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Level of Authority and Response Cost in the Obedience of Schoolchildren

Nivel de autoridad y costo de respuesta en la obediencia de niños escolares

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Abstract
In the present study an analysis was made of the effect of establishing two levels of authority (Total or Partial) in the obedient behavior of schoolchildren under two test situations: one with no response cost for disobedient responses (NRC) and the other, with response cost for disobedient responses (RC). The level of authority was determined by the number of power functions, as proposed by Ribes (2001) that were wielded in the experimental situation. At the beginning of the experiment, half of the participants were exposed to a condition of Total Authority consisting of three sessions of computer games in the presence of the experimenter while he wielded the four power functions (prescription, regulation, supervision and the administration of consequences). The other half of the participants was exposed to a condition of Partial Authority in which these three sessions took place in the presence of the experimenter while she wielded only two of these functions (prescription and regulation). Subsequently, by means of a puzzle-solving activity that allowed for two types of response: one permitted (obedience) and another forbidden (disobedience), the participants were exposed to a baseline phase and to test phases alternating NRC and RC conditions. It was observed that the participants who were exposed to a Total Authority figure gave fewer disobedient responses than the participants exposed to a Partial Authority figure. Furthermore, it was observed that regardless of the level of authority that was established, the participants who started the test sessions with an NRC condition gave fewer disobedient responses than those starting with an RC condition. The results are discussed in terms of the effect of the presence of an authority figures who wield power functions in different ways, and in terms of their interaction with the response cost implemented in the situation.
Key words: authority, power functions, obedience, response cost, restitution

Resumen
En el presente estudio se analizó el efecto de establecer dos niveles de autoridad (Total o Parcial) en la conducta obediente de niños escolares bajo dos situaciones de prueba: una sin costo de respuestas desobedientes (SCR) y, la otra, con costo de respuestas desobedientes (CR). El nivel de autoridad se determinó por el número de funciones de poder, propuestas por Ribes (2001), ejercidas en la situación experimental. Al inicio del experimento, la mitad de los participantes se expusieron a una condición de Autoridad Total que consistió en tres sesiones de juegos de computadora realizadas en presencia del experimentador mientras éste ejerció las cuatro funciones de poder (prescripción, regulación, supervisión y administración de consecuencias). La otra mitad de los participantes se expuso a una condición de Autoridad Parcial en la que estas tres sesiones se llevaron a cabo en presencia del experimentador mientras éste ejerció sólo dos de dichas funciones (prescripción y regulación). Posteriormente, mediante una tarea de resolución de rompecabezas, que permitió establecer dos tipos de respuesta: una permitida (obediencia) y otra prohibida (desobediencia), los participantes se expusieron a una fase de línea base y a fases de prueba alternando condiciones SCR y CR. Se observó que los participantes expuestos a una figura de Autoridad Total, mostraron menos respuestas desobedientes que los participantes que se expusieron a una figura de Autoridad Parcial. Además se observó que, independientemente del nivel de autoridad establecida, los participantes que iniciaron las sesiones de prueba con una condición SCR, mostraron menos respuestas desobedientes que los que las iniciaron con una condición CR. Se discuten los resultados en términos del efecto de la presencia de figuras de autoridad que cumplen de forma diferencial con las funciones de poder y en términos de su interacción con el costo de respuesta implementado en la situación.
Palabras clave: autoridad, funciones de poder, obediencia, costo de respuesta, restitución.

"Authority" has been defined as the legitimate right held by one or more individuals to give orders and to be obeyed (Friedman, 1990; Raz, 1990a, 1990b; Wolff, 1990). It has been distinguished from "power," primarily because power, according to Raz (1990b), refers only to the capacity to make others do what one wants them to do without being a normative term, while "authority" is such a term. However, even though "authority" and "power" are terms that can be defined independently, as early as 1959 Levinger (1959) maintained that for an individual to be recognized as an authority figure, he must always possess a minimum of power. For this reason, an analysis of "authority" necessarily involves a consideration of "power."

According to Ribes (2001), "power" can be wielded by an individual (authority figure or not) in a particular situation by means of four functions, namely: prescription, regulation, supervision and the administration of consequences. The prescription function is wielded by stipulating all the activities that can or must be carried out in a given situation, as well as indicating the consequences that will ensue if these activities are or are not carried out. The regulation function is wielded by intervening to make adjustments to the situation in order to maintain the prescribed conditions. Supervision occurs when prescriptions are monitored and indications are given so that these prescriptions are carried out, by simply observing, and not explicitly making individuals change their behavior. Finally, the administration function is wielded by directly procuring consequences in the situation. In Ribes' view (2001), these functions can be wielded by one or more people in a situation. Furthermore, these people may or may not be recognized as authority figures, which, together with other factors, will generate differential effects in the behavior of the individuals over which these functions are wielded (Rangel & Ribes, 2009). According to these authors, one of the effects that are produced when an authority figure wields power in a given situation is "obedience."

