

**III. ȘTIINȚE ALE EDUCAȚIEI/
EDUCATIONAL SCIENCES**

The psychosocial implications in young exposure to aggressive verbal stimuli evidenced by the polygraph

Implicatiile psihologice ale expunerii tinerilor la stimuli verbali, evidențiate cu ajutorul poligrafului

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Abstract

The objective of the study is to reveal the influence of aggressive words in physiological reactivity at polygraph.

The method: the participants were 48 students at the Faculty of Psychology and Educational Science, aged between 18 and 25 years ($m=21.6$, $S.D.=1.8$). Instruments: polygraph Lafayette LX 4000 Series; audio stimuli.

Results: The aggressive words had a strong impact in both galvanic skin response and heart rate recorded by polygraph.

Conclusion: The young exposed to aggressive stimuli register for a short period of time a high sensorial reactivity and after, suffer a radical desensitization.

Rezumat

Obiectivul studiului este relevarea influenței cuvintelor agresive în reactivitatea psihologică evidențiată cu ajutorul poligrafului.

Metoda: participanții sunt 48 de studenți de la Facultatea de Psihologie și Științe ale Educației, cu vârste între 18 și 25 de ani ($m=21,6$, $S.D=1,8$). Instrumente: poligraf Lafayette LX 4000 Series; audiostimuli.

Rezultate: Cuvintele agresive au un impact puternic atât în răspunsurile cutanate și în cele ale bățailor inimii evidențiate cu ajutorul poligrafului.

Cocluzii: Expunerea tinerilor la stimuli verbali agresivi pentru o scurtă perioadă de timp ce duce la reactivitate senzorială crescută și mai apoi la radical desensibilizare.

Keywords: *desensitization, aggressive stimuli, aggressive words*

Cuvinte cheie: *desensibilizare, stimuli agresivi, cuvinte agresive*

INTRODUCTION

Geen (1990) evidenced that constant exposure to violence causes more aggressive thoughts that would be activated in memory. These thoughts activate other aggressive an entire network of aggressive thinking is produced.[1]

In this way Anderson, Benjamin & Barthollow (1998) found that those who were exposed to aggressive words (kill and fight) had more aggressive thoughts than those who were exposed to neutral words (narrate and desert), suggesting that strong semantic associations are produced in memory which lead to more aggressive thoughts.[2]

Endestad & Torgersen (2003) present in their study the hypothetical models on how violence might influence behaviour evidencing the five hypotheses reviewed by Dill & Dill (1998)[3], [4]: 1) the construction, elaboration and priming of aggressive thought networks or scripts through game play, may increase the probability of violent behaviour; 2) Secondly, extended exposure towards violence could weaken inhibitions on acting violent; 3) exposure to violence affects the level of behavioural patterns of empathy adolescents feel towards/direct toward victims of violence in a tendency of decrease; 4) The social context of exposure can justify behaviour

mechanisms of aggression; 5) Albert Bandura's social learning theory demonstrates that modelling and reinforcement are important factors teaching children to act aggressively.

