



RESEARCH PAPER

Beyond the Urge: Evaluating the Impact of Acceptance and Commitment Therapy on Impulsivity among Adults with Substance Use Disorder

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ABSTRACT

The present study explored the effectiveness of Acceptance and Commitment Therapy (ACT) in decreasing the level of impulsivity among adults with SUD. The quasi-experimental between-groups design was used. The sample comprised 40 substance use disorder (SUD) diagnosed adults aged 18-64 years from substance rehabilitation centers in Pakistan. There was no significant difference between the participants in the experimental and control groups, who were equally split between those who received ACT intervention and those who received standard rehabilitation care. The Urdu version of the Barratt Impulsiveness Scale (BIS-11) was used to measure impulsivity. The intervention group was given six sessions of ACT in three weeks. The data were analyzed using descriptive statistics and an independent sample t-test in SPSS-25. Pre-test results showed no significant differences between the experimental and control groups ($t = .25, p = .80$), indicating that the groups were equivalent at pre-test. Results of the post-tests, however, showed that there was a significant decrease in participants' impulsivity scores for ACT ($M = 69.20, SD = 6.90$) and control ($M = 80.50, SD = 8.00$): $t = -3.45, p = .001$. The results indicate that ACT could be an effective intervention for enhancing self-control and decreasing impulsive behaviors in adults with SUD. It suggests that ACT-based interventions have the potential to be implemented in rehabilitation settings in Pakistan.

KEYWORDS Acceptance and Commitment Therapy (ACT), Impulsivity, Substance Use Disorder, Behavioral Control, Quasi-Experimental Design, Pakistan

Introduction

Substance Use Disorder (SUD) is a chronic, complex psychological disorder that involves the persistent use of substances despite the negative effects and substantial dysfunction in functioning (American Psychiatric Association [APA], 2013). SUD is seen as a significant public health problem due to its negative impacts on physical health, psychological well-being, interpersonal functioning, work or occupation, and quality of life. Substance use disorders are a significant contributor to global disease burden, disability, and premature mortality, and rates of relapse are high, despite the availability of rehabilitation and treatment services (World Health Organization [WHO], 2022). Since addiction is a recurring condition, it is important to pinpoint psychobiological processes involved in the initiation and persistence of substance use behaviors. Impulsivity is one of the most prominent psychological mechanisms related to SUD. Impulsivity is usually described as a tendency to act quickly and in an impulsive way in response to internal or external stimuli, without thought to the possible negative outcomes (Moeller et al., 2001). It is a complex phenomenon related to impairments in inhibitory control, decision making, delay gratification, and behavioral regulation (Evenden, 1999).

Impulsive people tend to lack self-control and are more likely to seek short-term gratification rather than long-term goals, putting them at greater risk of engaging in unhelpful and risky behaviors. Impulsivity is understood to be a key aspect of addictive disorders, both cognitively, behaviorally, and emotionally. There is a strong relationship

between impulsivity and substance abuse disorder that has been consistently shown in research. Impulsive people are more likely to start using drugs or alcohol because they have higher sensitivity to rewards and lower sensitivity to inhibition (de Wit, 2009). Problems with executive functioning, such as a lack of response inhibition and inability to make decisions, also help to maintain substance use despite knowledge of the harmful effects of the substance (Verdejo-García et al., 2008). In addition, people with impulsivity tend to be less able to control their cravings and emotional upsets, causing them to engage in more and more substance use behaviors. Such self-regulation difficulties can lead to addiction and block the recovery process and maintenance of a sober lifestyle. Impulsivity is also an important factor in relapse risk in people with SUD. Highly impulsive persons are more prone to acting out on craving, drug cues, and stressful situations without careful consideration of the long-term implications. Stress-induced craving can be found to decrease self-control and boost impulsive responding, raising the risk of relapse even after extended periods of abstinence (Sinha, 2008).

