Spring 4-22-2024

Perseverative Thinking and Thought Suppression: Links to Medication Non-Adherence Among Adults with Type 2 Diabetes

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PERSEVERATIVE THINKING AND THOUGHT SUPPRESSION: LINKS TO MEDICATION NON-ADHERENCE AMONG ADULTS WITH TYPE 2 DIABETES

By

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A thesis submitted to the faculty of The University of Mississippi in partial fulfillment of the requirements of the Sally McDonnell Barksdale Honors College

Oxford

April 2024

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ACKNOWLEDGEMENTS

I would first like to thank my advisor, Dr. Aaron Lee, for dedicating his time and effort in guiding and mentoring me throughout my project. This is my first time writing literature of this depth, so this is all possible thanks to his encouragement and expertise. I would also like to thank the PSICH lab members who were involved in the data collection for my project. The data they collected was extremely valuable in the endeavors for this project, and I am truly thankful for that. I am also grateful to the undergraduate lab members of the PSICH lab whom I have worked alongside the past 2 years. I have had many enjoyable moments through the projects we have worked on together. I would also like to thank my committee members, Dr. Todd Smitherman and Ms. Emmy Parkes, for reviewing my thesis and being a part of my defense. Finally, I would like to thank the Sally McDonnell Barksdale Honors College for giving me the chance to pursue this opportunity during my cherished time at the University of Mississippi.

ABSTRACT

Perseverative Thinking and Thought Suppression: Links to Medication Non-adherence among Adults with Type 2 Diabetes

(Under the direction of Dr. Aaron Lee)

Medication nonadherence in patients with type 2 diabetes contributes to poor glycemic control which often results in the development of serious and irreversible diabetes-related complications. This study examines the role of the maladaptive cognitive processes of rumination and thought suppression on medication nonadherence in patients with type 2 diabetes. The sample for this study (N = 343) consisted of adults (mean: 55, range: 19 – 85) with type 2 diabetes enlisted through a web-based platform. Participants completed a series of validated questionnaires including the Perseverative Thinking Questionnaire, White Bear Suppression Inventory, and Difficulties in Emotion Regulation Scale. Binary logistic regression models were used to examine the association between cognitive risk factors and diabetes medication non-adherence, controlling for age, insulin use, income, and number of diabetes support persons. Our results showed that greater perseverative thinking (AOR: 1.04; $p < .001$) and greater thought suppression (AOR: 1.03; $p = .002$) were associated with greater odds of medication nonadherence. The unproductive aspect of perseverative thinking was found to have the strongest association with medication nonadherence (AOR: 1.71; $p < .001$). Our study has the potential to improve approaches in changing unproductive patterns of thinking associated with patients' abilities to take medications.

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Introduction

Type 2 diabetes is an irreversible chronic condition characterized by insulin insensitivity and blood glucose dysregulation (Weyer et al., 1999; D'Allesio, 2011). It is commonly conceptualized as a lifestyle disorder resulting from suboptimal dietary behaviors and/or low levels of physical activity (Reddy, 2017). Currently around 34 million Americans have type 2 diabetes with more children, teenagers, and young adults becoming at risk for the condition by the year (CDC, 2023). It is an increasingly prevalent condition in adults with an estimated 462 million cases worldwide by 2017 (Khan et al., 2020). Unfortunately, uncontrolled type 2 diabetes leads to serious disabling complications such as nephropathy, neuropathy, lower extremity amputation, myocardial infarction, and stroke (American Diabetes Association, 2013). In the United States, the total cost of type 2 diabetes is estimated to be $327 billion when it comes to treating the condition itself alongside lost productivity (American Diabetes Association, 2018). Managing side effects and complications of type 2 diabetes is often expensive for the patient as well. Average per-capita medical expenditures for an individual with type 2 diabetes are nearly $16,500 per year - approximately 2.3 times more than someone without the condition (American Diabetes Association, 2018). While extreme complications can cause economic burden and a variety of health risks, they are preventable through effective diabetes self-management.