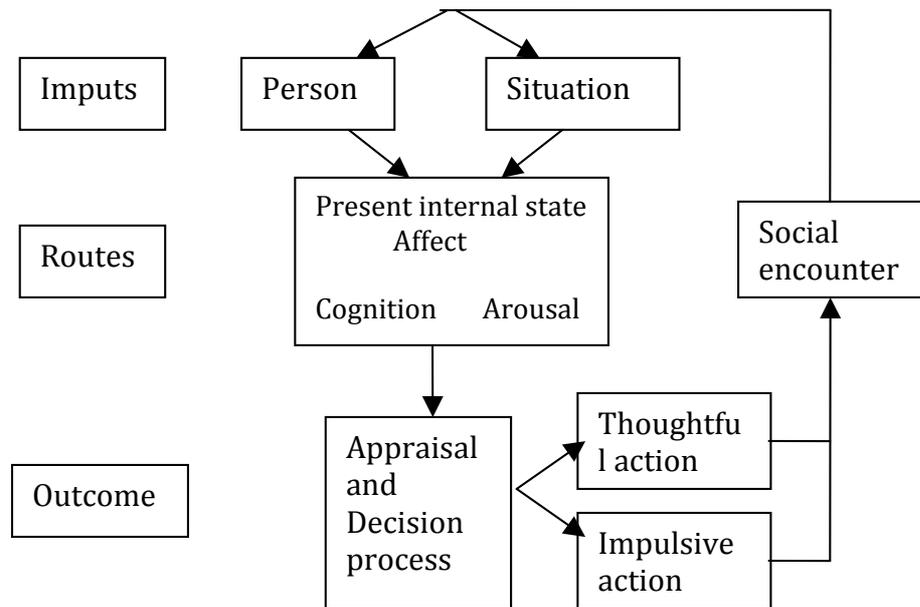


Figure 1 The general aggression model (Anderson & Bushman, 2002)[5]

In the model from figure 1 the Present Internal State box indicates the components' interaction. Thus, according to this model repeated exposure to violent lyrics may contribute to the development of an aggressive personality (Anderson & Bushman, 2002; Anderson, Carnagey, Eubanks, 2003), [6], [7] as is true for long-term TV violence effects (Huesmann, 1988; Huesmann & Miller, 1994) [8], [9].

Previous research had focused on extensive observation of violence shown to bias children's world schemas toward attributing hostility to others' actions (Dodge, 1985; Gerbner, Gross, Morgan & Signorielli, 1994), [10], [11]. In this was the studies demonstrated that attributions in turn increase the likelihood of children behaving aggressively (Dodge, 1980; Dodge, Pettit, Bates & Valente, 1995) [12], [13] and normative beliefs about which social behaviors are appropriate become crystallized, begin to act as filters to limit inappropriate social behaviors (Huesmann, Moise & Podolski, 1997) [14]. Furthermore, these normative beliefs are influenced in part by children's observation of the behaviors of those around them including behaviors observed in the mass media (Guerra, Huesmann, Spindler, 2003; Guerra, Huesmann, Tolan, VanAcker & Eron, 1995; Huesmann, Moise & Podolski, 1997), [15], [16], [17]. Long-term socialization effects of the mass media are also increased quite likely by the way the mass media and video games affect emotions. Through classical conditioning, fear, anger, or general arousal can become linked with specific stimuli after only a few exposures (Cantor, 1994; Cantor, 2002) [18], [19]. The authors concluded that emotions influence behavior in social settings away from the media source through stimulus generalization. A child may then react with inappropriate anger or fear in a novel situation similar to one that the child has observed in the media.

