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Adults with Intellectual Disabilities with and without Anxiety Disorder: The Zeigarnik Effect Paradigm Revisited

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Abstract
Zeigarnik effect refers to the phenomenon whereby “people will recall interrupted tasks much better than completed ones." The present study explored the relationship between Zeigarnik effect and anxiety disorder in 44 young adults with intellectual disabilities. The participants were segregated into “anxious” and “non-anxious” groups. The Glasgow Anxiety Scale for people with an Intellectual Disability (Mindham & Espie, 2003) and a series of 20 brief tasks (similar to the concept of Zeigarnik’s work) were administered. The results revealed that only “non-anxious” participants exhibited the selective recall pattern. It was hypothesized that interrupted activities created negative performance expectations, causing cognitive distress. It was assumed that the fear of failure, nervousness and physical discomfort, which are fundamental parts of anxiety, were particularly threatening to “anxious” participants, resulting in selective forgetting or selective storage of solutions. The findings are discussed emphasizing the role of psychopathological factors in the performance of individuals with intellectual disabilities.
Keywords: Intellectual Disabilities, Zeigarnik Effect, Psychopathology, Anxiety Disorder, Glasgow Anxiety Scale.

Theory

Anxiety disorders are common in the general population. 4.4% of the adult population have symptoms of a generalized anxiety disorder, 1.8% have been reported for phobias and 0.7% for panic disorders (Beck & Emery, 1985; Jaspers, 1997). Anxiety is a normal adaptive response to stress or threat. However, when the level of anxiety exceeds the reality of the threat or outlasts the duration of the threat, the response becomes pathological. Anxiety is a common symptom of a number of disorders. It triggers a spiral of autonomic and psychological overactivity that produce frightening symptoms, subsequently exacerbating the initial experience of anxiety, worry and apprehension (Sullivan et al., 1999). According to ICD-10 criteria (World Health Organization, 1994), anxiety disorders include one or more of the following: a) excessively distressed if separated from familiar person, b) distressed about being alone, c) fears about

particular things or situations (e.g., the dark or insects).

Intellectual disabilities (ID) affect approximately 1% to 3% of the population in developed countries (Hodapp, Burack, & Zigler, 1990). It is generally accepted that the rate of behavioral and emotional problems in people with ID exceeds that of the general population (Borthwick-Duffy, 1994; Dekker et al., 2002; Dykens, 1998; Einfeld & Tonge, 1996).

Anxiety rates have been found to be significantly higher in ID than in typically developing (TD) populations (e.g. Emerson, 2003; Emerson & Hatton, 2007). Individuals who have mild ID with clinically significant problems of anxiety have been found to express their distress in a similar fashion to their non-disabled peers. This includes somatic symptoms, and cognitive and behavioral elements such as a sense of helplessness, fear of failure, loss of enjoyment and withdrawal from activities (Mindham & Espie, 2003). Given a prevalence of anxiety disorders amongst people with ID of around 5-10% (Borthwick-Duffy, 1994; Deb et al., 2001), and the fact that anxiety disorders play a significant role in cognitive outcomes, there is an outstanding need to study these parameters.

Young people with ID tend to attribute their anxiety and their emotional distress to a wide range of factors, mostly environmental in nature, which can be grouped into four different categories: a) stressful life events, b) physical/ medical conditions, c) transition to adulthood and d) social isolation (Stalker et al., 2011).

On the other hand, Lewin (1939), father of modern social psychology, argued that beginning an integrated activity of any kind creates a "tension", which continues after the overt activity has been interrupted and persists after that particular activity is finished. Thus, if the tension is prevented from discharging, the individual remains in a state of disequilibrium.

Many processes presumably sustain interest in a goal when it is left unfinished. Automatic processes continue to seek and process goal relevant information and to watch for opportunities to resume pursuit of the goal (Förster, Liberman & Higgins, 2005; Rothermund, 2003). People also ruminate about goals they have not fulfilled so as to reevaluate how best to pursue them (Martin & Tesser, 2006). Thus, multiple processes push a person toward focusing on an unfulfilled goal even while the person may attempt to move on to other tasks (Smallwood & Schooler, 2006). This theoretical formulation found empirical support in the many studies of one of Lewin's students, Zeigarnik (1939/1965). Zeigarnik's research has led to the development of the well-known Zeigarnik effect: "people will recall interrupted tasks much better than finished ones."

