

The Preservation Bias Based on the Context: Performance of Teenagers with and without Cleft Lip within Hospital Context Using the Raven's Intellectual Test

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Abstract

The following paper raises the hypothesis that hospital context may raise an auto-preservation bias, influencing teenagers' cognitive development within an IQ assessment. We estimated that a motivational cognitive bias within mental activity of teenagers could promote more rigid and conservative behaviours. Data was collected during the application of the Raven Progressive Matrices in 96 male teenagers. Results show a significant difference between experimental and control groups. Our suggestions are that those discrepancies can be acknowledged by the fact that control group was not held within a health care context and therefore less prone to provide accurate answers as opposition to the experimental group that was diagnosed with a medical condition. Hence, we suggest a motivation cognitive bias to provide accurate answers regarding the context and the health condition participants had at the time of the data collection.

Keywords: Behavioural Inhibition System; Preservation Bias; Clef Lip Palate

Introduction

Since the decade of 70, psychological science has demonstrated a variety of replicable ways in which human judgements and decisions differ from the common notion of rational choice [1]. A way to explain this may fall into the heuristics, a group of rules that promote the brain to incur in potential errors. A central topic within the theme are the presence of biases, which are defined as a pattern distortion in the judgement that occurs due to influences and specific circumstances, taking neural activity to suffer conscious or unconsciously regarding motivation, judgement accuracy and logical interpretation, i.e. making choices to end being determined by irrational factors. Biases can be present in different types, such as the so called cold biases that appear in the way of "mental clatter" or warm biases that come into sight as cognitive-motivational bias when decisions are distorted by affections and beliefs.

There is a diversity of evidence which demonstrated that simple cleaning reminders influence moral judgements that promote biases associated to sexual behaviour or even political attitudes in people [2,3]. Inducing the feeling of being clean, for instance by rinsing hands, show effects on moral judgement in actions associated to become pure and avoid pornography visualization, handling garbage, drug consumption [4]. Although there is no direct evidence, a potential explanation is that promoting physical cleanness seems to increase individuals' sensitivity to feel dirty, creating anxious answers, i.e., behavioural responses that express the and promote the behavioural inhibition system [BIS] [5]. The BIS consists itself from the brain structures that take organisms to avoid danger or punishment. This model, once revised showed to be more related to anxiety than fear [6,7].

An important cognitive bias that can occur previously to the BIS activation is the attention bias, i.e. the tendency of having attention focused to emotional similar stimuli, neglecting relevant data and promoting correlation or association judgements. The functional description of the BIS that has been presented is compatible with the notion of auto-preservation, i.e., the action or tendency from an organism of conserving its own existence or integrity and the innate action of maintaining itself alive. It is possible to observe this phenomenon in all live organisms regarding survival basic mechanisms to preserve live.

The hospital context configures itself as a context where cleanliness and asepsis are imperative due to the infections risks. The World Health Organisation (WHO) mentioned that hospital infections reach between 14 and 19% of Brazilian patients [8]. Hence, the context itself of an hospital may promote the activation of the BIS as well as an important bias related to auto-preservation, making individuals' behaviour more conservative and conscious as has been described [9].

Hypothesis

Considering the set of current evidences that scientific research has been presented, a hypothesis that asepsis within the hospital context promotes an auto-preservation bias within individuals' cognitive activity by activating their BIS. This activation was believed that individuals would adopt more protective and conservative tendencies as opposite of flexible behaviours. Thus, we aimed to answer the following research question: BIS activation when promoting a protective behavioural tendency promotes an auto-preservation bias that can be observed within an IQ assessment?

Methods

To test this hypothesis a total amount of 96 male adolescents, aged 14 to 17 years old, participated in the study comprising two groups: GI, formed by 50 participants with repaired FLP. GII, with 46 adolescents without FLP. The inclusion criteria for participation in the GI study was to have a diagnosis of cleft and lip palate, enrolled in the HRAC/USP, to be in the age range of the study, and the authorization of parents or guardians. To formally consent to spontaneous participation in research. The inclusion criteria for the GII consisted in formally consenting to the participation of the research, presenting age at the proposed age range, to be regularly enrolled at schools of the official public school network and having parental consent. Exclusion criteria for both groups were those of having a syndromic diagnosis, sensory or neuropsychiatric deficiency. Present interfering systemic disease in the immune system. Make use of neurological and/or psychiatric medications.