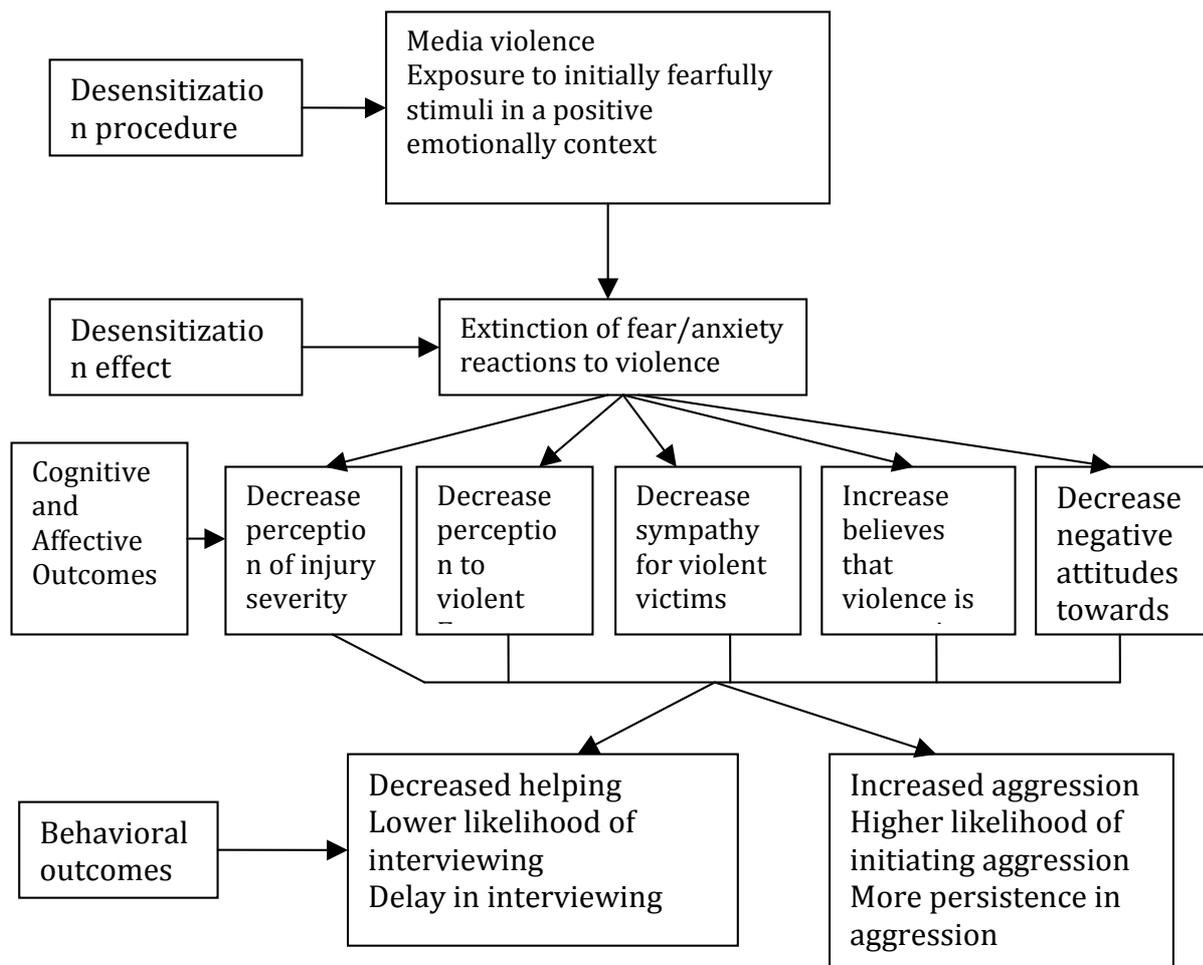


Figure 2 The model of the effects of exposure to media violence (Carnagey, Anderson & Bushman, 2007) [20].

Anderson & Bushman (2002) [21] proved that exposure is positively associated with heightened levels of aggression in young adults and children and negatively associated with prosocial behavior. Furthermore, the authors argued that exposure is positively related to the main mechanism underlying long-term effects of aggressive personality and aggressive cognition development being positively linked to aggressive affect and physiological arousal.

Since the natural reaction to seeing shocking violence is an increased heart rate, this is compelling evidence of desensitization. The galvanic skin responses, the electrodermal monitoring, the heart rate and other physiological responses to stimuli have been used to measure differential responsiveness to words and video films. Previous research underlined that during the movie, there was a significant drop in galvanic skin response for the violent gamers and a non-significant increase for the nonviolent gamers (Harris, Aycicegy & Gleason, 2003) [22]. They revealed that violent gamers were significantly less aroused by the violent images than nonviolent gamers another indication that they were desensitized by playing the violent games.

THE RESEARCH OBJECTIVES

- 1) to highlight the influence of the aggressive words in young students physiological reactivity recorded by the polygraph sensors
- 2) to evidence the influence of the positive words in young students physiological reactivity recorded by the poligraph sensors

THE RESEARCH HYPOTHESIS

- 1) The aggressive words influenced the young students physiological reactivity recorded by the polygraph sensors

- 1.1. The aggressive words influenced statistically significant the GSR amplitude recorded by the polygraph sensors
- 1.2. The aggressive words influenced statistically significant the heart rate recorded by the polygraph sensors
- 1.3. The aggressive words influenced statistically significant the blood pressure recorded by the polygraph sensors
- 1.4. The aggressive words influenced statistically significant the abdominal respiration rate recorded by the polygraph sensors

THE METHOD

The participants

The participants were 48 students at the Faculty of Psychology and Educational Science, Bucharest University age between 18 and 25 years old ($m=21.6$, $S.D.=1.8$), both female and male.

