How the Presence of an Authority Figure Influences Students' Choices and Stress Levels: a One-Time Experimental Study

Abstract

This study investigated how the presence of an authority figure influences individual choices. Specifically, it aimed to determine whether or not the presence of an authority figure increases the probability of following instructions to violate rules and how it impacts their stress levels when asked to go against their moral values. Using a true-experimental research design utilizing a between-subject design, participants (n = 40) were randomly assigned to either the group with an authority figure present or a group without an authority figure. An independent sample t-test showed a significant difference between the two groups in terms of obedience, showing the group with an authority figure having higher obedience to authority (M = 3.6, SD = 1.47) than the group without an authority figure (M = 2.0, SD = 1.08). There was a noticeable difference $t(38) = 3.94$, $p < .001$, with a large effect size (d = 1.24). Nevertheless, neither group found no significant difference in stress levels (U = 186, $p > 0.005$, r = -0.07). Participants in a group with an authority figure reported stress levels (M = 2.70, SD = 1.49) comparable to those without an authority figure (M = 3.05, SD = 2.72). These findings were supported by other existing studies indicating that the willingness of an individual to follow unethical instructions was influenced by an authority figure but did not increase their level of stress due to the enjoyable nature of the task. Future research should examine possible moderating factors, such as gender differences and the perceived legitimacy of authoritative figures, to better understand the role of authority in moral decision-making.

Keywords: authority figure, obedience to authority, stress level, experimental research , random assignment, true experimental study

Introduction

The subtle influence of authority often turns a simple “no” into a hesitant “yes.” In human interactions, authority figures tend to influence the choices of an individual even if such actions go against their principles morally (Götz et al., 2023). Building on the ground-breaking work of Stanley Milgram, which is the Milgram experiment of 1961, this study draws inspiration from the social psychology investigation to examine how an authority figure encouraging rule violations influences an individual's obedience and stress level. In this study, obedience is defined as an individual’s decision to follow instructions from an authority figure (Gibson, 2018, as cited by Götz et al., 2023). Another factor examined in this study is the level of stress an individual experiences during an activity, especially when an authority figure intentionally urges the person to act contrary to the rules and standards. In the presence of an authority figure, stress is often linked to heightened psychological pressure, driven by the expectations to obey, even when it conflicts with personal and moral beliefs (Cherry, 2024).

A global investigation into obedience has been explored from numerous viewpoints, including the study that underlines different conditions revolving around the impact of task difficulty and obedience to authority. This study provides valuable data highlighting the difficulty in task obedience in modern settings (Machen, 2019). Building upon the findings of the study of Machen (2019), this study aims to understand the way individuals respond to authority figures and their willingness to obey rule-breaking instructions. An additional study also determined the impact of authority figures on obedience by investigating blind obedience in the inspiration of a Milgram experiment. It delves into how individuals believe they behave more ethically and reject the commands of an authority figure with greater effect than others (Bègue&Vezirian, 2023). This existing literature supports the study by determining the impact of urging a rule-breaking behavior as well as examining the response of individuals in terms of challenging circumstances. The additional research, which was conducted by Gotz et al. (2023), indicated that when an authority figure is present, the sense of responsibility of an individual for their actions decreases. In the same study conducted by Gotz et al. (2023), it was stated that individuals experience internal conflict when obeying authority, especially when orders contradict their personal beliefs. But individuals still comply due to the perceived legitimacy of the authority and fear of potential consequences for disobedience.

Another existing research study, titled *The Concept of Utang naLoob in the Philippines,* conducted by Manguit (2022), examined the authority dynamics and cultural value of Filipinos of “Utang naLoob” (debt of gratitude). This study examined the deeply rooted utang naloob influences on obedience and decision-making in social and hierarchical settings. These results show how the utang naloob value encourages compliance and obedience to authority. That being said, utang naloob is not just a moral value for Filipinos; it means establishing socially harmonized and authority-based relationships in the Philippines.