A critical component of diabetes self-management is adherence to diabetes medication. For example, adults with type 2 diabetes typically use oral hyperglycemic medications and/or insulin injections to manage their blood sugar levels (Ganesan et al., 2023; Silver et al., 2018). Non-adherence to diabetes medications leads to higher rates of mortality, higher medical expenses, and an increased use of healthcare resources (Egede et al., 2012; Egede et al., 2014; DiBonaventura et al., 2014). Medication non-adherence is attributed to a 1.6-fold increase in all-

cause mortality among adults with diabetes (Currie et al., 2012). A cost analysis of non-adherence to medications treating diabetes, dyslipidemia, and hypertension suggests that direct costs totaled to $105.8 billion among 230 million patients in 2010, averaging out to be $453 per adult (Nasseh et al., 2012). Clearly, the effects of non-adherence to diabetes medications are severe both in terms of cost and patient health. Yet, adherence to diabetes medications is generally low. A systematic review of adherence to diabetes medication found that general prevalence of adherence to treatments ranged from 38.5% to 93.1% with only 22% of the studies reporting a prevalence of adherence over 80% (Krass et al., 2015). Critically, patients who are adherent to their diabetes medication are more likely to have better glycemic control than those who have less adherence (Sendekie et al., 2022). Good adherence was found to be associated with 10% lower HbA1c (Krapek et al., 2004). It is essential for patients with type 2 diabetes to maintain a high level of medication adherence since poor glycemic control, resulting from suboptimal adherence, is among the strongest predictors of disease progression and the development of microvascular and macrovascular complications in patients (Pani et al., 2008).

Cognitive rumination is the fixation on past and/or present negative thoughts that results in emotional distress (Sansone and Sansone, 2012). Rumination is an important mechanism linking metacognitive beliefs and changes in anxiety and depression (Cherry et al., 2023). It is associated with greater perception of symptoms among adults with chronic diseases such as type 2 diabetes (Ludman et al., 2004; Ludman et al., 1986). Rumination can also have harmful effects on resting and ambulatory blood pressure leading to potential health risks such as increased risk for cardiovascular disease in patients with type 2 diabetes (Hogan and Linden, 2004; Arauz-Pacheco et al., 2002). In relation to somatic syndromes such as type 2 diabetes, rumination can

affect perceptions of health, magnify existing symptoms, and induce psychobiosocial changes due to rumination-induced stress (Sansone and Sansone, 2012).

Like rumination, thought suppression is a maladaptive cognitive strategy that involves repeated attempts to suppress negative, intrusive thoughts. Thought suppression is a conscious, cognitive strategy deployed with the intention of avoiding unpleasant emotions associated with intrusive thoughts (Wegner, 1989). This phenomenon, however, has a paradoxical effect, resulting in greater intensity and frequency of suppressed thoughts (Wenzlaff and Wegner, 2000). An analysis of a survey study on thoughts about participants' health (N = 726, 86% type 2 diabetes) revealed that 46% of participants did not think about their health the day before the study, and 38.5% reported lower general frequencies (Borgmann et al., 2021). Among adults with diabetes, avoidance and suppression may be used as an ineffective coping mechanism to avoid distress associated with diabetes (Schmied et al., 2015). Unfortunately, psychological distress, such as anxiety and depression, resulting from thought suppression is associated with poorer diabetes management (Petkus et al., 2012; Rose et al., 1983).

Memory and attention are critical to the performance of planned behaviors such as taking medications. Existing research has demonstrated that thought suppression allocates cognitive resources such as memory (Wegner and Lane, 1995). In the process of thought suppression, two cognitive factors are at play (Wegner, 1994). The operator, a process within conscious awareness, attempts to direct awareness away from the unwanted thought while the monitor, an underlying consciousness, searches for the unwanted thought (Wegner, 1994). When the monitor finds the unwanted thought, it moves the unwanted thought back into conscious awareness; thus, creating a struggle between the operator and monitor (Wegner, 1994). Under great mental load, (e.g., when coping with diabetes-related stressors), the monitor overcomes the operator, making

the unwanted thought hyper accessible within conscious awareness (Wegner, 1994; Wegner and Erber, 1992).

The current study will examine the role of maladaptive cognitive processes (e.g., rumination and thought suppression) in medication non-adherence among adults with type 2 diabetes. This work is necessary to inform efforts to improve medication adherence among this population. First, we hypothesize that greater thought suppression will be associated with greater odds of non-adherence to diabetes medication. Second, we hypothesize that greater perseverative thinking will be associated with greater odds of non-adherence to diabetes medication as well.