The instruments

1). The Lafayette Polygraph, LX 4000-Platinum Series, with virtual interface, windows program. The polygraph soft and the GSR sensors are generally fixed about two inches apart, either to the top and bottom of the middle finger or on the base of two adjacent fingers. Heart rate sensors are generally used to record inter-beat intervals or heart rate variability.

2). two audio clips, the first one nonaggressive describing nature and flowers (20 min), and the second audio clip with aggressive words (20 min).

The procedure

A polygraph examination took place in the laboratory of experimental psychology at the Faculty of Psychology and Educational Science.

The length of an examination was between 30 and 40 minutes depending on the accommodation of the participants with the nonaggressive and aggressive stimuli. The examination was divided into two experimental situations: first experimental situation composed from words from poetries and lyrics about relaxing landscape, nature and flowers and aggressive words and colloquial language from movies. The polygraph sensors measured the GSR (Galvanic Skin Response), heart rate and respiration of the participants to the study in both situations.

The experimental design

The variables

The independent variables: for the first experimental group the audio stimuli were poetries and lyrics about relaxing landscape, nature and flowers, and for the second experimental group the stimuli were aggressive words and colloquial expressions from a violent movie with soundtrack.

The dependent variables: the Galvanic Skin Response (GSR) recorded as amplitude and return distance in pixels; Heart Rate and Blood Volume Pulse (BVP) and respiration (amplitude and return distance).

RESULTS

After the experiment was undertaken the data received was analyzed and computed by SPSS, then they were processed, using Wilcoxon test for two dependent groups. After the analysis, the following results were reached, comprised in the tables below.

Analyzing the data recorded by the GSR sensors according the physiological response to the relaxing audio stimuli and aggressive audio stimuli in table 1 can be observed the descriptive statistics of the data in the first 7 minutes of each experimental situation.

Table 1 Descriptive statistics, GSR-amplitude in the first 7 minutes (N=48)

<i>Dependent variable</i>	<i>Mean</i>	<i>Std. Dev.</i>
Group lyrics and relaxing-	90.14	55.32
group aggressive words	123.15	88.12

Applying Wilcoxon nonparametric test, the statistic hypothesis has been confirmed ($p < 0.01$) for the first 7 minutes of each experimental situations. The aggressive words had a negative influence increasing GSR to higher amplitude than the relaxing words from poetries. Thus, the statistic hypothesis „the aggressive words influenced statistically significant the GSR amplitude recorded by the poligraph sensors” had been confirmed.

Also, in table 1 can be observe a statistically significant difference between the tow experimental situations regarding the standard deviation ($p < 0.01$) explaining the difference in physiological reaction GSR and the emotional impact of the audio stimuli for each participant.

Table 2 Descriptive statistics, GSR-amplitude in the last 13 min (N=48)

<i>Dependent variable</i>	<i>Mean</i>	<i>Std. Dev.</i>
Group lyrics and relaxing-	34.12	19.33
group aggressive words	41.15	31.18

In the table 2 can be observed the descriptive statistics of the dates recorded by the GSR sensors according the physiological response to the relaxing audio stimuli and aggressive audio stimuli in the last 13 minutes of each experimental situation.

Applying Wilcoxon nonparametric test, the statistic hypothesis has not been confirmed ($p > 0.01$) for the last 13 minutes of each experimental situations. The aggressive words hadn't a negative influence to GSR amplitude than the relaxing words from poetries. Thus, the statistic hypothesis „the aggressive words influenced statistically significant the GSR amplitude recorded by the poligraph sensors” hadn't been confirmed because the participants exposed to the aggressive words after a period of 5-7 minutes had been acomodated with the stimuli reacting physiologically the same like to the relaxing words and poetries.