In general terms, "obedience" is a social phenomenon that has sparked the interest of

psychologists for some time, as evidenced by the wide range of studies that have been conducted with an eye to evaluation (e.g., Díaz Guerrero, 2000; Lara, Gómez, & Fuentes, 1992), experimentation (e.g., Brant, 1980; Burger, 2009; Milgram 1974/2004; Shanab & Yanhva, 1978, in Blass, 1991) and technology (e.g., Ayala, Téllez, & Gutiérrez, 1994; Ayala et al., 2001; Marlow, Tinestrom, Olmi, & Edwards, 1997; Richman, et al., 1994; Roberts, Hatzenbuehler, & Bean, 1981; Robinson & Sheridan, 2000; Wilder, Harris, Reagan & Rasey, 12007; Yeager & McLaughing, 1995, among others).

Thus, obedience encompasses situations in which individuals change their behavior in response to direct orders from others (Baron & Byrne, 1982). This means that in a situation in which obedience is demanded, individuals must change their behavior in response to orders given by other individual(s), because if they do not, they will face negative sanctions imposed by the one giving the orders, i.e., by the authority figure. In this last case, it could be said that the choice between doing and not doing what is ordered is forced or influenced by explicitly programmed consequences. In fact, Baron and Byrne (1982) have suggested that obedience is the most direct technique that one person can use to modify another's behavior because it implies the capacity to apply severe punishments on those who do no obey her orders.

On the basis of the foregoing, this study assumes that people who are in a position to be obeyed and wish to wield this privilege, should base their actions on power and the wielding of its functions. In fact, in studies on obedience (e.g., Ayala, Téllez, & Gutiérrez, 1994; Ayala et al., 2001; Burger, 2009; Marlow, Tinestrom, Olmi, & Edwards, 1997; Milgram 1974/2004; Wilder, Harris, Reagan, & Rasey, 2007), the wielding of prescription can be identified with the explanation of what must and must not be done in a situation; regulation with the maintenance of the participants in the experimental situation; supervision, with the experimenter's monitoring and pointing out to the participants that they are doing what should or should not be done; and finally, the administration of consequences with the experimenter's interventions in the situation applying negative sanctions to the participants who disobey, generally by means of procedures like time-out and response cost (e.g., Roberts, Hatzenbuehler, & Bean; Marlow, et al., 1997; Richman et al., 1994; Yeager & MacLaughing, 1995). There has been no systematic study, however, of the role that these functions play in obedient behavior when they are wielded differentially.

Thus, the aim of the present study was to compare the obedience of schoolchildren in response to two levels of authority, as defined by the number of functions wielded by the authority figure in the situation, and their effects on two conditions, one having a response cost for disobedience and the other without such a response cost. The first level of authority was called Total Authority, since the experimenter wielded all four of the power functions mentioned above, while the second level of authority was called Partial Authority, since the experimenter wielded only two of these functions (prescription and regulation).

Method

Participants

Sixteen children (eight girls and eight boys) between the ages of nine and 13 years participated in the experiment in exchange for candy and snacks. The participants came voluntarily to the community center where the experiment was conducted. The only criterion for inclusion was that they had to be enrolled in the fifth or sixth grade of elementary school at the time of the experiment.

Equipment and experimental situation

For conducting the experiment, four portable Compaq Pentium 100 computers were used, with chromatic monitor, keyboard and mouse for responding, and a clock. The experimental tasks used (games like Hangman, Tetris, etc.), for the experimental treatment condition, and puzzles for the test and baseline conditions. The instructions were given in written and spoken form. The puzzle software was designed for Windows 95, using Visual Basic 6.0. The participants' responses were automatically re-

corded by the computer system. The data were analyzed using the Excel 2007 program, and represented graphically with Sigma Plot 10.0.

The experimental sessions were held in a room measuring 4 x 5 m, at a community center. In the room were four tables, four chairs and different objects that allowed a division to be placed between the tables on which the computer equipment was placed. These divisions made it possible to work at the same time with the four participants of each group, as continuous visual contact and any kind of communication among the participants was effectively blocked. The experimenter took up a location that was visible to the four participants the whole time the experimental session lasted. During one of the phases (the Authority Training phase), there was only one table in the room, along with four chairs, a computer and a clock; the rest of the objects were kept in the room, but out of the participants' reach.