Methods

Participants

Participants were enlisted through a web-based platform of adults with diabetes managed by CloudResearch. Participants had to have an existing diagnosis of type 2 diabetes and be 18 years of age or older to be included in the study. Participants with an existing diagnosis of type 1 diabetes were excluded from participation in the study. After providing consent, participants completed a series of questionnaires. Out of the 518 participants who provided informed consent for the study, 428 reported having diabetes. Of those having diabetes, 40 individuals did not finish the survey, 14 individuals did not have type 2 diabetes, and one individual failed the survey's attention check. Of the remaining participants, 30 (8%) had one or more missing values for the study variables. Given the small proportion of missing values, we excluded these cases from multivariable models using list-wise deletion. Thus, the final sample of participants included 343 adults with type 2 diabetes.

Measures

Medication Non-Adherence. The Extent of and Reasons for Non-adherence Scale (Voils et al., 2012) is a 3-item scale used to measure medication non-adherence. Participants rated the degree to which they have missed their prescribed diabetes medication doses over the past week with response options ranging from 1 ("Always") to 5 ("Never"). Item responses were summed to generate a total score. Total scores demonstrated significant positive skew. Consequently, we dichotomized total scores so that values of 1 (i.e., always adherent) were recoded as 0 and values greater than 1 (i.e., some non-adherence) were coded as 1.

Perseverative Thinking Questionnaire. The Perseverative Thinking Questionnaire (PTQ) is a 15-item self-report used to measure participants' repetitive negative thinking predispositions (Ehring et al., 2011). The PTQ inventory includes three subscales: (1) intrusiveness, repetitiveness, and difficulties with disengagement, (2) perceived unproductiveness of repetitive negative thinking, and (3) repetitive negative thinking capturing mental capacity. Participants rated the degree to which they engage in repetitive negative thinking on a 5-point Likert Scale from 1 ("never") to 5 ("almost always"). The PTQ total and subscales were used as predictors in the study. Findings in the present study indicate an excellent internal consistency for the total scale ($\alpha = .97$) and each subscale including PTQ Core ($\alpha = .96$), PTQ Unproductive ($\alpha = .86$), and PTQ Mental ($\alpha = .91$).

White Bear Suppression Inventory. The White Bear Suppression Inventory (WBSI) (Wegner & Zanakos, 1994) is a 12-item inventory that measures chronic thought suppression tendencies. Participants rated the degree of these tendencies using a 5-point Likert scale from 1 ("strongly disagree") to 5 ("strongly agree"). The present study uses a total WBSI score as well as subscales for suppressive thoughts and intrusive thoughts. In the present study, the total scale had an excellent internal consistency ($\alpha = .95$) including the WBSI Suppression ($\alpha = .89$) and WBSI Intrusion (.93) subscales.

Control Variables. Age, income, insulin use, and diabetes support members at home were control variables in this study that were collected via self-report. Participants reported if they were currently prescribed insulin to aid in diabetes management (0 = no insulin use, 1 = insulin use).

Data Analysis Plan

Sample characteristics were examined using descriptive statistics. Next, we tested a series of binary logistic regression models examining the total and subscale scores of the PTQ and WBSI as predictors of medication non-adherence while controlling for age, insulin use, income, and number of diabetes support persons. There was substantial correlation among PTQ and WBSI subscales. To avoid multicollinearity, we examined each subscale and total scale as predictors of non-adherence using separate binary logistic regression models. Each model met assumptions of binary logistic regression (e.g., non-collinearity, independence of observations, and homoscedasticity). All coefficients are reported as Adjusted Odds Ratios (AORs). All inferential statistical tests are two-tailed with alpha = .05. All descriptive and binary logistic regression models were performed using SPSS version 29.0 (IBM, 2021).

Results

Sociodemographic and clinical characteristics of the sample (N = 343) are reported in Table 1. The sample is primarily composed of White, non-Hispanic, female participants with an approximate, average age of 55 years (range: 19 to 85). The majority of participants had a high school degree, and the sample's modal annual household income exceeded $75,000. The majority of participants in the sample had health insurance and a primary care provider 12 months prior. On average, participants experienced diabetes for an average duration of approximately 12 years. Approximately 39% of the sample, at the time of data collection, used insulin.