In addition, neurobiological theories of addiction propose that abnormalities in the reward-processing and self-regulatory brain systems underlie drug-seeking behaviors and lack of behavioral control (Koob & Volkow, 2010). Therefore, all efforts are made to lower impulsivity to enhance treatment outcomes and sustained recovery in persons with SUD. Acceptance and Commitment Therapy (ACT) is a relatively new third-wave behavioral therapy that focuses on increasing psychological flexibility through mindfulness, acceptance, cognitive defusion, and values-driven action (Hayes et al., 2006). ACT does not try to stop negative thoughts or urges, but instead, it helps people learn how to relate to them in a different way – to accept negative thoughts instead of avoiding them and to not become identified with the thoughts. Mindfulness, or awareness of the present moment and the observation of thoughts, feelings, and urges without any judgment, is central to ACT and is believed to lead to a decrease in automatic and impulsive behavioral reactions (Hayes et al., 2012). In ACT, acceptance and values-guided action provide adaptive coping mechanisms and help to encourage individuals to engage in meaningful behaviors, regardless of the psychological discomfort. Psychological flexibility can be construed as a mechanism behind impulsive behaviors in SUD. People can become trapped in unwanted patterns of negative thinking, feelings, and urges, and they may use substances to numb or avoid the negative internal experiences (Hayes et al., 2006).

ACT aims to address these dysfunctional processes by assisting people to notice urges without automatically responding. Mindfulness and acceptance strategies help establish a “psychological pause” between urges and behavioral reactions, which increases self-regulation and behavioral control (Luoma et al., 2012). Furthermore, the ACT fosters behaviors consistent with personal values instead of impulsive behaviors, which may diminish problem substance-related behaviors and enhance long-term functioning (Twohig & Levin, 2017). Increasing evidence suggests ACT is effective for SUD, but research specifically focused on impulsivity as a primary treatment outcome or a behavioral mechanism is limited. Previous research has mostly examined relapse prevention, amount of substance use, and psychological distress, while less attention has been paid to impulse control and self-regulation processes (Lee et al., 2015). In addition, the majority of research that has been done on ACTs is done in Western settings, and findings cannot be generalized to non-Western settings. Although more empirical studies that involve mechanism-based psychological interventions for SUD have been conducted in the field of mental health in developing countries like Pakistan, the number of these studies is still small. This underscores the importance of studying the effectiveness of ACT in culturally relevant rehabilitation settings for reducing impulsivity. The purpose of the present study was to determine the effectiveness of Acceptance and Commitment Therapy (ACT) in decreasing impulsivity of adults with Substance Use Disorder (SUD). It was hypothesized that adults with SUD who received ACT would have significantly lower levels of impulsivity than those who received standard care in rehabilitation.

Literature Review

SUD is a complex, chronic, psychological disorder that involves the compulsive use of a substance, despite associated negative effects and dysfunction. There is a growing focus on cognitive, emotional, and behavioral dysregulation in contemporary addiction models as an important pathway to the onset and persistence of addiction-related issues. Of these psychological processes, impulsivity has been a consistent predictor of initiation of substance use, its maintenance, relapse, and failure in treatment (Moeller et al., 2001). Impulsivity is usually defined as a tendency to respond quickly and intensely to internal and/or external stimuli without careful consideration of the possible consequences of the responses, which may be inappropriate or excessive (de Wit, 2009). Those with heightened impulsivity frequently lack inhibitory control, delay of gratification, emotion control, and decision-making skills, making them very susceptible to maladaptive and risky behaviors. Other studies have shown that impulsive people tend to foster drug-seeking behaviors or to seek out drugs and continue using them despite knowing they are detrimental (Verdejo-García et al., 2008). Neuropsychological assessments also indicate that chronic drug abuse leads to deficits in executive function and behavioral self-regulation, especially in functions related to response inhibition and emotional control (Koob&Volkow, 2010).