Data analyses and Instruments

The instrument used to collect data from the survey were Raven's Progressive Matrices (Raven, 1979) and the analysis of the research data was performed using a normality test, verifying the non-distribution normal of the data. For this reason, the use of a non-parametric approach was used in the data analysis by Mann-Whitney Rank Sum Test; Chi-square.

Ethical research procedures

The project was submitted to the Research Ethics Committee of HRAC/USP, approved by the opinion of n. 885800 of 11/17/2014. To participate in the research, the subjects and caregivers were informed and invited, followed by the formalization through the signatures of both in the Term of Free and Informed Consent in accordance with resolution 466/2012 of the National Health Council. In the end,

Anonymity and privacy, preserving their right of not to accept or interrupt their participation, if they so wished, without this being likely to cause embarrassment or loss of attendance at the institution. In the GI, the contact occurred directly during the hospital routine; In the GII, after authorization from the participating institution, occurred personally with the adolescent in a school context, complemented by the terms of assent and consent addressed to parents or guardians. The adolescents who had the terms of consent duly authorized were considered in the screening of the research.

The GI participants were identified by consulting the HRAC-USP Data Processing Center (CPD) section. Subsequently, a specific time schedule was requested in the scheduling sector compatible with the patients' return for routine ambulatory or surgical services in the hospital.

G2 participants who had the duly authorized consent terms were submitted to the eligibility criteria to be considered participants in the study. The administration of the neuropsychological tests for the GI occurred in the Laboratory of Neuropsychology of the Hospital of Rehabilitation of Craniofacial Anomalies - USP, being careful with the privacy and orientation about the objectives of the collection procedures. At the end of the evaluation process, the results were returned to the participant and parents or guardians, partially repaying the collaboration provided in the project.

The administration of the tests for G2 occurred in the facilities of the Mirim Araçatuba Foundation. The institution serves adolescents between the ages of 14 and 18, of both genders, among whom many are in situations of social vulnerability. It is a cultural and educational association that provides educational and professional assistance to adolescents in situations of personal and social risk, as well as, low income youths seeking their insertion in the job market. Taking care of the privacy, guidance on the research objectives was performed data collection. At the end of the evaluative process, the results were returned to the participants, parents or guardians and the school, partially repaying the collaboration provided.

The evaluation of the intellectual level consisted in the administration of the RAVEN Intelligence Test, seeking the identification of logical non-verbal intellectual visuospatial reasoning. The instrument was applied individually, according instrument regulations. This procedure lasted approximately 15 minutes.

Results

In order to contemplate the objectives proposed in this study, information about the studied population (G1 and G2) was presented, followed by the results obtained through the instrument used in the data collection. The stratified analyses were also demonstrated based on the comparison of the results (Table 1).

Participants	n	Gender	Average age	Education level*		
				ES	EM	CE
G1	50	Male	16 y/o	9	40	1
G2	46	Male	16 y/o	8	38	-
Total	96	Male	16 y/o	17	78	1

Table 1: Characterization of participants in the study.

*ES: Elementary School; HS: High School; CE: College Education.

Comparing the ages between the groups using the Mann - Whitney Rank Sum Test non - parametric test, no significant differences were found between the groups, since the participants were distributed in a balanced way in the age group of 15 to 17 years (Table 2).

The Chi-square test was used to compare the intelligence level, using the Raven Progressive Matrix test, considering the categories of the protocol. A statistically significant difference was found between the groups in the discrepant classification category (Table 3).

Age	S	Average	25%	75%	Average	P.D	p
G1	50	15,7	15,1	17,1	16,0	1,1	p = 0,965
G2	46	15,7	15,2	17,0	16,0	1,1	

Table 2: Comparing groups by age.

Groups	G1		G2		p = 0,003*
Categories	s	%	S	%	
Discrepant	0	0,0	10	21,7	p = 0,003*
Evidence of Disability	9	18,0	12	26,1	
Lower than average	19	38,0	12	26,1	
Average	20	40,0	12	26,1	
Above Average	2	4,0	0	0,0	

Table 3: Ravens's Progressive Matrices Test - General Scale.