Design

Table 1 presents the design used in this study, consisting of an intra- and inter-subject comparison under different experimental treatments. The participants were assigned randomly to one of four groups. All the participants were exposed to a Game Training session (to become familiarized with the task), specifically about the games that would be used in the following experimental phase, the Authority Training phase, consisting of the participants' exposure to one of the two levels of authority (Total or Partial) according to the number of power functions that the experimenter wielded during that phase. The participants from Groups 1 and 3 worked in a situation of Total Authority, while those from Groups 2 and 4 did so in a situation of Partial Authority. Subsequently, each participant was told that he would work with a partner (really a computer) to put together two identical puzzles, one belonging to him and the other to the partner. With this experimental task, the participants were exposed to a Baseline phase consisting of a situation of freely choosing responses between their own puzzle and their partner's. During this condition, the participant was allowed to respond on either one of the two puzzles for the purpose of establishing response preferences in each one of them. After this, the participants were exposed to four (groups 3 and 4) or five (Groups 1 and 2) test phases, in which response-cost and non-response-cost conditions (RC and NRC) were alternated for responding on their own puzzle (which was established as the forbidden puzzle starting with these test phases) (see Table 1).

The experiment was conducted for nine days for Groups 1 and 2, and for eight days for Groups 3 and 4. The Game Training session and the first session of the Experimental Treatment in Authority were conducted the first day. The remaining two treatment sessions

Table 1

	Pre-training	Experimental Treatment Authority Training		Test Phases				
Group 1	Game Training	Total Authority	Baseline	NRC	RC	NRC	RC	NRC
Group 2		Partial Authority		NRC	RC	NRC	RC	NRC
Group 3		Total Authority		RC	NRC	RC	NRC	
Group 4		Partial Authority		RC	NRC	RC	NRC	
Sessions	1	3	3	3	3	3	3	3
Days	1	1-3	4	5	6	7	8	9

Experimental design, where: NRC refers to the condition where there is no response cost for responding on the forbidden puzzle, and RC refers to the condition where there is a response cost for responding there.

were conducted the second and third days. The rest of the phases (Baseline and each NRC and RC phase) consisted of three sessions (puzzles) each, with one phase being conducted each day.

Procedure

Total Authority Training phase – establishment of history

After the period of training in six computer games, the participants were exposed to three sessions in which they could choose to play any of them: Tetris, Pac-man, Hangman, and other similar games. In each of the sessions, the four members of each group played on one computer. Each of them was to play for 5 minutes and then let the next participant have her turn, until each member had played for 15 minutes. The participants had a clock in front of them so that they could keep track of time themselves while they played. Before starting each session, the participants were told that there were behaviors that were not permitted, such as shouting, getting up from their place, saying bad words, hitting each other, hurting each other, or saying mean or rude things to each other, and that if any of them were caught behaving that way, they would have to leave the game for that day. It was stipulated that in the first two sessions of this phase, the participants would be taken out of the experimental cubicle the third time they did something forbidden, and that in the last session, if any of them behaved disruptively on more than one occasion, they would be eliminated from the experiment. The participants who remained in the experiment received a piece of candy at the end of the session. The experimenter, in this case the authority figure, was able to prescribe what was to be done and what was not to be done in the situation; regulate by making the participants stay in the experimental room; supervise the participants' behavior in the situation and administer consequences for what they did.

Partial Authority Training phase

This phase was handled the same way as the Total Authority phase, with indications of forbidden behavior, but without any penalties if they occurred. During this condition, no candy was handed out to the participants. The experimenter only prescribed what was to be done and what was not to be done in the experimental situation, and regulated by keeping the participants in the experimental room. She did not however supervise to see whether forbidden behaviors took place or not, nor were any consequences administered after their occurrence.

Starting with the Baseline phase, the experimental task consisted of putting together puzzles on the computer screen by placing pieces in their place using the mouse (See Figure 1). A different figure was presented for each experimental session (See Figure 2). Each puzzle consisted of 50 pieces and on the computer screen, two identical puzzles appeared, one on the left side and one on the right side of the screen. The puzzle on the left appeared under the heading *Partner's*, and the one on the right under the heading *Mine*. The participants had the possibility of placing pieces on either of the two puzzles, and the time for completing the task was unlimited.

Under each puzzle, two counters appeared, one that recorded correct responses and the other that recorded the points awarded for each piece that was correctly placed, either by the participant or by the partner. There was no counter for the Baseline condition, and other than in this condition, at the end of each session the participants could differentially exchange the points they scored for candy. Before the experimental sessions started, a sample of the prizes was shown with their respective point value. The experimenter was present in the experimental room while the participants were exposed to the different tasks making up the study.