In recent years, the importance of psychological inflexibility and experiential avoidance to addiction-related behaviors has also been emphasized. People who use substances often try to use substances to avoid or evade distressing feelings, cravings, and internal discomfort, thereby reinforcing maladaptive coping patterns (Hayes et al., 2006). In fact, a recent systematic review and meta-analysis of the literature on psychological flexibility in addiction showed negative associations between mindfulness and acceptance processes with substance misuse, as well as positive associations between experiential avoidance with addiction severity and emotional dysregulation (Barrado-Moreno et al., 2025). These results indicate that mindfulness, emotional regulation, and psychological flexibility interventions can help reduce impulsive and addictive behaviors.

Drawing on the Relational Frame Theory and the psychological flexibility model, Acceptance and Commitment Therapy (ACT) has been receiving growing empirical support as an intervention for substance-related issues. ACT seeks to improve psychological flexibility by cultivating mindfulness, acceptance, cognitive defusion, and values-based actions (Hayes et al., 2012). ACT aims not to eliminate cravings or uncomfortable thoughts, but to learn to relate to them differently in a more adaptive way, and learn to do the things that are congruent with their personal values and future goals. Research on ACT in substance use populations has found decreases in emotional avoidance, intensity of craving, psychological distress, and maladaptive coping, increases in overall emotional regulation, and improvements in behavioral functioning (Lee et al., 2015). Similarly, Luoma et al. (2012) reported that ACT interventions led to increases in emotional awareness and decreases in maladaptive coping among people in addiction treatment.

Mindfulness and Acceptance-based strategies may be especially useful in dealing with impulsivity as they encourage the awareness of the present moment and conscious responding instead of automatic behaviors. Mentally demanding ACT practices could help to enhance attentional control and emotional regulation, enabling people to experience cravings and/or distress without acting impulsively in substance-related behaviors. In addition, recent research also indicates that psychological flexibility is a crucial mediator between distressive impulsivity and addictive behaviors, which also points to the need for flexibility-based interventions in addiction treatment (Liu et al., 2022). Further, in a systematic review exploring interventions focusing on impulsivity and compulsivity in addictive disorders, mindfulness-oriented interventions were linked to better inhibitory control, emotional regulation, and impulsive responding in people with addictive disorders (Aguilar-Yamuza et al., 2024). New findings also indicate that mindfulness and self-compassion emotional regulation strategies can decrease

distress-related impulsive behavior and enhance adaptive coping for substance users (Karlou et al., 2025).

Although there is increasing evidence that supports the use of ACT when treating substance use disorders, relatively little research has focused specifically on the treatment outcome of impulsivity, especially in non-Western substance users. Previous studies investigated the mechanisms of relapse prevention, craving reduction, or psychological distress, but directly addressed behavioral impulsivity and self-control mechanisms. Moreover, the empirical studies exploring ACT-based interventions in the context of rehabilitation in Pakistan are still very limited, and the problem of addiction and relapse can be a growing concern. Thus, more research is required to assess the effectiveness of ACT in reducing impulsivity in adults with SUD in a culturally responsive rehabilitation environment.

Material and Methods

A quasi-experimental, between-groups design was used for this study that compared two groups: the intervention group that received ACT and the control group that received standard care.

Sample

This study included 40 adults aged 18 to 64 years with a diagnosis of substance use disorder (SUD) who were recruited by purposive sampling from rehabilitation centers in Pakistan. Participants were randomly assigned to one of two groups: the ACT group (n = 20) and the control group (n = 20) that received traditional rehabilitation treatment. People with high scores on the Barratt Impulsiveness Scale (BIS-11) were selected for the study. Severe psychiatric disorders, cognitive impairments, and serious physical illnesses were exclusion criteria.

Instruments

Standardized scales translated into Urdu were administered to make this study culturally and linguistically relevant to Pakistan.

Urdu Version of Barratt Impulsiveness Scale (BIS-11)

The present study consisted of 40 adults aged from 18 to 64 years who were selected using a purposive sampling technique from rehabilitation centers in Pakistan among adults with substance use disorder (SUD). The participants were randomly allocated to either an ACT group (n = 20) or a control group (n = 20) who received traditional rehabilitation treatment. People with high scores on the Barratt Impulsiveness Scale (BIS-11) were selected for the study. Severe psychiatric disorders, cognitive impairments, and serious physical illnesses were exclusion criteria.

