percent) administered the maximum shock. More telling is the fact that 95 percent of participants did not go beyond the point where the learner vehemently protested for the first time (MMSL = 5.50). Once again, contrary to the behavior of Holocaust perpetrators, Milgram's participants took care not to harm the learner if the choice was left in their hands.

Summary

Contemplating the causes of the Józefów massacre in which Reserve Police Battalion 101 of the German Order Police shot 1,500 Jews, Browning (1992) asked his readers "Was the massacre at Józefów a kind of radical Milgram experiment that took place in a Polish forest with real killers and victims rather than in a social psychology laboratory with naive subjects and actor/victims?" (pp. 173-174). Contrary to what Milgram stated, his findings indicate that the answer to this question is <u>no</u>. What these findings tell us is that as conditions began, even in small ways, to approach those that better describe the Holocaust, a corresponding increase in defiance occurred. Thus, the victim's limited consent, the subordinate's close proximity to the victim and required use of physical force against him, the presence of peers who had successfully defied authority,

the easing of the authority's supervision, and increases in the subordinate's discretion concerning the treatment of the victim <u>each</u> resulted in significant increases in defiance compared to Milgram's oft-cited base-line statistic.

We can reasonably infer that a situation which included <u>all</u> of these features would elicit little or no obedience in Milgram's participants. And yet the combination of such features during the Holocaust was met with zealous obedience, suggesting strongly that factors other than obedience pressures must have sustained the perpetrators' willingness to kill Jews. Moreover, it is telling that the primary reason given for requesting reassignment by members of Reserve Police Battalion 101's genocidal cohort was sheer physical revulsion--not a sense that there was anything morally wrong with murdering Jews (Browning, 1992; Goldhagen, 1996). In contrast, Milgram's participants generally displayed anxiety that indicated empathetic concern for the potential victim (see Milgram, 1965a, 1974).

Social Psychology's Message

Although some social psychologists have constructively critiqued Milgram's obedience explanation and have taken steps to develop a useful theoretical account of the social forces that often conspire to produce acts of evil (e.g., Darley, 1992, 1995; Kelman & Hamilton, 1989; Lutsky, 1995; Staub, 1989), the field of social psychology, in general, has demonstrated a rather uncritical acceptance of obedience as the basis for socially organized acts of evil (for examples, see Miller, 1995). It is ironic that social psychology, in its eagerness to reject an oversimplified lay dispositionist view of evil that points to the evilness of the evildoer as the cause (what Darley, 1992, termed the quantum of evil), seems to have accepted an oversimplified situationist view of evil that points to the evildoer's obedience to authority as the cause. To demonstrate the fundamental attribution error, the field made an even more fundamental one: oversimplification.

Unfortunately, the "just following orders" explanation--oversimplified further in textbooks--may be the only educational information about the Holocaust that undergraduates receive. These "soundbites" on the Holocaust--themselves, often the epitome of banality--not only misrepresent the psychology of the situation, they also miss the opportunity to explore what we can learn from the Holocaust about racism, prejudice, discrimination, attitude-belief correspondences, and social perception--to name a few topics. Miller (1995) stated that "the fact that Milgram's studies provide, for a vast audience, an occasion for an examination of the Holocaust is significant" (p. 42) and that such opportunities "may sharpen their critical thinking with respect to the revisionists' (sic) arguments" (p. 42). I agree. But the educational and social value of these opportunities ultimately depends on the content of the communicated message and, currently, I believe there is a need to greatly improve that content.

Additional Social Dangers

As Lutsky (1995) noted, "when social scientists view historical events through the lenses of psychological studies and concepts, we advance implicit and explicit claims about history" (p.

62). These implicit historical claims, in turn, have social ramifications. The misleading message communicated to a vast number of students is one example. In closing, I want to draw attention to two other negative social ramifications of the "just following orders" claim regarding the Holocaust: The first is that it is offensive to survivors (and to our memories of victims) who know all too well that there was much more behind they way they were viciously brutalized, mocked, and tormented than a mere obligation to follow orders. This is not to suggest that social scientists should try to construct theories that comfort any particular group. Researchers and theorists should, of course, seek the truth even if it is a terrible truth and they should reveal what they find. Nevertheless, care should be taken in how explanations are communicated, especially when they have a clear potential to cause harm. And so, for instance, social psychology textbook authors could go a long way in this regard simply by pointing out that a sense of duty to authority is only one of several factors that contributed to the Holocaust and discussing other factors such as those mentioned earlier on in this article.

The second, negative social ramification of the oversimplified obedience account is that it insidiously serves the function of exonerating Nazi war criminals (and an untold number of other evildoers) by reaffirming exactly what many of them--even the highest-ranking Nazi officials on trial at Nuremberg (see G. M. Gilbert, 1947)--claimed in their defense: that they too were "just following orders."

