IJRAR.ORG E-ISSN: 2348-1269, P-ISSN: 2349-5138

INTERNATIONAL JOURNAL OF RESEARCH AND ANALYTICAL REVIEWS (IJRAR) | IJRAR.ORG

An International Open Access, Peer-reviewed, Refereed Journal

TIME LIQUIDITY

DOES TIME PERCEPTION VARIES IN DEPRESSION?

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Abstract

The study examined changes in time perception as a function of depressive symptom. A systematic review was carried out using the keywords 'time perception', 'depression' and 'internal clock' in the data base of GOOGLE SCHOLAR. The review focuses on time judgement that varies in depressive patients. Additionally, the cause of discrepancies in time judgement are examined. The majority of studies reviewed revealed that depression led to discordance in time perception. Despite the fact that physical time appears to be more or less objective, psychological time is subjective and prone to shifts in perception. Systematic assessment of studies supported the resultsby flowing down of the internal clock in the depressive patient.

Keywords: *Time perception, internal clock, depression*

Introduction

Among the most prevalent effective psychiatric conditions. According to DSM-V criteria (American Psychiatry Association), depression is characterized by feeling sad, empty, or suicidal. In addition, it is characterized by experiencing a noticeable decline in the enjoyment of life. One of the most prevalent symptoms of depression is the inability to keep track of time, which is closely linked to both intellectual disability and the severity of the mood disorder (Blewett, 2018). There is a sensation that time is moving more slowly than usual. In the case of depressed people, "every hour seems like a year" or "Time moves at a terrible pace". However, Bech states (1975), states that when a patient says, "time goes by slowly, he is communicating the same or a comparable experience", he indicates his grief and discontent with a phase of his life. It does not, however, reflect an intrinsic shift in the way people perceive time, i.e., such people experience time in the same manner as others. Time perception depends on who people are and/or the circumstances they find themselves in. Even though physical time appears to be more or less objective, psychological time is subjective and subject to change. The various temporal illusions we encounter emphasize this malleability.

Bech (1975) concluded that depression has no effect on time perception. Some studies concur with this conclusion. Researchers Oberfeld, Thönes, Palyoor, and Hecht (2015) showed that time experience (personal flow of time) and interval timing (verbal estimation, time production, and time reproduction) did not result in depressive symptoms. Therefore, it cannot be inferred that depressive disorders have a significant impact on subjective time passage perceptions (Hawkins et. al 1988). Kitamura and Kumar studies (1982) after studying 23 depressive inpatients revealed that there were no significant differences between the conditions nor was any correlation found between clinical symptoms and depressive symptoms. Similar results were reported by Mezey andCohen, (1961) that depression did not affect the way they perceived time or their judgment of time.

However, other research suggests that depressive affect alters people's perceptions of time. Patients with depression tend to ruminate on the past, spend less time planning for the future, give more thought to more distant memories and past events, spend more time anticipating near-term future events and report longer time spans for story productions (Wyrick and Wyrick, 1977). They are more preoccupied with bygone events than those suffering from control conditions (Gallagher, 2012). In line with these researchers, Vogel et al. (2018) added that people with Major DepressiveDisorder appear to have lost the power to influence the present, leading to a life that is impersonaland obstructed. Moments become pointless, the past becomes irrevocably terrible, and the passage of time is reduced to an agonising, unstoppable and sluggish flow. Similar studies were found when Stanghellini et al. (2017) reported that MDD patients experienced a time frame dominated by the past, and time seemed to slow down. A study from Tysk (1984) found that depressed patients have slower time counting and a corresponding inflated perception of time. In agreement with this result, Kuhs et al. (1984), there was a greater time estimation error in endogenous depressives when they felt poorly in comparison to times of happiness and positivity. On the contrary, Bschor et al. (2004) reported that depressive patients, when it came to time judgment activities, overestimated the length of time they would need to complete the task. The acceleration effect may be caused by a congruence in mood between extended pauses, boredom, and depression, among other things (Kent, Doorn, and Klein, 2019). As a result of this congruence inmood, we are able to recall invasive, negative, and nonspecific autobiographical long-term memories that are utilised to estimate time gaps between past experiences.

No single mechanism in the systems responsible for processing time has yet been pointed out as being impacted by sad mood, most likely because there are numerous systems at play. Sévigny et al. (2003), however, has suggested that the ability to sustain attention during prolonged durations accounts for the differences in temporal inferences made by depressive and non-depressive participants, but they could not identify the particular mechanisms involved. The majority of experts believe that depression-related changes in perception of time are also caused by a slower internal clock in depressives. (Bschor et al., 2004; Lehmann, 1967; Tysk, 1984).