Table 3 Descriptive statistics, Heart Rate, in the first 7 minutes (mean of the max recorded bpm-beating per minute) (N=48)

<i>Dependent variable</i>	<i>Mean</i>	<i>Std. Dev.</i>
Group lyrics and relaxing-	74.12	12.21
group aggressive words	118.3	58.45

Applying the Wilcoxon nonparametric test, the second hypothesis „the aggressive words influenced statistically significant the Heart Rate recorded by the poligraph sensors” has been confirmed for the first 7 minutes of each experimental situation ($p < 0.01$). The aggressive words had a negative influence increasing Heart Rate to higher amplitude than the relaxing words from poetries. Also, in table 3 can be observe a statistically significant difference between the tow experimental situations regarding the standard deviation ($p < 0.01$) explaining the difference in physiological reactions of the Heart Rate and the emotional impact of the audio stimuli for each participant.

In table 4 can be observed the descriptive statistics of the Heart Rate recorder by the polygraph sensors in the last 13 minutes of each experiemental situations.

Table 4 Descriptive statistics, Heart Rate, in the last 13 minutes (mean of the max recorded bpm-beating per minute) (N=48)

<i>Dependent variable</i>	<i>Mean</i>	<i>Std. Dev.</i>
Group lyrics and relaxing-	91.3	14.42
group aggressive words	112.8	54.65

Applying the Wilcoxon nonparametric test, the second hypothesis „the aggressive words influenced statistically significant the Heart Rate recorded by the polygraph sensors” has not been confirmed for the last 13 minutes of each experimental situation ($p < 0.01$). The aggressive words after a period of 5-7 minutes of accommodation hasn't a negative influence increasing Heart Rate to higher amplitude than the relaxing words from poetries. Thus, the participants exposed to the aggressive words after a period of 5-7 minutes had been acomodated with the stimuli reacting physiologically the same like to the relaxing words and poetries.

Also, in table 4 can be observed that between the two experimental situations regarding the standard deviation explaining the difference in physiological reactions of the Heart Rate and the emotional impact of the audio stimuli for each participant there is not a statistically significant diferece applying the Wilcoxon nonparametric test ($p > 0.01$).

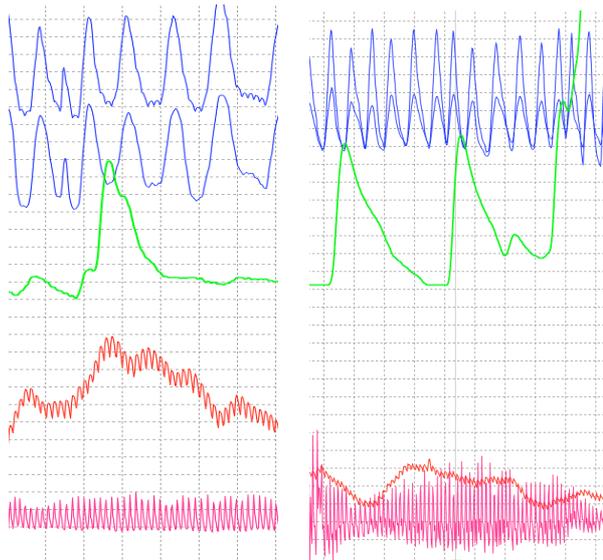


Figure 3 a, b physiological reactivity to aggressive words- audio exposure

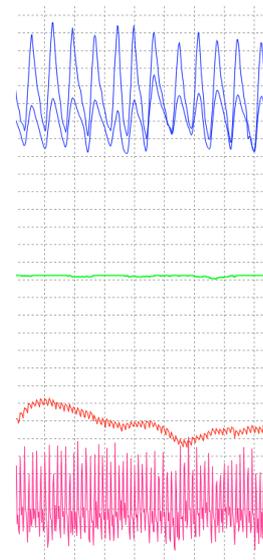


Figure 4 physiological reactivity to relaxing words –audio exposure

As it can be seen in figure 3 a, b (exposure to aggressive words audio stimuli), the GSR amplitude is higher statistically significant than in figure 4 (exposure to relaxing words) ($p < 0.01$).