Specifically, Zeigarnik (1939/1965) administered a series of 20 brief, simple tasks to her participants (e.g., making words from letters, writing names of cities beginning with the letter L, and the like). Half of the tasks were completed by the participants; however, the remaining tasks, spread throughout the series, were interrupted without providing any opportunity for resumption. Immediately following the completion of the series, the participants were required to recall as many of the subjects as possible. The result was that the percentage of interrupted tasks recalled was significantly higher than the percentage of completed tasks recalled (68% vs 43%). Marrow (1938) demonstrated that it is the experience of failing to reach a goal standard that is associated with increased recall, and not the interruption or incompleteness of a task per se: Recall was better for noninterrupted tasks when participants were told that a task was terminated as soon as the experimenter was satisfied with their performance—that is, when non-interruption indicated failure to reach a given performance standard.

House and McIntosh (2000) studied the Zeigarnik effect in a sample of adults with

moderate and mild ID. They found that there was a significant difference in the recall of uncompleted versus completed tasks, thus establishing the Zeigarnik effect in that population.

Subsequent research with the Zeigarnik paradigm revealed, however, that enhanced recall of unfinished tasks is not a robust effect (Butterfield, 1964; VanBergen, 1968). In some studies, even an "inverse" Zeigarnik effect was found—that is, recall was better for successfully completed tasks (Holmes, 1990). This instability of the Zeigarnik effect was sometimes attributed to the influence of psychological factors on recall: Participants might want to create a favorable impression of themselves by trying to recall successful tasks. This explanation was supported by the finding that a reversed Zeigarnik effect was observed mainly under conditions of "high" task importance and when there was a "high" involvement of psychological/motivational factors (Greenwald, 1982; Holmes, 1990).

To sum up, interrupted tasks are better recalled than completed ones. This seems to be most pronounced in participants without fear of failure and lack of serious stressful experiences. On the contrary, participants who showed a sense of helplessness and fear of failure sometimes remembered more completed tasks than interrupted tasks (Alevriadou, 2010; Moot, Teevan, & Greenfeld, 1988). This unexpected decreasing tendency of interrupted tasks by participants with fear of failure was maybe influenced by psychological factors such as anxiety, worry, apprehension and stressful experiences.

Previous work has shown that Zeigarnik effect might be influenced by cognitive and psychological (personality) factors. For example, Masicampo and Baumeister (2011), found that those who simply tend to stick with their goals through completion, may have also have difficult time transitioning from one unfinished task to a new one, particularly when the latter is dependent on executive functions. On the other hand, Kuhl and Helle (1986) have found that clinically depressed people may be especially susceptible to interference from unfulfilled goals.

The present study attempted a conceptual replication of the Zeigarnik effect in a sample of young adults with ID of "high" and "low" anxiety. It was expected that individuals with ID would show a similar pattern of behavior like that of persons without ID. Specifically, an absence of anxiety disorder would lead to better recall for uncompleted or unsolved tasks-the usual Zeigarnik effect-whereas a prominent anxiety would result in a reversed Zeigarnik effect.

Method

Participants

The sample of the study consisted of 44 young adults with ID. There were 32 females (77.27%), whose average age was 19.76 years (SD=1.74) and 12 males (22.73%), whose average age was 19.49 years (SD=1.93). All participants had been previously diagnosed as having ID by clinic personnel using the American Association on Mental Retardation (AAMR) diagnostic criteria (Luckasson et al., 2002). They were all attending training programs at Vocational Rehabilitation Centers in North Greece, and none were living in institutional settings. They had all mild ID, according to the Test of Non-Verbal Intelligence (TONI-3) (Brown et al., 1997) (Mean IQ=65, SD=3.45). The participants were native speakers of Greek origin. Furthermore, all of them had sufficient ability to communicate verbally in day-to-day interaction. Finally, none of them had sensory impairments and motor disabilities.

The participants were segregated into "anxious" (N=22, 16 females and 6 males) and "non-anxious" (N=22, 16 females and 6 males) groups. Participants from the "anxious" group

were identified by certified clinical psychologists and psychiatrists of the National Health Service of Greece, while some of them were being recruited through private practice. The "anxious" group met ICD-10 criteria (World Health Organization, 1994): Generalized Anxiety Disorder (n = 17), Panic Disorder with Agoraphobia (n = 3), Panic Disorder without Agoraphobia (n = 1) and Specific Phobia (n = 1). All of them were being treated for anxiety disorder. The "non-anxious" group had no known anxiety disorder or history of it.