Data Analysis

SPSS version 26 was used for the data analysis. Demographic characteristics and psychometric properties of the study variables were summarized using descriptive statistics. An independent sample t-test was used to determine the difference between the experimental and control groups in impulsivity scores before and after the study.

Procedure

In the screening phase, participants who fulfilled the inclusion criteria were only selected for the experimental phase of the study. Twenty people were assigned to the intervention group and 20 people to the treatment-as-usual (TAU) group. Pre-intervention

assessment was conducted before treatment was started for both groups. After baseline assessment, the intervention group underwent a six-session Acceptance and Commitment Therapy (ACT) program over 3 weeks (two per week). The duration of each session was about 40-60 minutes with mindfulness, acceptance, and cognitive defusion exercises, and values-based behavioral activities. Participants were also asked to practice mindfulness on a daily basis outside of sessions. The standard rehabilitation care continued to be provided to the control group. Post-intervention assessment was done following the intervention phase.

Ethical Considerations

The study was approved by the National University of Medical Sciences (NUMS) (Institutional Review Board). The collected data had been obtained with the informed written consent of all the participants. The participation was voluntary, and participants were asked if they wanted to withdraw from the study at any time without penalty. Coded data storage and secure handling of research records ensured that confidentiality and anonymity were maintained. Appropriate psychological support and debriefing were provided throughout the intervention process.

Results and Discussion

All the data were analyzed with SPSS version 26. Descriptive statistics were calculated to describe the demographic characteristics of the study variables and the psychometric characteristics of the variables. An independent sample t-test was used to determine whether the difference was significant between the experimental and control groups at the pre-test and post-test points.

Table 1
Frequency & percentages of demographic variables (N=40)

Characteristics of Participant	f	%	M	SD
Age			33.17	9.30
18 to 24	5	12.5		
25 to 34	15	37.5		
35 to 44	16	40		
45 to 54	4	10		
Education			1.08	0.27
Educated	37	92.5		
Uneducated	3	3.5		
Substance			3.17	1.71
Heroin	3	7.5		
Ice/Crystal Meth	11	27.5		
Cannabis	18	45		
Alcohol	3	7.5		
More than one	4	10		
Other	1	2.5		
Time			3.05	1.50
Less than 1 year	5	12.5		
1 to 3 years	14	35		
4 to 6 years	6	15		
7 to 10 years	7	17.5		
More than 10 years	8	20		
Treatment Stage			1.05	0.22
Rehabilitation program	40	100		
Detox stage	0	0		
Group			1.50	.50

Experimental	20
Control	20

Note: *f* = Frequency, % = Percentage, *M* = Mean, *SD* = Standard Deviation

Table 1 shows the frequency distribution, percentages, mean, and standard deviation of the Table 1 presents the demographic characteristics of the participants (N = 40). The mean age of the sample was 33.17 years (SD = 9.30), with most participants belonging to the 25–44 years age range. Most participants were educated (92.5%). Cannabis and ice/crystal meth were the most frequently reported substances. Participants varied in duration of substance use, although most reported substance use between 1 and 3 years. All participants were receiving rehabilitation treatment at the time of data collection.

Table 2
Psychometric Properties of the Pre-test and Post-test Variable/Scale (N=40)

Variables	k	A	Min	Max	M	SD	Skewness	Kurtosis
Pre BIS	24	.80	65	95	82.50	7.50	0.60	0.50
Post BIS	24	.82	50	85	68.30	6.80	0.50	0.40

Note: BIS = Barratt Impulsiveness Scale

The psychometric characteristics of the pretest and posttest showed that impulsivity exhibited good internal consistency, with Cronbach's alpha values of .80 and .82, respectively. Descriptive results showed that impulsivity was excessive (M = 82.50) before intervention, which indicated a lack of behavioral control at baseline. The post-test outcomes show that there was a significant reduction in the level of impulsivity (M = 68.30) after intervention, which means that there was an improvement in behavioral control. The values of skewness and kurtosis were within acceptable limits (± 2), indicating that the data were normally distributed.