During the test sessions, two kinds of responses were identified: 1) a forbidden response, consisting of responding on one's own puzzle, and 2) a permitted response, consisting of responding on the partner's puzzle. This made for a situation in which the authority figure could explicitly tell the participants what to do and what not to do. In view of the fact that when this task is used (Ribes, 2001; Ribes & Rangel, 2002; Ribes, Rangel, Casillas et al., 2003; Ribes, Rangel, Juárez et al., 2003, etc.), a marked preference for responding on one's own puzzle has been found, in the present experiment the responses on this puzzle were forbidden, and the responses

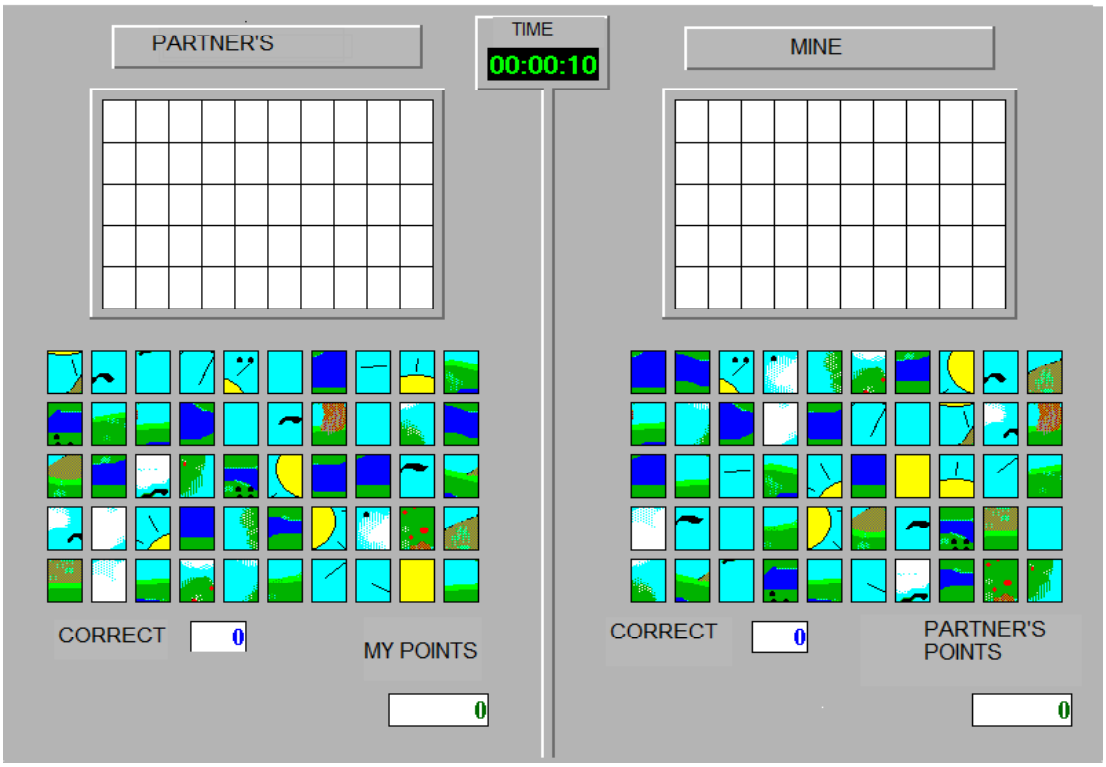

Figure 1. Shows the screen of the puzzles that the participants worked on.

Figure 2. Shows some of the figures used on the puzzles.

on the partner's puzzle were allowed, the reasoning being that had the participants obeyed an order to respond only on their own puzzle, according to the experimental results this behavior could easily be occurring independently of the order given by the authority figure in the experimental situation.

In order to avoid any kind of bias toward disobedience, the partner, i.e., the computer, only placed pieces on the puzzle that the participant saw on her screen under the heading *Mine*, which made it seem that the partner was always obeying the experimenter's orders.

Baseline

Two puzzles appeared on the screen with the same figure, one of them under the title *Mine* and the other under the title *Partner's*. The participant was informed that he could assemble either of the two puzzles. As mentioned, over the course of the session the computer assembled only the puzzle that the participant had on the screen under the title *Mine*. The computer placed a piece every 15 seconds. The time allowed for completing the puzzle was unlimited, and the participant was not told about the points he earned or the right responses he made.

Non-Response Cost condition

In this condition, the participant was told she should only respond on the partner's puzzle. However, just as in the Baseline, she was able to manipulate either of the puzzles that appeared on the screen. The computer placed a piece in the puzzle that the participant saw under the title *Mine* every 15 seconds, and for each piece placed, 10 points were added to the counter that said *Partner's points*. For each piece that the participant placed correctly in the partner's puzzle, which was the puzzle she was permitted to work on, she got 10 points on the counter that said *My points*, while for each piece placed correctly in her own puzzle, which was the puzzle where she was forbidden to work, she got 40 points. The value on the forbidden puzzle was set to make up for the speed with which the machine placed pieces in this same puzzle, and so that it would have an effect on the forbidden or disobedient response (earn more points for this kind of response). In addition, with this, the values of the pieces were kept constant with respect to the response-cost condition. The participants were able to observe their points and those of their partner at any time during the session. If the participant finished putting together the permitted puzzle (the partner's) before the computer finished placing the pieces in the puzzle that the participant saw under the title *Mine*, the participant had to choose between waiting for his partner to assemble the puzzle to finish the session, or help him finish it, even though this meant giving responses on the forbidden puzzle (disobeying).