While existing literature has investigated obedience under different conditions (Machen, 2019; Bègue&Vezirian, 2023) and the ascendancy of culture on authority, known as utang naloob in the Philippines (Manguit, 2022), there is still a scarcity of

authority figure. However, no study has specifically explored a less harmful form of influence that could still affect the individual's obedience and stress levels. A recent A recent study by Acoba (2024) shows the role of stress, particularly how it can impact an individual's psychological results in challenging situations. This highlights a research gap with regard to how authority figures can influence stress due to the encouragement to break the rules, which can be explored in this study.

The famous Milgram experiment, which accentuates the psychological mechanisms pushing individuals to follow authority figures even when their directives are in conflict with their moral and personal values, has been extensively studied across different cultures (Blass, 2012, as cited by Tong et al., 2020). This related literature persistently shows that the rate of obedience varies depending upon the societal shape, cultural norms, and views on authority. In the Philippines, where respect for authority and interconnection in the hierarchy are deeply rooted (Manguit, 2022), investigating obedience from this perspective can give insights and understanding into how culture shapes behavior. In this study, participants' obedience will be measured by counting the number of violations they commit under the influence of an authority figure. In this way, a measurable process evaluating obedience will be done while grounding the findings in the context of Filipino culture.

The purpose of this investigation is to find out the willingness of the participants to follow instructions that break the rules and how their stress levels are affected when an authority figure encouraging rule-breaking actions is present. Specifically, it intends to find answers to the following research questions:

1. Does the presence of an authority figure increase the chance of participants breaking the rules compared to a situation without an authority figure?
2. Is there a significant difference in obedience between participants who are exposed to an authority figure and those with an absence of such?
3. Is there a significant difference in stress levels between participants in the presence of an authority figure and when no authority figure is present?

The biopsychosocial model offers a comprehensive way to understand the relationship between obedience and stress levels by considering biological, psychological, and social factors. Biologically, the stress response, regulated by the HPA axis and cortisol levels, plays a key role in how individuals react to authority. Psychologically, factors like cognitive appraisal, emotional regulation, and perception of authority influence both stress levels and the likelihood of obedience. Socially, group dynamics, cultural norms, and the presence of authority figures can either amplify or mitigate stress and obedience.

The modern replication of the Milgram experiment brings insights into obedience and stress caused by the authority figure. The findings of this exploration Training programs focusing on stress are essential as they emphasize building a support system among peers (Carleton et al., 2019). This is in line with the c a n be applied in real-world situations, specifically in the field of mental health. significance of our study, which addresses how stress influenced by an authority figure through training programs can help individuals in an environment with high

that is morally and ethically right (Benlahcene et al., 2022). This leadership intervention is closely related to the effects of the influence of authority figures in encouraging individuals to violate rules and helps alleviate the detrimental impacts of that action.

Methods

Participants

In line with standards in determining sample size in experimental research, 40 undergraduate students (mixed genders) aged 18-25 years old were chosen to balance practical limitations and the demand for adequate statistical power (Myers & Hansen, 2012). Inclusion criteria included students who were willing and available to participate in a 1-hour activity, ensuring they had the necessary time and capacity to complete the task. Participants were excluded if they had prior experience with social psychology experiments, as their previous exposure could influence their responses, and if they reported feeling unwell on the day of the experiment, which could impact their performance and the accuracy of the result.

Procedure and Design

The study was officially conducted after the researchers submitted consent for the approval of the school's dean to ensure ethical approval. Convenience sampling was used to recruit the participants based on their willingness to participate and their availability. Experimenters obtained informed consent, explaining that the experiment would focus on teamwork and collaboration, using deception for the experimental group to avoid any bias. By that, the true purpose of the study was kept from the participants to ensure the validity of the experiment.