The many oversimplified statements about the Holocaust that have been made by Milgram and a number of other social scientists, like the claims of most accused Nazis, constitute little more that an <u>obedience alibi</u>. The term <u>alibi</u> is especially fitting because it connotes both an excuse or assurance of innocence and an explanation or statement. Holocaust perpetrators have asserted the obedience alibi as an assurance of their innocence. Social scientists have asserted the obedience alibi as an ostensibly situationist explanation of the Holocaust. Though the intent of one group has differed from the other, the message conveyed has been strikingly similar. This is most unfortunate given the lack of empirical evidence to substantiate statements, such as the following by Milgram (1974):

The most frequent defense of the individual who has performed a heinous act under command of authority is that he has simply done his duty. In asserting this defense, the individual is not introducing an alibi concocted for the moment but is reporting honestly on the psychological attitude induced by submission to authority. (p. 146)

Uninformed by fact and displaying a bizarre illogic, which I still find this puzzling given Milgram's care and acumen as a researcher, Milgram's statement, like many of his others concerning the Holocaust, reveals a dangerous form of pseudoscientific overconfidence.

Milgram apparently forgot that jurisprudence is concerned with the facts of a case, not with the law of averages. His statements forfeit the possibility that <u>some</u> of the accused--and perhaps many of them--may actually have been doing more that <u>just</u> following orders even if they were following orders. Instead, Milgram accepted his maximum obedience rate of 65 percent as proof that most, if not all, of the accused war criminals were just following orders. In so doing, he

provided a fine example of how social scientists can lend an air of scientific legitimacy to the obedience alibi.

References

- Arendt, H. (1965). Eichmann in Jerusalem: A report on the banality of evil (rev. ed.). New York: Viking Compass.
- Barkai, A. (1994). Volksgemeinschaft, 'Aryanization' and the Holocaust. In D. Cesarani (Ed.), <u>The Final Solution:</u>
 Origins and implementation (pp. 33-50). New York: Routledge.
- Bauer, Y. (1994). Conclusion: The significance of the Final Solution. In D. Cesarani (Ed.), <u>The Final Solution:</u>
 Origins and implementation (pp. 300-309). New York: Routledge.
- Berenbaum, M. (Ed.) (1997). Witness to the Holocaust. New York: HarperCollins.
- Browning, C. R. (1992). <u>Ordinary men: Reserve Police Battalion 101 and the final solution in Poland</u>. New York: HarperCollins.
- Camus, A. (1948). The plague. New York: Alfred A. Knopf.
- Darley, J. M. (1992). Social organization for the production of evil. Psychological Inquiry, 3, 199-218.
- Darley, J. M. (1995). Constructive and destructive obedience: A taxonomy of principal-agent relationships. <u>Journal of Social Issues</u>, 51(3), 125-154.
- Davidowicz, L. S. (1975). The war against the Jews: 1933-1945. New York: Holt, Rinehart and Winston.
- Elms, A. C. (1995). Obedience in retrospect. <u>Journal of Social Issues</u>, 51(3), 21-31.
- Finkelstein, N. G., & Birn, R. B. (1998). <u>A nation on trial: The Goldhagen thesis and historical truth.</u> New York: Henry Holt and Company.
- Friedländer, S. (1997). <u>Nazi Germany and the Jews: Volume 1: The years of persecution, 1933-1939.</u> New York: HarperCollins.
- Gilbert, G. M. (1947). Nuremberg diary. New York: Farrar, Straus & Giroux.
- Gilbert, M. (1993). Atlas of the Holocaust (rev. ed.). New York: William Morrow and Company.
- Gilbert, S. J. (1981). Another look at the Milgram obedience studies: The role of gradated series of shocks. <u>Personality and Social Psychology Bulletin, 7,</u> 690-695.
- Goldhagen, D. J. (1996). <u>Hitler's willing executioners: Ordinary Germans and the Holocaust.</u> New York: Alfred A. Knopf.
- Gutman, Y., & Berenbaum, M. (Eds.) (1994). <u>Anatomy of the Auschwitz death camp.</u> Bloomington, IN: Indiana University Press.
- Hillberg, R. (1961). The destruction of the European Jews. Chicago, IL: Quadrangle.
- Höss, R. (1992). <u>Death dealer: The memoirs of the SS Kommandant at Auschwitz</u> (S. Paskuly, Ed.). Buffalo, NY: Promethius Books. [published posthumously]
- Kelman, H. C., & Hamilton, V. L. (1989). <u>Crimes of obedience: Toward a social psychology of authority and responsibility.</u> New Haven, CT: Yale University Press.
- Kubica, H. (1994). The crimes of Josef Mengele. In Y. Gutman & M. Berenbaum (Eds.), <u>Anatomy of the Auschwitz</u> death camp (pp. 317-337). Bloomington, IN: Indiana University Press.
- Lifton, R. J. (1986). The Nazi doctors: Medical killing and the psychology of genocide. New York: Basic.
- Lifton, R. J., & Hackett, A. (1994). Nazi doctors. In Y. Gutman & M. Berenbaum (Eds.), <u>Anatomy of the Auschwitz death camp</u> (pp. 301-316). Bloomington, IN: Indiana University Press.
- Lipstadt, D. (1994). Denying the Holocaust: The growing assault on truth and memory. New York: Plume.