Perseverative Thinking

Table 2 depicts the results of binary logistics models examining the relationship of perseverative thinking questionnaire total and subscales with medication non-adherence. Greater total perseverative thinking was significantly associated with greater odds of medication non-adherence (AOR = 1.037; SE = 0.01; 95%CI: 1.02, 1.06; $p < .001$). Among the control variables, only older age was significantly associated with lower odds of diabetes medication non-adherence (AOR = 0.96; SE = 0.01; 95%CI: 0.96, 0.99; $p = .002$). Insulin use (AOR = 1.14; SE = 0.25; 95%CI: 0.70, 1.88; $p = .597$), income (AOR = 0.84; SE = 0.27; 95%CI: 0.49, 1.43; $p = .517$), and number of diabetes support persons (AOR = 1.14; SE = 0.11; 95%CI: 0.92, 1.34; $p = .233$) were not significantly associated with diabetes medication adherence.

Greater core perseverative thinking questionnaire scores were significantly associated with greater odds of medication non-adherence (AOR = 1.56; SE = 0.14; 95%CI: 1.20, 2.07; $p <$

.001). Among the control variables, only older age was significantly associated with lower odds of diabetes medication non-adherence (AOR = 0.97; SE = 0.01; 95%CI: 0.95, 0.99; p <.001). Insulin use (AOR = 1.17; SE = 0.25; 95%CI: 0.71, 1.92; p = .533), income (AOR = 0.83; SE = 0.27; 95%CI: 0.49, 1.41; p = .496), and number of diabetes support persons (AOR = 1.14; SE = 0.11; 95%CI: 0.92, 1.40; p = .233) were not significantly associated with diabetes medication adherence.

Greater unproductive perseverative thinking questionnaire scores were significantly associated with greater odds of medication non-adherence (AOR = 1.71; SE = 0.13; 95%CI: 1.20, 2.07; p < .001). Older age was significantly associated with lower odds of diabetes medication non-adherence (AOR = 0.97; SE = 0.01; 95%CI: 0.95, 0.99; p < .001). Insulin use (AOR = 1.12; SE = 0.26; 95%CI: 0.68, 1.85; p = .653), income (AOR = 0.85; SE = 0.27; 95%CI: 0.50, 1.45; p = .547), and number of diabetes support persons (AOR = 1.14; SE = 0.11; 95%CI: 0.92, 1.40; p = .224) were not significantly associated with diabetes medication adherence.

Greater mental perseverative thinking was significantly associated with greater odds of medication non-adherence (AOR = 1.67; SE = 0.14; 95%CI: 1.28, 2.18; p < .001). Among the control variables, older age was significantly associated with lower odds of diabetes medication non-adherence (AOR = 0.97; SE = 0.01; 95%CI: 0.96, 0.99; p = .005). However, insulin use (AOR = 1.13; SE = 0.25; 95%CI: 0.69, 1.86; p = .634), income (AOR = 0.81; SE = 0.27; 95%CI: 0.48, 1.38; p = .444), and number of diabetes support persons (AOR = 1.15; SE = 0.11; 95%CI: 0.94, 1.41; p = .182) were not significantly associated with diabetes medication adherence.

Thought Suppression

Table 3 depicts the results of binary logistics models examining the relationship of thought suppression questionnaire total and subscales with medication non-adherence. Greater

total thought suppression questionnaire scores were significantly associated with greater odds of medication non-adherence (AOR = 1.03; 95%CI: 1.01, 1.05; $p = .002$). Among the control variables, only older age was significantly associated with lower odds of diabetes medication non-adherence (AOR = 0.97; SE = 0.01; 95%CI: 0.95, 0.99; $p < .001$). Insulin use (AOR = 1.16; SE = 0.25; 95%CI: 0.71, 1.90; $p = .552$), income (AOR = 0.86; SE = 0.27; 95%CI: 0.51, 1.46; $p = .580$), and number of diabetes support persons (AOR = 1.13; SE = 0.11; 95%CI: 0.92, 1.39; $p = .246$) were not significantly associated with diabetes medication adherence.