At the time of recruitment, the experimenters used a toss coin to randomly assign the participants to either the experimental or control group to avoid any bias. For each participant, the experimenter used a standard coin to determine their group allocation, tossing the coin once to decide their assignment, with heads indicating placement in the experimental group and tails assigning them to the control group. The outcome of each coin toss was immediately recorded alongside the participant's name to maintain accurate records of the allocation process. After completing the assignment procedure for all participants, the distribution of individuals across the two groups was reviewed to confirm that randomization had been achieved successfully, resulting in a total number of 20 participants in the experimental group and 20 in the control group. Each group was also scheduled to participate in the study on different days to avert any influence between them. Both rooms were set up identically with the materials needed for the activity, such as cups, straws, and blindfolds. Participants in both groups were divided into smaller groups, and the experimenters explained the focus of the activity, including the rules and mechanics. In the experimental group, participants were told that a leader, acting as the authority figure and covertly a confederate in the experiment, would be chosen randomly. However, in reality, only the name of the confederate was included in the draw.

In the actual activity, all participants wore blindfolds and collaborated to fill the cup with straws without violating any rules. The confederate leader followed a scripted role throughout the task, suggesting and encouraging the rule-breaking

each group. Also, to determine their experience, participants were asked to answer the single-item scale measuring their stress levels during the activity.

A leader plays a significant role within organizations, as their behavior directly influences the work and efficiency of their subordinates (Fu et al., 2022). While leaders often inspire, guide, and motivate, they may not always be perceived as authority figures. In contrast, authority figures demand obedience from their members, using their position to enforce rules and expectations ("Dictionary.com | Meanings & Definitions of English Words," 2024). A leader becomes an authority figure once they gain the trust of their team to make decisions and give commands.
In the experiment, the leader's role involved giving commands and instructions to blindfolded participants, which created a dynamic that blurred the line between leadership and authority. This situation led to hesitation among participants, as they were reluctant to make decisions independently, fearing that disobedience or errors could result in failure to complete the task successfully.

In this study, a true experimental design with a between-subject approach was utilized, randomly assigning participants to one of the two treatment conditions. A between-subject design is an experimental design in which different groups of participants are exposed to other conditions or treatments. This design allows researchers to compare the effects of various therapies by examining differences between the groups. The experimental group was exposed to deception, with a confederate leader encouraging rule-breaking behavior during the activity. In contrast, the control group was not exposed to the same deceptive treatment or the influence of a confederate leader, serving as a baseline for comparison. When random assignment is employed, the study qualifies as a true experimental research design. This is because random assignment ensures that every participant has an equal chance of being placed in any group, thereby minimizing the potential influence of confounding variables.

Instrument

For stress management, we utilized the question "How stressed were you?" to evaluate the stress level of participants during the game, using a scale from 1 to 10, where 1 represents extremely low stress, meaning participants felt relaxed and calm, and 10 represents extremely high stress, meaning participants felt overwhelmed or close to breaking point. This straightforward approach ensures clarity and relevance to the short duration of the task. We recorded the number of rule violations participants committed during the activity for obedience. These violations are counted systematically to evaluate the extent to which participants complied with instructions.

For data analysis, obedience will be measured and compared between the experimental and control groups using an independent sample t-test, as this statistical method is suitable for analyzing the differences in the rate of breaking the rules between the two groups. Similarly, perceived stress levels will be measured and compared using an independent sample t-test to determine whether the presence of peer pressure guided by an authority figure results in noticeably greater amounts of stress levels in the experimental group compared to the control group.

The study examined the role of independent t-test statistics and their importance in educational research. This statistical tool is fundamental in the field, offering a systematic and precise approach to evaluating the impact of interventions, teaching methods, and educational policies. By providing empirical evidence, the t-test supports researchers and educators in making informed, evidence-based decisions within the dynamic landscape of education. It facilitates a deeper understanding of the effectiveness of various educational strategies by comparing mean scores across different groups. (Akpan et al., 2023).

Results

Table 1. Normality Test for Obedience to Authority

	W	p
Number of violations	0.971,	0.389

Table 1 assessed the assumption of normality using the Shapiro-Wilk test. Results indicated no significant violation of normality (W = 0.971, p = 0.389). As the p-value exceeds the conventional threshold of 0.05, the null hypothesis of normality cannot be rejected. Thus, the data are approximately normally distributed.