Response-Cost condition

This condition was conducted in the same way as the NRC condition, except that 20 points were subtracted from the participants' score every time they responded on their own puzzle. The participants were told that since they were not allowed to respond on that puzzle, they would lose 20 points every time they did it. These values were assigned so that even though responding on the forbidden puzzle had a cost, the participant would continue earning more points for disobeying; it was thought that if she earned fewer points by doing so, the probability of the forbidden behavior's occurring would drop. In this condition, a delayed-contingency situation was presented, since by completing the task, the participants could only observe the points that they earned, and not the ones that they lost. At the end of the session, the experimenter took off the 20 points for each piece placed on the participant's own puzzle. The participants could observe their points and their partner's at any time during the session.

Results

Figure 3 shows the data from the RC and NRC sessions as a proportion of changes with respect to the Baseline. To calculate this rate, the proportion of responses on the participants' own (forbidden) puzzle in each condition was divided by the proportion of responses on their own puzzle in the Baseline. Thus, if the rate val-

ue is 0, it means that the participant responded only on the permitted puzzle and was obedient during that condition; if the rate is 1 or less, it means that the participant gave some disobedient responses but fewer than in the Baseline, i.e., that she showed a certain degree of obedience; finally, if the rate is greater than 1, it means that the participant responded on the forbidden puzzle at higher levels than in the Baseline, i.e., she was disobedient. As Figure 3 shows, the participants that had the lowest disobedience rate were those from Group 1, who were exposed to Total Authority Training and started the test sessions with the NRC condition. Starting with the first RC condition, they gave only obedient responses for the rest of the experiment. The participants from Groups 2 and 3, exposed respectively to Partial Authority and Total Authority training, had a low disobedience rate (1 or less). Finally, the participants from Group 4, exposed to Partial Authority training and who started the test sessions with an RC condition, were the ones with the highest disobedience rates (up to 9) in NRC conditions. Since the score that the participants received in each session depended on their execution, the participants from Group 4 were the ones who kept earning the most points, especially in NRC conditions (up to 1500 points per session), while the rest of the participants, in most of the sessions, maintained a point level of 500, which was the most they could earn if they responded only on the permitted puzzle.

Figure 4 shows the total average (of all the participants) of the obedience/disobedience rate by condition (NRC/RC) and by authority

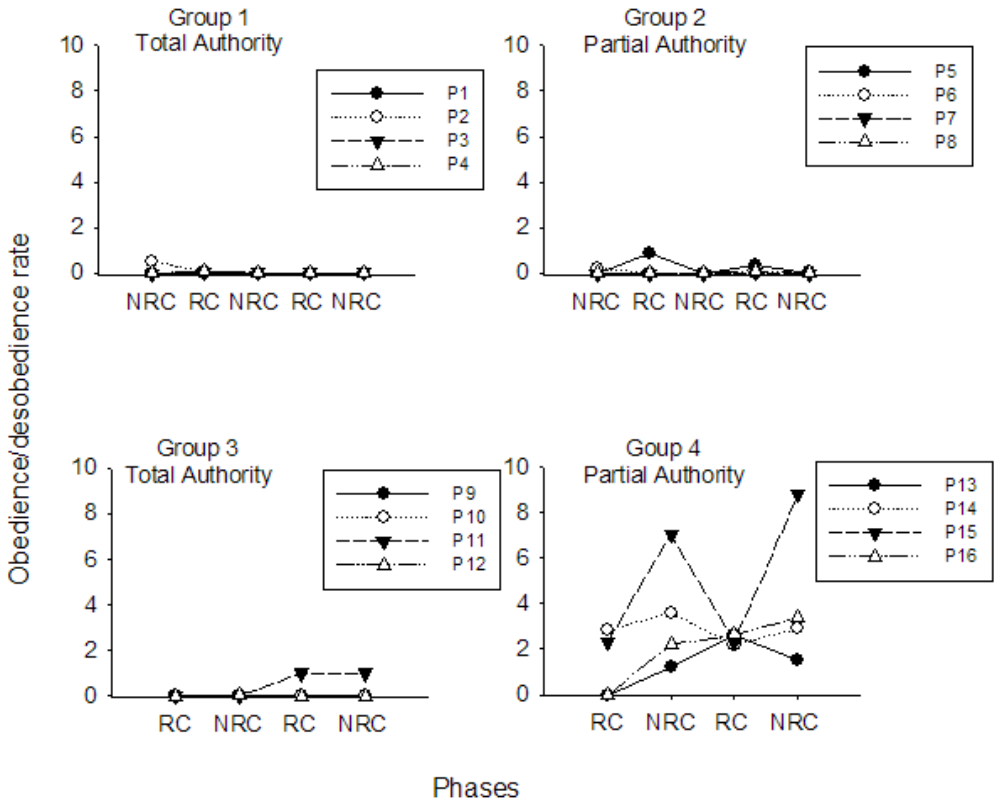

Figure 3. Shows the obedience/disobedience rate by participant. RC: Response-Cost Condition; NRC: Non-Response-Cost Condition.

level (Total, Partial). It can be observed that the participants in the Total Authority condition had rates close to 0 in both RC and NRC conditions, while the participants exposed to the Partial Authority condition showed higher disobedience rates especially in NRC conditions.