Also in figure 3 a, b and 4 can be visualized the abdominal respiration amplitude and the heart rate in both experimental situations measured in the first part of the experimental situation (the first 7 minutes of exposure ti the audio stimuli).

Table 5 Descriptive statistics Blood Preasure in the first 7 minutes (mean mmHG)) (N=48)

<i>Dependent variable</i>	<i>Mean</i>	<i>Std. Dev.</i>
Group lirics and relaxing-	45.3	2.18
group aggressive words	46.2	2.11

Applying the Wilcoxon nonparametric test, the third hypothesis „The aggressive words influenced statistically significant the blood preasure recorded by the polygraph sensors” hasn't been confirmed ($p > 0.01$). Thus, the aggressive words had not influence Blood Preasure either in the first 7 minutes of the experimental situations on in the last 13 minutes of both experimental situations to higher amplitude than the relaxing words from poetries.

Tabel 6 Descriptive statistics, abdominal respiration amplitude, in the first 7 minutes (N=48)

<i>Dependent variable</i>	<i>Mean</i>	<i>Std. Dev.</i>
Group lyrics and relaxing-	14.46	5.03
group aggressive words	12.16	4.42

Applying the Wilcoxon nonparametric test, the fourth hypothesis „the aggressive words influenced statistically significant the abdominal respiration rate recorded by the poligraph sensors” hasn’t been confirmed regarding the respiration amplitude ($p > 0.01$). Thus, the aggressive words hadn’t influence Blood Pressure either in the first 7 minutes of the experimental situations or in the last 13 minutes of both experimental situations to higher respiration amplitude than the relaxing words from poetries.

Table 6 Descriptive statistics, respiration rate in the first 7 minutes (cpm-cicl./ min) (N=48)

Dependent variable	Mean	Std. Dev.
Group lyrics and relaxing-	19.52	5.23
group aggressive words	17.11	6.18

Applying the Wilcoxon nonparametric test, the fourth hypothesis „the aggressive words influenced statistically significant the abdominal respiration rate (cicli per min) recorded by the poligraph sensors” hasn’t been confirmed regarding the respiration rate ($p > 0.01$). Thus, the aggressive words hadn’t influence Blood Pressure either in the first 7 minutes of the experimental situations or in the last 13 minutes of both experimental situations to higher respiration amplitude than the relaxing words from poetries.

Conclusions

One way to measure the emotional impact of words is through their effect on autonomic reactivity. Thus, the galvanic skin response has been significantly statistic different recorded in violent and aggressive words exposure situations than relaxing scenes. Furthermore, the violent word has a strong impact in both galvanic skin response and hart rate.

After accommodation with the aggressive audio stimuli (5-7 min) the participants’ reactivity recorded by polygraph hasn’t been significantly statistic different recorded in violent and aggressive words exposure situations than relaxing scenes. Thus, the participants to the study assumed these aggressive stimuli as normal environment. The explanation of these findings based on the model of the effects of exposure to media violence (figure 2) highlight that living in the city enviroment, sorrownded by aggressive media stimuli the teenagers are adapted to the hostile words and their physiologically reactivity hasn’t a statistically significant difference between exposure to aggressive words. The adaptation of the teenagers to violent and aggressive words and stimulation represents a strategy to survive and a social need until the point of desezitization as the model mentioned in figure 2 evidenced. Thus, the teenagers exposed to aggressive words proved that the model of the effects of exposure to media violence (Carnagey, Anderson & Bushman, 2007), [23] underline that they suffer a radical desensitization after registering a strong statistically significant the physiological reactions as: high rate heart beat, high amplitude heart beat and galvanic skin response. Such exposure serves as a desensitization procedure leading to increases in aggression and decreases in helping the community where they live.

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