There were no statistically significant differences in the chronological age between "anxious" and "non-anxious" groups ($t=0.16$, $df=42$, $p> .05$), and in their IQ scores ($t=0.44$, $df=42$, $p> .05$).

Measures

The Glasgow Anxiety Scale for people with an Intellectual Disability (GAS-ID) (Mindham & Espie, 2003) is a self-report questionnaire that consists of 27 items about worries, specific fears, and physiological symptoms of anxiety. A three-response option format is used: (0 points) 'never', (1 point) 'sometimes' and (2 points) 'always'. Thus, the GAS-ID yields a total score for the scale (0-54), but also subtotals for component scales of "worries" (0–20) (e.g. Do you worry that something awful might happen?), "specific fears" (0–18) (e.g. Do you get scared in the dark?…think of being in bed with the lights out: Would you be scared?) and "physiological symptoms" (0–16) (e.g. Do you ever feel breathless? …hard to breathe/out of breath). Cronbach's alpha reliability was 0.87 for the total scale, 0.94 for 'worries', 0.90 for 'specific fears', and 0.92 for 'physiological symptoms', respectively. The GAS-ID is "user friendly", taking only 10-15 min to administer.

A series of 20 brief tasks (similar to the concept of Zeigarnik's work) was used for the recall portion of the experiment. The young adults with ID were given Jigsaw puzzles. Half of them were interrupted tasks and half were uninterrupted ones (completed tasks).

Procedure

All participants were tested individually by the author (a certified psychologist) in one session, lasting approximately 25-30 minutes and consisting of the administration of the GAS-ID, and the experimental Zeigarnik task. Participants were informed at the beginning of the assessment that data are used for research purposes in anonymous form. If people object to such use, their data were removed. A comprehensive protocol safeguarded anonymity of the participants and ensured proper handling of the data. The Ethical Committee of the University of Western Macedonia approved the regulations and agreed with this policy.

The GAS-ID was administered individually by the author using a standardized format. The purpose of the assessment was then explained: I am going to ask you some questions about how you have been feeling since over the past week. There is no right or wrong answer; it is just about how you feel. If I have not explained something clearly, please ask me to tell you what I mean. For each question, I will ask you if you have 'never felt like this', 'sometimes felt like this' or 'always felt like this'. The author then demonstrated these responses using cue cards with visual representations of 'never', 'sometimes' and 'always', and checked that the participant understood the concepts using everyday examples (e.g. 'Do you like to go to the theatre?') and responded consistently to these. Items were then read to the participant (or she or he was assisted to read them). Some flexibility in wording was permitted (consistent with the language

used in the groups) and responses were recorded.

In the Zeigarnik task, the participants were given Jigsaw puzzles individually, only half of which were "allowed" to be completed. The recall test was given as soon as work on the series of tasks was completed.

Results

The design was a 2 ("anxious" X "non-anxious" group) X 2 [interrupted (uncompleted) – uninterrupted (completed) tasks]. The mean scores on the GAS-ID were the following [("anxious" group: M=33.50, SD = 4.50), ("non-anxious" group: M= 6.50, SD=2.50)]. It is important to mention that Mindham and Espie (2003) defined the cut-off scores in the range 13-15 of the GAS-ID, assessing all those who have above this score with a diagnosis of anxiety, while excluding all those who had below the cut-off scores (do not have a diagnosis of anxiety).

A t test for independent samples indicated that the "non-anxious" group recalled more interrupted tasks (M = 9.61, SD= 1.07) than did the "anxious" group (M = 3.90, SD= 1.69) ($t=5.08$, $p < .01$). On the contrary, "anxious" group recalled more uninterrupted tasks (M = 6.91, SD= 2.03), than did the "non-anxious" group (M = 4.48, SD= 1.84) ($t=3.13$, $p < .05$).

Moreover, analysis indicated that there were positive and significant Pearson correlations between "non-anxious" group scores and Zeigarnik scores (scores in the interrupted tasks) ($r = .44$, $p < .01$). Additionally, there were statistically significant correlations between the subscales of the GAS-ID, that is "worries", "specific fears", "physiological symptoms" and Zeigarnik scores ($r = .40$, $p < .01$, $r=.37$ $p < .05$, and $r = .35$, $p < .05$, respectively). On the other side, there were negative significant correlations between "anxious" group and Zeigarnik scores ($r = -.40$, $p < .01$). Additionally, there were negative significant correlations between "worries", "specific fears", "physiological symptoms" and Zeigarnik scores ($r = -.39$, $p < .01$, $r=-.36$ $p < .05$, and $r =- .33$, $p < .05$, respectively).