The following figures show the average of each experimental phase. Each phase consists of three sessions. The intra-phase variations are shown by means of their standard deviation.

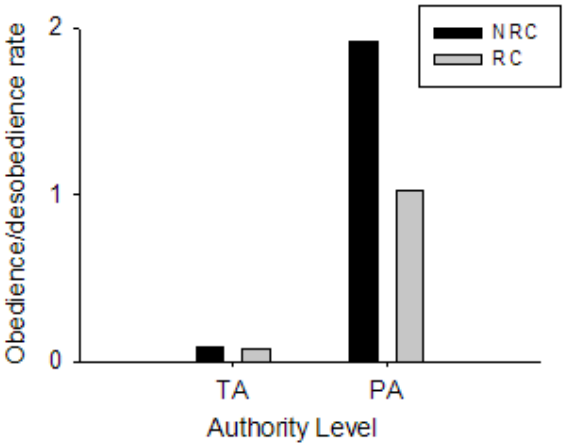

Figure 4. Shows the average (of all the participants) of the obedience/disobedience rate in each test condition and in each level of authority. TA: Total Authority; PA Partial Authority; RC: Response-Cost Condition; NRC: Non-Response-Cost Condition.

Figure 5 was devised for the purpose of observing whether the participants responded on the forbidden puzzle while they still had a chance to respond on the permitted puzzle (during) or whether they did it after they had finished assembling it (after). In very low response numbers, participants 3, 7 and 11 gave all the forbidden responses during, i.e., while they still had the chance to assemble the permitted puzzle; Participants 4, 6, 12 and 13, on the other hand, responded on the forbidden puzzle only after having completed the permitted one. Participants 2, 5 and 8 gave their forbidden responses both during and after. Special mention must be made of Participants 14, 15 and 16, who were the ones who responded the most on the forbidden puzzle. Participant 14 did so after having competed the permitted puzzle, while the other two (15 and 16) did so while they were still able to respond on the permitted one, making them the most disobedient participants of the experiment.

Figure 6 shows the time (average by phase) that each participant took to assemble the puzzles. In the first experimental sessions, all the participants took between 15 and 38 minutes per session. After the baseline, all the participants managed to finish the sessions in less than 18 minutes. Only Participant 14 was able to put puzzles together in less than 10 minutes.

Discussion

The aim of the present experiment was to compare the obedience of schoolchildren in response to 2 different levels of authority: a Total Authority who wielded the four power functions proposed by Ribes (2001) and a Partial Authority, who wielded only two of these functions (prescription and regulation), as well their impact on two conditions: one with a response cost and the other without a response cost for disobeying.

The results showed three important effects: 1) the participants from the groups that were exposed to a Total Authority figure showed lower rates of disobedience, including total obedience, than those exposed to a Partial Authority figure; 2) Group 1, which was exposed to a Total Authority figure and started the test phases with an NRC condition, was the group with the highest obedience rates, while Group 4, which was exposed to a Partial Authority figure and started the test phases with an RC condition, was the group with the highest disobedience rates (up to 9 in the case of some participants in some sessions); and 3) it would seem that regardless of the level of authority, starting the test phases with an RC condition favors higher disobedience rates than starting the treatment with an NRC condition.

This last effect could be attributable to the set-up of the RC condition, since even with the implementation of the response cost, the participants earned more points if they responded on the forbidden puzzle than if they limited their responses to the partner's puzzle. Regard-