It was found that, when comparing the performances between G1 and G2, there was a representative discrepancy score in G2, indicating a pattern of random responses.

Discussion

When comparing the performance within the intellectual test between groups, a significant difference is observed ($p = .003$). The control group presented a pronounced discrepancy in the Raven's test, being observed that 21% of the sample within this group were inconsistent cases, i.e. cases that reach discrepancies greater than ± 2 . These discrepancies have been mentioned in Raven's manual as potential random answers throughout the test (Raven, 1979). Facing this scenario, it is possible to infer that a potential cognitive bias as well as motivational factors may have been the source of such results and discrepancies during the intellectual test application. Due to the fact that group 2 was not included within an hospital context and health care attention environment, we believe that G2 was not as motivated to perform the tasks as G1. Another note is the fact that within the hospital context, patients have a greater amount of experimental solicitations for research purposes. Our results also allow us to think in the possibility that a more conscious and conservative behaviour may have occurred by the existence of a preservation bias due to the hospital context and its type of environment. In the presence of the asepis need within this context, one can expect the BIS to be activated and individuals to be more prone to produce behavioural answers more cooperative to the experiment as well as aversive to risk.

Affective and social commitments added to specific cognitive losses can configure potential risk conditions for complex cerebral processing actions which demand an integrated functioning in different domains, for example the executive functions. Saying this, we acknowledge a limitation in our study. Significant differences that were found may have been present due to biopsychosocial characteristics between groups rather than due to the preservation bias promoted by the institutional context of the hospital. Studies like ours should consider a third group of participants such as a group of clinical patients but without being individuals that are integrated in rehabilitation processes to verify with higher clarity if discrepancies within answers are associated with patients' characteristics profile or if the clinical context plays an important role in this process [10,11].

Conclusion

We observed that individuals within the clinical context had higher accuracy as opposition to the control group. We noticed a tendency that control group individuals may have reported their answers at chance in most cases. By acknowledging this, we may also suggest that clinical treatments as well as other assessments that are needed to carry with individuals for clinical reasons may need to be carried within a conservative context. On another note, it is also interesting to point out that some of the treatments that are not carried within the clinical setting may have a decrease of success rates due to the fact that individuals will have a small preservation effect and therefore

will be more flexible towards the procedure (e.g. taking a certain medication at a certain hour). It is important to acknowledge that being biased towards the context might not be as the majority of research points, a bad thing, but rather in this case something of interest for the success of the outcome.

Bibliography

1. Tversky A and Kahneman D. "Judgment under uncertainty: Heuristics and biases". *Science* 185.4157 (1974): 1124-1131.
2. Inbar Y, *et al.* "Conservatives are more easily disgusted". *Cognition and Emotion* 23.4 (2009): 714-725.
3. Inbar Y, *et al.* "Disgust sensitivity predicts intuitive disapproval of gays". *Emotion* 9.3 (2009): 435-439.
4. Zhong CB, *et al.* "A clean self can render harsh moral judgment". *Journal of Experimental Social Psychology* (2010).
5. Gray JA. "On mapping anxiety". *Behavioral and Brain Sciences* 5.3 (1982): 506-534.
6. Gray JA. "The neuropsychology of anxiety: An enquiry into the functions of the septo-hippocampal system". Oxford: Oxford University Press (1982a).
7. Corr PJ, *et al.* "Motivation and personality: A neuropsychological perspective". *Social and Personality Psychology Compass* 7.3 (2013): 158-175.
8. Millerbaum (2016).
9. Helzer EG and Pizarro DA. "Dirty liberals! Reminders of physical cleanliness influence moral and political attitudes". *Psychological Science* 22.4 (2011): 517-522.
10. Boes AD, *et al.* "Social function in boys with cleft lip and palate: relationship to ventral frontal cortex morphology". *Behavioural Brain Research* 181.2 (2007): 224-231.
11. Anderson SW, *et al.* "Impairment of social and moral behavior related to early damage in human prefrontal cortex". *Nature Neuroscience* 2.11 (1999): 1032-1037.

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