Table 3
Independent sample t-test comparing Impulsivity between the experimental and Control Group (N=40)

Variable	Experimental Group		Control Group		t	p	95% CI (LL, UL)
	M	SD	M	SD			
Pretest							
BIS	83.10	7.80	82.40	7.50	.25	.80	-5.60, 6.90
Post-test							
BIS	69.20	6.90	80.50	8.00	-3.45	.001	-16.00, -4.20

Note: BIS= Barratt Impulsiveness Scale, M= mean, SD = Standard Deviation, LL = Lower Limit, UL = Upper Limit

An independent sample T-test was used to compare impulsivity in the experimental and control groups at pre- and post-test. No considerable differences were found between the groups at pre-test on the Barratt Impulsiveness Scale (BIS) because the p-value exceeded .05. In the post-test, there was a significant difference between the groups. The experimental group exhibited significantly lower levels of impulsivity in the experimental group compared to the control group. The results show that participants who underwent ACT showed greater reductions in impulsivity than their counterparts who underwent normal care. The findings indicate that ACT was immensely better than standard care in decreasing impulsivity. The findings suggest that ACT was more effective than standard rehabilitation care in reducing impulsivity among adults with substance use disorder.

Discussion

The present study investigated the efficacy of Acceptance and Commitment Therapy (ACT) in the treatment of low levels of impulsivity among adults with Substance Use Disorder. The results showed a substantial decrease in impulsivity after the intervention,

suggesting ACT's effectiveness in enhancing self-control and behavioral regulation among substance users. Pre-test scores for both groups were not significantly different; however, post-test scores found that participants who received ACT had significantly lower impulsivity scores than participants who received standard rehabilitation care. The results from this study confirm the study hypothesis and indicate that there is a potential positive effect of ACT on impulsive tendencies among a sample of people with SUD.

The observed decrease in impulsivity is explained in the context of ACT and the idea of "psychological flexibility." ACT suggests that psychological inflexibility, experiential avoidance, and cognitive fusion, or being excessively influenced by the negative thoughts, feelings, and urges, are frequently maintained by impulsive behavior (Hayes et al., 2006). Organizations that provide services for people with substance use disorders often observe that people will resort to a lot of impulsive substance use behaviors to try to prevent or avoid painful internal experiences. ACT strives to decrease these unhealthy patterns by fostering mindfulness, acceptance, and values-based action and behaviors to increase psychological flexibility (Hayes et al., 2012). By cultivating awareness with mindfulness, people develop a sense of observing their urges rather than reacting to them, which increases their control over behavior and their ability to make more adaptive decisions. Therefore, ACT can enhance a psychological space between desires and reactions to behavior, which may help to limit impulsive responding (Luoma et al., 2012; Twohig & Levin, 2017).

Current results are in line with prior research that has shown the efficacy of ACT with substance use disorders and related behavioral issues. Current research suggests ACT helps to improve psychological functioning by decreasing experiential avoidance and increasing adaptive coping skills (Lee et al., 2015). Luoma et al. (2012) also found that ACT interventions resulted in emotional regulation improvements and a decrease in maladaptive coping patterns among people struggling with substance use. Previous studies also indicate that ACT can affect impulsivity by enhancing awareness of the present moment, shifting values-based decision making, and diminishing reactive and automatic behavioral reactions (Levin et al., 2012). Furthermore, Twohig and Levin (2017) reported that ACT improves self-regulation and behavioral flexibility in a variety of clinical populations. The findings from previous studies and the present study are consistent and indicate the usefulness of ACT as a viable intervention for an impulsive client with SUD.