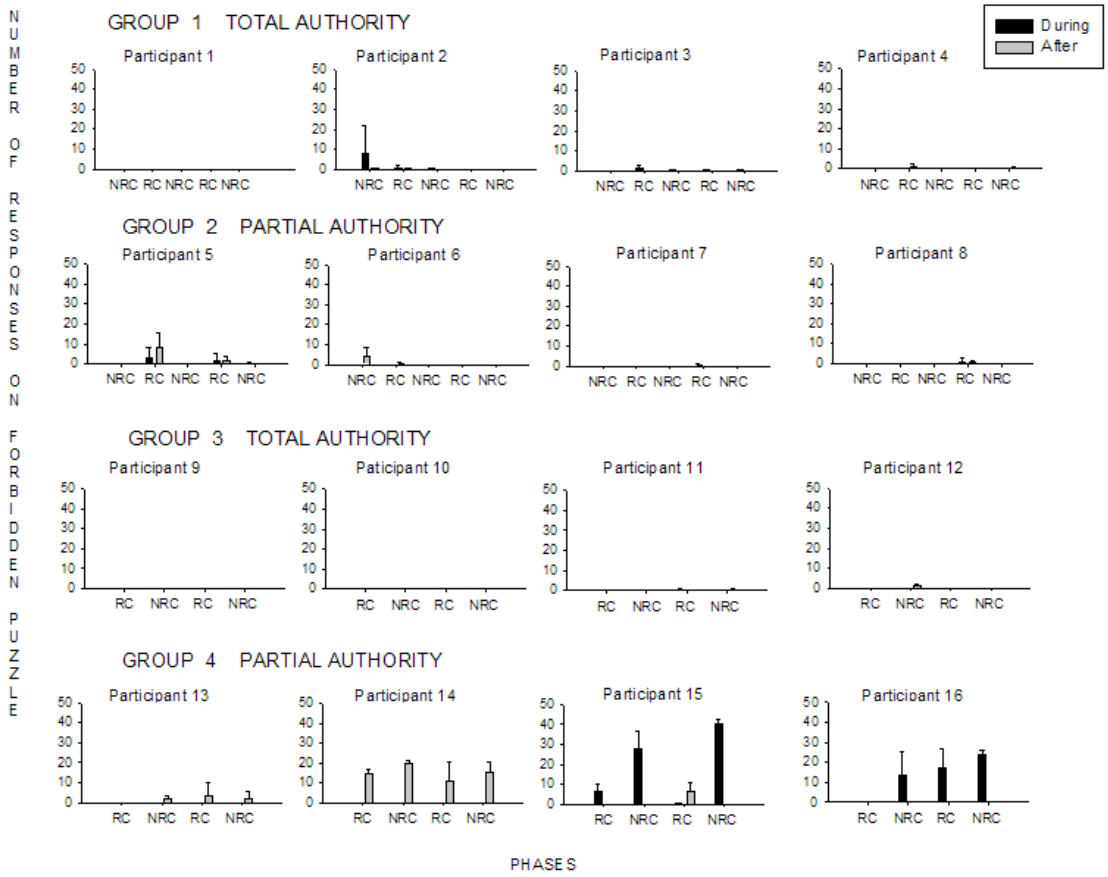

Figure 5. Shows the average number (by phase) of responses on the forbidden puzzle during or after the assembly of the permitted puzzle. BL: Baseline; RC: Response-Cost Condition; NRC: Non-Response-Cost Condition.

ing this point, Participant 5 mentioned that on the puzzles that made up the NRC phases, he could not respond on the forbidden puzzle, but that on the others, referring to those making up the RC phases, he could, because even though he was told not to, in the end 20 points were taken away for each piece that he placed. This effect might be related to a restitution procedure in which a participant who takes something that does not belong to her, is required to give it back (Azrin & Wesolowski, 1974; Carey & Bucher, 1981). Although these authors reported that restitution is a procedure that leads to a decrease in the frequency of undesirable behaviors, it would seem that in the case of Participant 5, this procedure worked the other way around: as mentioned above, he placed pieces on the forbidden puzzle because at the end of the session 20 points would be taken away from him anyway. In other words, he justified his disobedient behavior with the forced restitution that he would make at the end of the session. This effect did not occur in the groups where Total Authority was wielded.

In general, the results support the findings reported by Baron and Byrne (1982) in the sense that two aspects that are fundamental for evoking obedience are: 1) the presence of an authority figure in the situation, and 2) this figure's ability to administer strong punishments to those who disobey. When one of these aspects is missing, cases of disobedience often appear, as occurred with the participants from groups 2 and 4, in which the Partial Authority did not fulfill the functions of supervision and administration of consequences.

The appearance of some disobedient behaviors, even in the participants from Groups