Indeed, depression causes the internal clock to slow down, which means fewer pulses areaccumulated per unit of time, and therefore time is considered shorter by the brain. Those who experience depression's affective component - the feeling of sadness - may experience a slowed pace.

Material and Method

Method

This systematic review approach followed the PRISMA principles.

Search and Selection process

Between 25th September and 10th October 2021, the electronic databases Google Scholar and Academia were searched by using the following keywords in the 'Title/Abstract': 'time perception', 'depression', 'time judgement' and ‘Internal Clock’. This review included only articles written in the English language. The

eligibility and relevance of papers were initially determined through a title/abstract review. Two reviewers collaborated on the search and selection processes.

Data Extraction and Analysis

Specifically, the evaluation for this review concentrated on gathering the following information from all relevant research on how time perception was affected in depressive patients.

Result and Discussion

The purpose of this review was to assess the research that had a particular emphasis on how depression impacts time judgement. Depressive affect alters people's perception of time, according to the majority of published research. Further the studies indicated that the depressed individuals experience an atypical effect. The results were consistent with the study conducted by Bschor et al. (2004) revealed that depressed people underestimated how long it would take to finish a task when it came to time judgement tasks.

As discussed previously, depressed persons experience that time moves at a slower pace than usual. Finally, our research indicates that this awareness of the passage of time slows down This may be attributed to a physiological fact, namely a slowed internal clock. Consequently, the perception that time is passing more slowly may be based on an awareness of the internal clock

slowing down and/or an awareness of executive functions changing their pace in relation to the external environment. Finally, the ability to perform well on activities involving the sense of time may be an indication of a deterioration in mental abilities. Rammsayer and Brandler (2007) recently resurrected the master clock concept that coordinates multiple brain activity. As a result, the internal clock speed would represent exactly how quickly information is processed (Eagleman et al., 2005; Rammsayer and Brandler, 2007). This does not rule out the idea that attention is a keyfactor in time differences between depressed and non-depressed persons, as both clock and attention hypotheses are not mutually exclusive. Furthermore, the pace of the clock may have an impact on attentional abilities. Given that sadness causes the internal clock to run slower than usual and that the durations are shorter, the issue that now has to be answered is: Why does the internal clock slow down in depressed people? It's been hypothesized that depression is associated with an overall slowdown in motor behavior due to the slowing of the internal clock (Lemke et al., 2000).

Some researchers have hypothesized that depression contributes to a slowdown in motor behaviordue to the slowing of the internal clock (Lemke et al., 2000). Alexander et al. (1986) found that depression was linked to changes in the basal ganglia regions responsible for motor control. Basalganglia have also been shown to have a major role in time perception, according to brain imaging studies. (Buhusi and Meck, 2005; Matell and Meck, 2004). Additionally, antidepressant medications work on dopamine receptors in the brain, which have been associated with depression and consequently affects time perception.(Dailly et al., 2004; Willner et al., 2005). Closely related to psychomotor retardation, the slowing of the internal clock in depression may also be a result of a reduction in arousal levels. According to the DSM-5 criteria, one of the primary symptoms of depression is exhaustion, or a low level of energy throughout the day, along with a melancholy mood characterized by sorrow. This is in accordance with findings on the influence of emotive faces on the passing of time. Depressed individuals experience powerlessness and hopelessness and become detached from life. This explains why depression impairs psychomotor performance. Thus, depressed persons' emotional state of melancholy alters their sense of time, causing them tosee time going slowly.

However, no single mechanism involved in the processing of time has been identified as being influenced by sad mood, most likely due to the complexity of the systems involved. But Sévigny et al. (2003) asserted that the capacity to maintain attention over extended periods of time explains the differences in temporal judgements made by depressed and non-depressive individuals, but they were unable to pinpoint the

specific processes involved.

Conclusion

To recapitulate, we can claim that time perception differs in depression, and a slowdown of the internal clock explains the discrepancies in the perception of short durations between depressed and non-depressed people.

The conclusions of this review should be interpreted in light of the limitations of the research investigations, which should be considered. To begin with, there is a scarcity of data from a representative sample. The predictor variables used in different research have varied, making comparisons across studies challenging.

There is still a need for more study into the consistent predictor factors of how people perceive time. The incidence and scope of the problem, as well as the identification of relevant factors, necessitates population-based research utilizing depression batteries, which are also necessary. Depressed individuals' neurobiology of time perception should also be studied to better understandthe role of contributing variable

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