Table 2. Comparison of theViolations Reported between Authority Figure and No Authority Figure Present

	Group	N	Mean	Median	SD	SE
Number of violations	**Authority Figure Present**	20	3.60	4.00	1.47	0.328
	No Authority Figure Present	20	2.00	2.00	1.08	0.241

Table 2 shows the descriptive statistics for obedience, which also revealed that the mean of a condition with an authority figure was M = 3.6 (SD = 1.47, SE = 0.32), while the other group without the presence of an authority figure was M = 2.0 (SD = 1.08, SE = 0.241). It also suggests that participants are likely to break the rules when an authority figure is around. The higher mean and standard deviation in the group with an authority figure present indicate both a high rule-breaking behavior and greater variation in responses. In contrast, the group with no authority figure present shows a lower standard deviation, suggesting they acted more consistently. This implies that the presence of an authority has a significant impact on how individuals make choices.

Table 3. Results of theIndependent Sample T-Test in Obedience

	Statistic	df	p	Effect Size

Table 3 shows the results of an independent sample t-test conducted to compare the number of violations under two conditions: the presence of an authority figure that encourages the participants to violate the rules and those who are not exposed. T-test results yielded significant results of $t = 3.94$, $df = 34.9$, $p < 0.001$, indicating a significant difference in the number of violations between the two conditions. These results demonstrate that the number of rule violations increased substantially whenever an authority figure was present, with a small p-value implying that this difference is improbable to be an outcome of chance. The effect size measured by Cohen's d was 1.24, suggesting a large effect size and also indicating that the participants' behavior was significantly influenced by the presence of an authoritative person. These results support the alternative hypothesis that the mean number of violations differs considerably depending on whether an authority figure is present or absent.

Table 4. Normality Test for the Level of Stress

	W	**p**
Stress Level	0.827	<. 001

Table 4 reveals the Shapiro-Wilk test results to determine the data's normality for stress levels. Based on the result, the normality assumption was violated ($W = 0.827$, $p < 0.001$), which means the data is not normally distributed. Moreover, the Mann-Whitney U Test, a non-parametric test, was used to analyze the differences between the stress levels of participants with an authority figure and without an authority figure.

Table 5. Comparison of theStress Level Measured between Authority Figure and No Authority Figure Present

	Group	**N**	**Mean**	**Median**	**SD**	**SE**
Stress Level	**Authority Figure Present**	20	2.70	2.50	1.49	0.333
	No Authority Figure Present	20	3.05	2.00	2.72	0.609

Table 5 shows the descriptive statistics for stress, which revealed that the mean of a condition was slightly lower in the group with an authority figure ($M = 2.70$, $SD = 1.49$, $SE = 0.333$) compared to the other group without the presence of an authority figure ($M = 3.05$, $SD = 2.73$, $SE = 0.609$). Overall, the data shows that the stress levels of the participants may have slightly decreased with the presence of an authority figure. The small difference between the two groups, however, suggests that while the authority figure may have an influence on stress, the effect is only a slight one.

Table 6. Results of theIndependent Sample T-test for Stress Level

		Statistic	df	p		Effect Size
Stress Level	**Mann-Whitney U**	186	38.0	0.617	Rank Biserial Correlation	-0.0700

Table 6 shows the results of an independent sample t-test conducted to investigate if there is a difference between participants who were exposed to an authority figure that encourages the participants to violate the rules and those who are not exposed to one. Since the study uses a between-subject design comparing two groups, the researchers utilized an independent sample t-test. A Mann-Whitney U test was used to analyze the data due to the assumption of violation of normality. The results revealed that the stress level for participants with an authority figure (*M* = 2.70, *SD* = 1.49*)* was not significantly different from participants without an authority figure (*M* = 3.05, *SD* = 2.72), *U* (186) = 38.0, *p* = 0.707. The effect size was calculated using rank biserial correlation (*r* = -0.0700), suggesting that the presence or absence of an authority figure had little to no impact on the stress level of the participants. With the results, it can be argued that the presence of authority figures does not significantly affect the stress levels of the participants.