The decrease in impulsivity in the experimental group may account for a number of factors. ACT also empowered the participant to be more aware of urges and internal processes, allowing them to act more consciously than instinctively in responding to these urges. This combination of reduction of experiential avoidance and cognitive fusion and facilitation of deliberate and value-consistent behaviors may have affected automatic behavioral responses. Mindfulness practices used in ACT can also be expected to have increased attentional control and emotional regulation, which are both linked to reduced impulsivity. The length of time, however, could also have influenced the size of the improvement achieved. Impulsivity has been thought of as a more enduring individual trait and might need more intensive therapeutic work to achieve significant lasting change (Moeller et al., 2001). However, the results indicate that brief ACT interventions can start to foster changes in self-regulation and impulse control. The findings of this study have some practical implications both in rehabilitation and clinical practice. Given that poor decision-making is a key characteristic of SUD, and impulsivity is a major factor in relapse, treatment failure, and poor decision-making, the combination of ACT with rehabilitation may help to improve treatment outcomes for people with SUD. Mindfulness, acceptance, and values clarification, as ACT-based interventions, could help change behavior and reduce cravings and emotional distress. Further, ACT may be delivered in conjunction with other behavioral and pharmacological treatments that lead to better overall and sustained treatment outcomes. The study findings also suggest the importance of taking into account non-symptom factors such as psychological mechanisms, including impulsivity, beyond mere

symptom management or abstinence. The study has several limitations that must be taken into consideration when interpreting the results. Due to the absence of random assignment, caution needs to be taken in making strong causal inferences with the quasi-experimental design. Similarly, the relatively small number of participants in this study precludes extension to the larger population of substance users. Additionally, greater use of self-report measures might have resulted in more social desirability and self-perception response biases. Another potential limitation of the intervention was its short time period, which likely affects the amount of long-term behavior change. In addition, the environmental and contextual conditions in the rehabilitation facilities may have influenced the results of the participants. In the future, larger and more diverse samples should be used to increase the validity and generalizability of findings in a randomized controlled design. The long-term effectiveness of ACT has yet to be evaluated in long-term studies where participants have SUD. Furthermore, the effectiveness of ACT as an intervention component to other evidence-based behavioral regulation and emotional functioning interventions could be explored in future research. In conclusion, the results of the present study provide initial evidence of the effectiveness of ACT for decreasing impulsivity in adults with SUD and suggest its potential for use in rehabilitation.

Conclusion

The present study looked at the effectiveness of Acceptance and Commitment Therapy (ACT) in the reduction of impulsivity in adults with SUD. The results revealed that a significantly lower number of participants in the ACT treatment group had a history of impulsivity compared to the standard treatment group, indicating that participants in the ACT treatment group were more behaviorally regulated and thus had more self-control compared to those in the standard treatment group. The findings from this study support the psychological flexibility model of ACT, which suggests that there is the potential to respond more flexibly to cravings and emotional distress without engaging in impulsive substance-related behaviors through engaging in mindful, accepting, and values-based actions. The overall study offers preliminary evidence to support the utility of ACT as a potentially effective intervention that can be used to help decrease impulsivity and improve rehabilitation outcomes for people with substance use disorders.

Recommendations

The results of this study suggest the possible future implications of Acceptance and Commitment Therapy (ACT) to decrease impulsivity in adults with SUD, and several suggestions for future study and practice may be given. The use of ACT-based interventions as part of routine substance use and addiction treatment programs should be explored in the context of rehabilitation centers and mental health professionals to enhance behavioral regulation and self-control among individuals with addictions. The integration of mindfulness, acceptance, and values-based behavioral strategies could improve treatment outcomes and long-term recovery, given the strong linkages between impulsivity and relapse and maladaptive decision making. Larger and more diverse samples should be used, and future studies should be randomized controlled trials to enhance generalizability and causal interpretation. Long-term effects of ACT on psychological functioning, relapse prevention, and impulsivity are also suggested to be assessed using longitudinal studies. Furthermore, future studies could examine how psychological variables like psychological flexibility, emotional regulation, mindfulness, and experiential avoidance mediate the relationship between ACT and impulsive behavior to gain a deeper understanding of the processes by which ACT may affect impulsive behavior. Given the paucity of empirical evidence in the Pakistani rehabilitation context, more culturally sensitive studies and investigations of ACT-based interventions among individuals who use drugs are highly recommended.

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