Discussion & Conclusion

The present study replicates the findings of similar studies about Zeigarnik effect, in which the participants were individuals without ID (Martin & Tesser, 2006; Moot et al., 1988). It seems that persons with ID respond in the same way and display similar patterns of behavior across domains, when compared to TD individuals. These results support the developmental approach by Edward Zigler (Burack, Hodapp & Zigler, 1998; Hodapp, Burack & Zigler, 1990; Zigler, 1969, 1999).

In the original 1927 Zeigarnik study, participants who were interrupted, while working on problems, were overtly disturbed by the interruption and evidenced a strong tendency to resume working. This putative "tendency to resume" may create some form of attentional mediation of the task material and thereby promote the portion of the task completed (Levin, 1951; Prentice, 1944). It is suggested, along with the classic theory of Lewin (1951) that accessibility decreases after a completed task, because task completion functions in a way similar to goal fulfillment. Goal fulfillment, according to many theories in cognitive, social and clinical psychology (Förster et al., 2005; Liberman, Førster & Higgins, 2007; Marsh, Hicks & Bink, 1998), is followed by an inhibition (i.e., an active reduction of accessibility) of goal-related constructs. Such an inhibition after goal fulfillment is crucial for the pursuit of other goals (Liberman et al., 2007).

In relation to the anxiety variable, the participants in the "anxious" group remembered the largest percent of completed (uninterrupted) tasks and had the lowest Zeigarnik scores. It

seems that as anxiety scores increased from "low" to "high", the tendency to remember incomplete tasks decreased. There is reason to suspect that prior, unfulfilled goals could interfere with psychological and/or psychopathological factors. Indeed, research on populations with clinical depression has shown that an unfulfilled intention can be quite detrimental to other tasks, including short-term memory tests and the ability to initiate novel intentions (Kuhl & Helle, 1986). Additionally, Alevriadou (2010) explored the relationship between Zeigarnik effect and self-esteem in 48 adolescents and young adults with ID. She found that only participants "high" in self-esteem exhibited the selective recall pattern. It was hypothesized that interrupted activities were viewed as failures. It was also assumed that the recall of failures was particularly threatening to "low" self-esteem participants, resulting in selective forgetting or selective storage of solutions.

That is, for low achievers, uncompleted tasks are regarded to be threatening and to lead to increased avoidance of failures, since recall of failures would serve to bring back the pain of failure and worry which is based on negative performance expectations, causing cognitive distress. Examples of reactions of cognitive distress can be nervousness, fear, and physical discomfort, which are fundamental parts of anxiety (Lufi, Okasha & Cohen, 2004). It seems that the performance of individuals with ID may be influenced, in some measure, by noncognitive variables rather than by inherent deficits in memory performance, as it is obtained through the anxiety analysis.

Psychological and/or psychopathological factors can partially explain the differences found between the two groups. That is, the differences in cognitive performance between the two ID groups reflect the operation of certain psychological (personality variables), arising from life experiences that people with ID often encounter, such as helplessness, social deprivation and frequent experiences of failure (Burack et al., 1998; Weisz, 1979). The developmental approach of mental retardation by Zigler (1969, 1999) gives special emphasis on the whole individual. It examines ways in which personality characteristics, arising from certain life experiences, interact with the individual's developmental abilities to determine behavior on both cognitive and non-cognitive tasks (Zigler, 1999). Various studies found various personality deficiencies in individuals with ID, such as more external locus of control, higher anxiety levels, withdrawal, depression, low self-esteem, more rejection by others, and fewer social skills (Dykens, 1998; 2007). These disorders are distressing and might severely impact upon their daily functioning and performance in tasks like Zeigarnik-type ones.

Thus, efforts to understand, and maximize their mental health may hold significant benefits for individuals with ID in their pursuit of competence and independence. While this still requires further investigation, our knowledge is probably adequate enough to recommend that at times of stressful life events, physical/ medical conditions, transition to adulthood and social isolation, educators and carers should offer additional support to people with ID. Educators should also be trained to be vigilant for signs of emerging mental illness at such times, so that timely interventions can be offered. It is also clear that determination of the factors that influence the performance in Zeigarnik-type tasks warrant further empirical examination in individuals with ID.

Finally, the findings presented here stress the need to assess further the influence of anxiety. The assumption made should be tested further in future research, using a wider variety of research tools. One additional interesting line of research would be to explore which aspects

of anxiety disorder relate to the Zeigarnik effect task.

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