Greater intrusive thought suppression was significantly associated with greater odds of medication non-adherence (AOR = 1.07; 95%CI: 1.03, 1.11; $p < .001$). Among the control variables, older age was significantly associated with lower odds of diabetes medication non-adherence (AOR = 0.97; SE = 0.01; 95%CI: 0.95, 0.99; $p < .001$). Insulin use (AOR = 1.17; SE = 0.25; 95%CI: 0.71, 1.91; $p = .543$), income (AOR = 0.85; SE = 0.27; 95%CI: 0.50, 1.43; $p = .530$), and number of diabetes support persons (AOR = 1.13; SE = 0.11; 95%CI: 0.92, 1.40; $p = .240$) were not significantly associated with diabetes medication adherence.

Greater thought suppression was significantly associated with greater odds of medication non-adherence (AOR = 1.06; SE = 0.02; 95%CI: 1.01, 1.10; $p < .011$). Among the control variables, only older age was significantly associated with lower odds of diabetes medication non-adherence (AOR = 0.96; SE = 0.01; 95%CI: 0.95, 0.98; $p < .001$). Insulin use (AOR = 1.18; SE = 0.25; 95%CI: 0.73, 1.93 $p = .498$), income (AOR = 0.86; SE = 0.26; 95%CI: 0.51, 1.45; $p = .559$), and number of diabetes support persons (AOR = 1.13; SE = 0.11; 95%CI: 0.92, 1.39; $p = .247$) were not significantly associated with diabetes medication adherence.

Table 1.

Sociodemographic and Clinical Sample Characteristics (N = 343).

Variable	*M* (*SD*) or *n* (%)
Age (in years)	54.71 (15.88)
Female Sex	192 (56%)
Race	
White	270 (78.7%)
Black	45 (13.1%)
Asian	13 (3.8%)
American Indian	2 (.6%)
Other	9 (2.6%)
Ethnicity	
Hispanic/Latino	34 (9.9%)
Education	
8th grade or less	1 (0.3%)
Some high school, but did not graduate	5 (1.5%)
High school graduate or GED	68 (19.8%)
Some college or 2-year college degree	119 (34.7%)
4-year college graduate	89 (25.9%)
More than 4-year college degree	61 (17.8%)
Current Income	
< $15,000	28 (98.2%)
$15,000-30,000	70 (20.4%)
$30,000-50,000	66 (19.2%)
$50,000-75,000	72 (21%)
>$75,000	107 (31.2%)
PTQ Core	2.96 (.99)
PTQ Unproductive	2.78 (1.04)
PTQ Mental	2.74 (1.06)
WBSI Int	18.35 (7.18)
WBSI Supp	20.03 (6.24)
Insulin Use	142 (41.8%)
Diabetes Duration (in years)	12.9 (10.17)
Primary Care Provider	337 (98.3%)
Health Insurance	330 (96.2%)
DERS Total Score	83.34 (28.48)

PTQ = Perseverative Thinking Questionnaire; WBSI = White Bear Suppression Inventory; DERS = Difficulties in Emotion Regulation Scale

Table 2.

Binary Logistic Regression Examining the Association between Medication Non-adherence and Facets of Perseverative Thinking (N = 343).

	AOR	SE	95% CI		*p*
			LL	UL	
PTQ Total	1.037	.009	1.018	1.056	<.001
PTQ Core	1.579	.138	1.204	2.069	<.001
PTQ Unproductive	1.707	.131	1.319	2.209	<.001
PTQ Mental	1.672	.136	1.281	2.184	<.001

AOR = Adjusted Odds Ratio; SE = Standard Error; 95% CI = 95% Confidence Intervals; LL = Lower Limit; UL = Upper Limit; Each predictor tested in separate models.

Table 3.

Binary Logistic Regression Examining the Association between Medication Non-adherence and Facets of Thought Suppression (N = 343).

	AOR	SE	95% CI		*p*
			LL	UL	
WBSI Total	1.027	.009	1.010	1.045	.002
WBSI Intrusion	1.066	.019	1.027	1.107	<.001
WBSI Suppression	1.055	.021	1.012	1.098	.011

AOR = Adjusted Odds Ratio; SE = Standard Error; 95% CI = 95% Confidence Intervals; LL = Lower Limit; UL = Upper Limit; Each predictor tested in separate models.