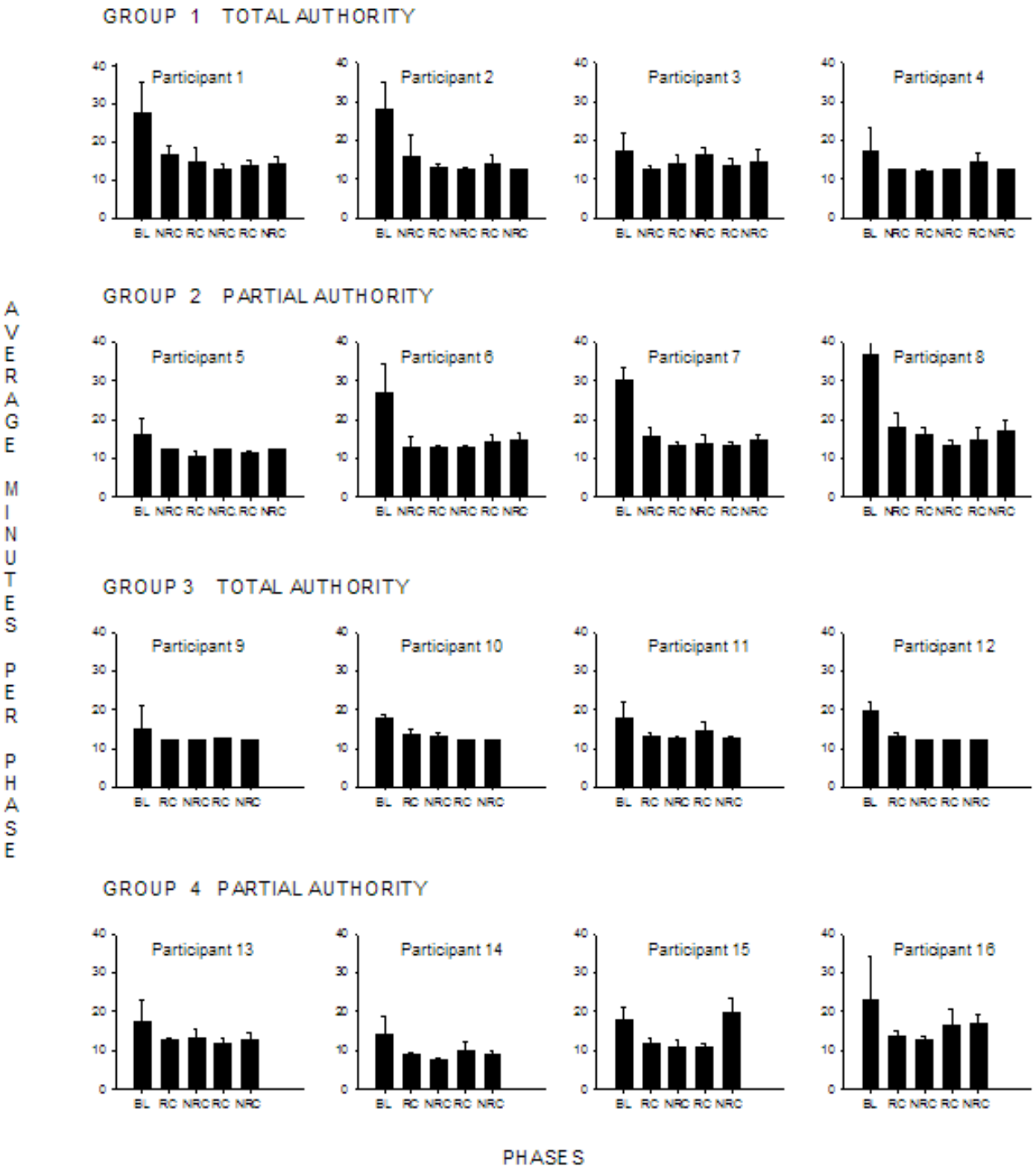

Figure 6. Shows the time (average by phase) that each participant took to assemble the puzzles. BL: Baseline; RC: Response-Cost Condition; NRC: Non-Response-Cost Condition.

1 and 3, who were exposed to a Total Authority, could be explained by the fact that in the authority establishment phase no participant engaged in disruptive behavior on more than two occasions, meaning it was not necessary to remove any of them from the experimental situation. This was most likely due to a sound establishment of the norms governing the situation, but at the same time, it did not allow for the administration of consequences in this phase, which according to Baron and Byrne (1982) and Milgram (1974, 2004) could have weakened the obedience to the authority figure, the administration of punishments being a key aspect for evoking obedience.

As the observations showed, even though some participants did not respond on the forbidden puzzle until they had competed the permitted one, most of the participants, regardless of which experimental group they belonged to, responded on the forbidden puzzle when they still had the possibility of responding on the permitted puzzle, especially two of the participants from Group 4 who were the ones that gave the highest number of disobedient responses. On the other hand, it would seem that the time taken to solve the puzzle was not a variable that affected the participants' obedience/disobedience, because the observations showed that as the experiment progressed, all the participants improved their execution time to a similar extent.

Two points of consideration that could be borne in mind for future research are: 1) the increase of restitutive value for disobeying; and 2) the immediate application, for each forbidden response, of the established response cost. In accordance with the Functional Dimensions of Social Behavior model (Ribes, 2001), in this study the authority figure was able to prescribe the imposed norms in the situation, as well as regulate, supervise and administer consequences for the behaviors displayed by the participants. It might be interesting to observe what happens when these functions are distributed among different people within a single experimental situation, or when they are combined differently. In conclusion, the area of obedience and power, in the Functional Dimensions of Social Behavior model, can be seen as a field in which a wide variety of manipulations can be carried out. This could be exploited first of all to gain a greater understanding of the variables involved in schoolchildren's obedient behavior, and then it could be extended to other populations and other types of situations.

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