- Lutsky, N. (1995). When is "obedience" obedience? Conceptual and historical commentary. <u>Journal of Social Issues</u>, 51(3), 55-65.
- Mantell, D. M., & Panzarella, R. (1976). Obedience and responsibility. <u>British Journal of Social and Clinical Psychology</u>, 15, 239-245.
- Milgram, S. (1963). Behavioral study of obedience. Journal of Abnormal and Social Psychology, 67, 371-378.
- Milgram, S. (1965a). Obedience [Film]. (Available from the New York University Film Library).
- Milgram, S. (1965b). Some conditions of obedience and disobedience to authority. Human Relations, 18, 57-75.
- Milgram, S. (1967). Obedience to criminal orders: The compulsion to do evil. Patterns of Prejudice, 1, 3-7.
- Milgram, S. (1974). Obedience to authority: An experimental view. New York: Harper & Row.
- Miller, A. G. (1986). The obedience experiments: A case study of controversy in social science. New York: Praeger.
- Miller, A. G. (1995). Constructions of the obedience experiments: A focus upon domains of relevance. <u>Journal of Social Issues</u>, 51(3), 33-53.
- Mixon, D. (1972). Instead of deception. Journal for the Theory of Social Behavior, 2, 145-177.
- Nissani, M. (1990). A cognitive reinterpretation of Stanley Milgram's observations on obedience to authority. American Psychologist, 45, 1384-1385.
- Orne, M. T., & Holland, C. C. (1968). On the ecological validity of laboratory deceptions. <u>International Journal of</u> Psychiatry, 6, 282-293.
- Ross, L. D. (1977). The intuitive psychologist and his shortcomings: Distortions in the attribution process. In L. Berkowitz (Ed.), <u>Advances in experimental social psychology</u> (Vol. 10, pp. 173-219). San Diego, CA: Academic Press.
- Ross, L. D. (1988). Situationist perspectives on the obedience experiments. Contemporary Psychology, 33, 101-104.
- Staub, E. (1989). The roots of evil: The origins of genocide and other group violence. New York: Cambridge University Press.
- Strzelecki, A. (1994). The plunder of victims and their corpses. In Y. Gutman & M. Berenbaum (Eds.), <u>Anatomy of the Auschwitz death camp</u> (pp. 246-266). Bloomington, IN: Indiana University Press.
- Zimbardo, P. G. (1974). On "obedience to authority". American Psychologist, 29, 566-567.
- Zimbardo, P. G. (1992). Psychology and life (13th ed.). New York: HarperCollins.
- Zimbardo, P. G., Banks, W. C., Haney, C., & Jaffe, D. (1973, April 8). The mind is a formidable jailer: A Priandellian prison. <u>The New York Times Magazine</u>, pp. 38-60.

Footnotes

¹In this respect, Milgram's account is similar to Goldhagen's (1996) controversial thesis that Germans were already possessed by a virulent form of eliminationist antisemitism and that that factor on its own was sufficient to produce the motivational state underlying Germans' willingness to kill Jews. Goldhagen's thesis has been harshly criticized for its monocausal motivational account (Browning, 1992; Finkelstein & Birn, 1998).

²This was Heinrich Himmler's <u>Sicherheitsdienst</u>, or S. D., which was the Intelligence service of the Party headed by Reinhardt Heydrich, who was to become, as Gerald Reitlinger put it, "the real engineer of the Final Solution" (quoted in Arendt, 1965, p. 36).

³There is evidence to suggest that Major Trapp's emotional reaction alone should have reduced obedience pressures. For instance, Mixon (1972), using a role-playing simulation of the teacher-learner situation, found that when the experimenter displayed restive reactions (like Trapp's) during the experiment, only 20 percent of the sample was obedient compared to 50 percent when the experimenter was calm and confident.

⁴Indeed, as the German scholar Herbert Jäger and the German prosecutors of the 1960s firmly established, "no one could document a single case in which Germans who refused to carry out the killing of unarmed civilians suffered dire consequences" (Browning, 1992, p. 192).

⁵For those readers unfamiliar with social psychological lingo, I should note that Ross (1977) coined the term the fundamental attribution error, which refers to the human tendency to attribute the causes of social events to dispositional features of the actors involved rather than to features of the situation.

⁶As Lipstadt (1994) correctly noted, the term <u>revisionist</u> is a misnomer when applied to Holocaust deniers. These deniers have calculatingly identified themselves as revisionists to lend an air of scholarly credibility to their antisemitic diatribe. In line with the relativistic tenet of revisionism and deconstructionism, Holocaust deniers claim that their "historical accounts" (e.g., that the Holocaust never happened or that it has been greatly over-exaggerated) are just as valid as the "conventional" historical account. Of course, this is patently false.

Author Notes

David R. Mandel, Department of Psychology, University of Hertfordshire.

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Correspondence concerning this article should be addressed to David R. Mandel, Department of Psychology, University of Hertfordshire, College Lane, Hatfield, Hertfordshire, AL10 9AB, United Kingdom. Electronic mail may be sent via Internet to D.R.Mandel@herts.ac.uk.