Table 7. Violation Reports and Stress Level of Participants With and Without the Presence of Authority Figure

Participants	Violation Made During the Experiment: Obedience Without Authority	Violation Made During the Experiment: Obedience With Authority	Stress Level Without Authority	Stress Level With Authority
Participant 1	2		4	
Participant 2	1		2	
Participant 3	0		1	
Participant 4	3		1	
Participant 5	1		3	
Participant 6	2		1	
Participant 7	3		4	
Participant 8	2		1	
Participant 9	4		8	
Participant 10	2		1	
Participant 11	1		1	
Participant 12	2		1	
Participant 13	1		3	
Participant 14	1		2	
Participant 15	3		1	
Participant 16	3		8	
Participant 17	2		4	
Participant 18	1		1	
Participant 19	4		4	

Participant 21		2		3
Participant 22		3		3
				1
Participant 23		3		2
Participant 24		3		3
Participant 25		4		2
Participant 26		5		3
Participant 27		6		4
Participant 28		4		2
Participant 29		5		3
Participant 30		4		3
Participant 31		0		2
Participant 32		4		2
Participant 33		2		2
Participant 34		3		1
Participant 35		5		5
Participant 36		4		1
Participant 37		6		4
Participant 38		2		1
Participant 39		3		
Participant 40		4		7
Mean	**2.0**	**3.60**	**3.05**	**2.70**

Table 7 illustrates how the presence of an authority figure and the lack of it affect the participants' behavior, specificallyin terms of rule violations, and its influence on their stress levels. The data reveals significant differences in rule violation and stress levels under two different conditions. On average, participants committed fewer violations when authority was absent *(M = 2.0*) than when authority was present (*M = 3.60*), indicating that authority may encourage rule-breaking behaviors. Interestingly, stress levels showed a slight increase without authority *(M = 3.05)* compared to when participants are under authority (*M = 2.70*), suggesting that reliance on an authority figure may reduce stress levels for some individuals.

Discussion

The data collection shows that the presence of an authority figure increases the likelihood of participants breaking the rules. Moreover, there is a significant difference in obedience between participants who are exposed to an authority figure and those with an absence of such. In Table 3, the result reveals a significant difference between the two groups in terms of obedience to authority, which means that the authority figure influencing rule-breaking behavior is a factor in their obedience. Similar to the findings in the previous study by Götz et al. (2023), this study's result suggests that the presence of an authority figure has an enormous effect on obedience. Participants in the experimental group who were urged to violate the rules by the authority figure displayed greater levels of obedience compared to those in the control group. When leaders are assigned as authority figures within a group, participants tend to commit more violations whenever they are encouraged to do so. The higher susceptibility to going against the rules originates from the authoritative figure's influence, demonstrating an authority bias. It is a natural human tendency to succumb to orders, decisions, or instructions from a higher authoritative figure, as stated by Saha (2023). This phenomenon often leads to people overriding their own judgment to put more importance on the reasoning of an authoritative figure, despite it going against their own moral and ethical standards. In connection to the original Milgram experiment, the decisions of the participants were likely not only influenced by the conditions they were in but also by the credibility and authority attributed to the people acting as the authority figure (Van Woensel, 2019, as cited by Azarpanah et al., 2021). This supports the notion that individuals may go along and be impacted by the decisions of an authority figure, regardless of whether their actions align or do not align with their own ethical values.

In the groundbreaking Milgram experiment, participants were subjected to severe psychological consequences as they were instructed to administer what they perceived to be unsettling and potentially harmful electric shocks to another person. Meanwhile, in this study, the participants did not use severe punishments in order to avoid ethical problems. Instead, the researchers provided lesser consequences for the participants in order to still investigate the essence of the phenomenon of obedience to authority.