Discussion

Medication non-adherence in adults with type 2 diabetes has shown to come with economic burden and a variety of health risks (Egede et al., 2012; Egede et al., 2014; DiBonaventura et al., 2014; Nasseh et al., 2012). Prior studies have also demonstrated the effect of maladaptive cognitive processes on thoughts and management of diabetes self-care behaviors (Petkus et al., 2012; Rose et al., 1983; Ludman et al., 2004; Ludman et al., 1986). This study is the first to analyze the relationship between these cognitive processes (i.e. rumination and thought suppression) and medication non-adherence in adults with type 2 diabetes. Our findings are consistent with the study's hypotheses that greater thought suppression and greater perseverative thinking are associated with greater medication non-adherence. Findings from this study will help inform initiatives that aim to improve medication adherence among adults with type 2 diabetes.

Perseverative Thinking

Our study found that all facets of perseverative thinking were significantly associated with greater medication non-adherence. Results of this study highlight the role of perseverative thinking in medication adherence among adults with type 2 diabetes. We found a significant relationship between core features of perseverative thinking (i.e. repetitiveness, intrusiveness, difficulties with disengagement) and greater medication non-adherence. These findings align with prior research showing that psychological distress associated with diabetes is associated with poor adherence of self-management behaviors (Peyrot et al., 2005).

The results of our study show that perceived unproductivity and mental capacity resulting from repetitive negative thinking are also significantly associated with patients' non-adherence. Adherence to diabetes treatment is a long, complex process for many patients. Previous literature supports this assertion that treatment non-adherence is affected by perceived difficulty and burden that comes with the regimen (García-Pérez et al., 2013). Repetitive negative thinking can be taxing on one's mental capacity and can lead to missed doses of medication as well.

Thought Suppression

Consistent with our hypothesis, our study indicates that all facets of thought suppression are significantly associated with greater medication non-adherence. Frequency of intrusive thoughts was revealed to be a significant predictor in medication non-adherence. Greater frequency of maladaptive thoughts can consume a great deal of cognitive resources, especially for adults with type 2 diabetes. These thoughts can also lead to a negative self-perception of the individual, undermining the individual's ability to successfully take medications, a suggestion aligning with prior research that self-stigma is an important factor that negatively influences adherence to treatment (Kamaradova et al., 2016). Our study suggests that thought suppression is an important predictor in medication non-adherence. Consistent with our findings, Wenzlaff and Wegner (2000) found that thought suppression can lead to a paradoxical exacerbation of thoughts. Psychological distress as a result of thought suppression can lead to the avoidance of one's diabetes self-care regimen and adherence to medication (Petkus et al., 2012; Rose et al., 1983). Among adults with diabetes, attempts to suppress thoughts may require greater cognitive resources which may undermine their ability to consistently take diabetes medications as prescribed.

Like repetitive negative thinking, constant suppression of thoughts is mentally load-intensive as well, possibly leading one to forget to take doses of medication. Finally, frequency of intrusive thoughts and thought suppression were shown to be a significant predictor of medication non-adherence. When considering the frequency of negative thoughts that might come with type 2 diabetes, an individual cannot help but attempt to suppress these thoughts as well as those surrounding his or her condition. Increasing the frequency of diabetes-related thoughts, the distress that comes as a result of these thoughts, leads to non-adherence to medication. As a result, adults with diabetes may become stuck in a cycle of non-adherence where a constant negative thought about diabetes-related sources of distress contributes to greater attempts to use thought suppression, which paradoxically contributes to an increased likelihood of medication non-adherence.

Limitations

The findings from this study are qualified by several important limitations. First, a cross-sectional design was utilized for this observation study. Consequently, we are not able to determine the directional nature or the observed relationships among the study variables. For example, it is possible that medication adherence demands contribute to greater repetitive negative thinking or thought suppression. It is also possible that the observed associations of repetitive negative thinking and thought suppression with greater diabetes medication non-adherence may be due to one or more mediating variables not measured in this study. For example, these variables may have an indirect effect on medication non-adherence via neuropsychological variables such as working memory and attention. Future research should examine whether rumination and thought suppression contribute to poorer medication adherence among adults with type 2 diabetes because of decreased working memory or attentional capacity.