In Table 6, both groups' stress levels did not differ significantly, revealing that the presence of an authority figure was not a factor in stress levels. The result showing no significant difference in stress levels between the two conditions could be understood in a more recent study on obedience. As the study indicates, stress is not always an indicator of emotional distress caused by an authority figure (Kaposi, 2022). Further research has also yielded findings revealing that while authoritarian leadership increased unethical behaviors, it had little impact on interpersonal stress levels (Hu et al., 2022). These findings support the results that stress levels were not significantly different between groups with an authority figure and without one. Based on the findings, the presence of an authority figure had little impact on the stress level of the participants, which could suggest that other factors may have influenced how they responded in the experiment. The absence of differences in stress levels between the group with an authority figure and those without one may also be attributed to the enjoyable nature of the activity conducted by the experimenter,

Given the insightful findings of this study, there are still several limitations that should be taken into account. The limited sample size of this study, which includes only 40 participants, is one of its limitations, which could limit how broadly the research can be applied. Future researchers could use a bigger sample size to improve its external validity. Another limitation that needs to be considered is using only one task. This limitation restricts the investigation of the stress level in the participants, which could be enhanced by future studies by examining the effects of different tasks with various groups in terms of their stress levels. Additionally, this study did not consider the gender of the authority figure or the potential moderating impact of participants' sex on obedience and stress levels. Future studies could explore how the gender of authority persons affects these results and how males and females differ in obedience and stress responses. For the reason that this study uses a quantitative approach in gathering data, future researchers may also obtain relevant information regarding obedience to authority if they examine it through the perspective of a qualitative approach. Examining the participants' personal experiences during the experiment may provide a deeper understanding of their standpoint.

CONCLUSION

In this study, the researchers aim to examine the influence of an authority figure on the rule-breaking behavior by comparing participants who are exposed to an authority figure that encourages their members to violate rules during an activity with those that were not. Another factor that is examined is the perceived stress levels of the participants exposed to two different conditions: (1) the presence of an authority encouraging them to break the rules and (2) the absence of such an authority figure. Data were collected from 40 undergraduate students (mixed genders) based on the specific inclusion and exclusion criteria. Researchers recorded the number of rule violations during the activity. At the end of the experiment, participants were asked to rate their stress levels during the activity on a scale of 1-10 (1 indicating low stress level and 10 indicating high-stress level) in response to the question, "How stressed were you during the game?"

A significant difference was observed between the two groups regarding violations, suggesting that the presence of an authority figure who encourages its members to violate rules has influenced the participants to commit such actions. Several studies have supported this result, stating that the presence of an authority figure has an enormous effect on obedience. Additionally, authority bias also plays a significant role in the obedience of the participants. This prejudice frequently causes individuals to emphasize assessments of authority figures over their own reasoning or ethical considerations. This study indicated no significant difference in stress levels between the experimental and control groups, suggesting that the presence of an authority figure was not a determining factor in stress. This finding is supported by earlier studies indicating that participants found the experiment more enjoyable than stressful, resulting in low-stress levels among participants from two different conditions.

The findings of this study provide practical relevance that is helpful in real-

for fostering peer support systems. Similarly, ethics training among leaders or authoritative individuals is also recommended as an essential measure to reduce unethical behaviors by encouraging decision-making grounded in moral and ethical principles. This type of leadership intervention helps alleviate the negative consequences of decisions that go beyond ethical human considerations.

Ethical Approval and Consent

Participants were given informed consent prior to the study, with the experimenters explaining the whole focus of the experiment, including specific details to maintain the integrity of the experiment. Since deception was utilized in this study, including the misleading of participants about the random selection of the leader, a thorough debriefing was conducted at the end of the activity in which they were informed of the true purpose of the study and the role of a confederate. Since the experiment was designed to ensure the safety of the participants, they were also informed of their autonomy to withdraw at any time without any penalty. Moreover, the data gained from the experiment remains confidential and was used for research purposes only. The study design, including the use of the scripted role of the confederate, was carefully reviewed to ensure that harm would be minimized and the benefits of this study would surpass the potential drawbacks.

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1.
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3.

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Appendix A
Stress Measurement Scale

How stressed were you during the game?

(1) (2) (3) (4) (5) (6) (7) (8) (9) (10)

Appendix B

DOCUMENTATION

Figure 1.

Random Assignment of the participants through tossing coins.

Figure 2.

Introduction of the Activity including its mechanics

Experimental Group (Actual Activity)

Figure 4.

Control Group (Actual Activity)