Second, our study relied on self-report measures relating to diabetes status as well as activities that relied on participants' to retrospectively recall information regarding their medication taking behavior. Future research should examine the relationship of thought suppression and negative automatic thinking with objective measures of medication adherence such as electronic pharmacy record data (e.g., medication position ratios) or pill counts. Third, we did not examine the potential impact of medication non-adherence on downstream variables. For example, we were not able to determine whether the putative impact of thought suppression and negative thinking to poorer medication adherence extends to worse glycemic control (e.g., glycated hemoglobin A1c) among adults with type 2 diabetes.

Conclusion

Our study highlights the importance and effect of rumination and thought suppression on medication non-adherence in patients with type 2 diabetes. Both factors and their subscales were significantly associated with greater medication non-adherence. The consequences of suboptimal adherence to type 2 diabetes medication has profound consequences for the patient both in terms of cost and physical complications (Nasseh et al., 2012; Pani et al., 2008). Our study's findings have the potential to bring awareness of approaches to change unhelpful patterns of thinking that might be useful in improving patients' abilities to take medications consistently. Future research might expand on our findings by incorporating factors such as quality of care by support persons and its effect on patients' cognitive tendencies during a diabetes self-care regimen.

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APPENDIX

Perseverative Thinking Questionnaire

Response Options: 0 – Never, 1 – Rarely, 2 – Sometimes, 3 – Often, 4 – Almost Always

1. The same thoughts keep going through my mind again and again.
2. Thoughts intrude into my mind.
3. I can't stop dwelling on them.
4. I think about many problems without solving any of them.
5. I can't do anything else while thinking about my problems.
6. My thoughts repeat themselves.
7. Thoughts come to my mind without me wanting them to.
8. I get stuck on certain issues and can't move on.
9. I keep asking myself questions without finding an answer.
10. My thoughts prevent me from focusing on other things.
11. I keep thinking about the same issue all the time.
12. Thoughts just pop into my mind.
13. I feel driven to continue dwelling on the same issue.
14. My thoughts are not much help to me.
15. My thoughts take up all my attention.

White Bear Suppression Inventory

Response Options: Strongly disagree (1) to Strongly agree (5)

1. There are things I prefer not to think about.
2. Sometimes I wonder why I have the thoughts I do.
3. I have thoughts that I cannot stop.
4. There are images that come to mind that I cannot erase.
5. My thoughts frequently return to one idea.
6. I wish I could stop thinking of certain things.
7. Sometimes my mind races so fast I wish I could stop it

8. I always try to put problems out of my mind.

9. There are thoughts that keep jumping into my head.

10. Sometimes I stay busy just to keep thoughts from intruding on my mind.

11. There are things that I try not to think about.

12. Sometimes I really wish I could stop thinking.

13. I often do things to distract myself from my thoughts.

14. I have thoughts that I try to avoid.

15. There are many thoughts that I have that I do not tell anyone.

Difficulties in Emotion Regulation Scale (DERS-36)

Response options: 1 - Almost never (0-10%), 2 – Sometimes (11-35%), 3 - About half the time (36-65%), 4 - Most of the time (66-90%), 5 - Almost always (91-100%)

1. I am clear about my feelings.

2. I pay attention to how I feel.

3. I experience my emotions as overwhelming and out of control.

4. I have no idea how I am feeling.

5. I have difficulty making sense out of my feelings.

6. I am attentive to my feelings.

7. I know exactly how I am feeling.

8. I care about what I am feeling.

9. I am confused about how I feel.

10. When I'm upset, I acknowledge my emotions.

11. When I'm upset, I become angry with myself for feeling that way.

12. When I'm upset, I become embarrassed for feeling that way.

13. When I'm upset, I have difficulty getting work done.

14. When I'm upset, I become out of control.

15. When I'm upset, I believe that I will remain that way for a long time.

16. When I'm upset, I believe that I will end up feeling very depressed.

17. When I’m upset, I believe that my feelings are valid and important.
18. When I’m upset, I have difficulty focusing on other things.
19. When I’m upset, I feel out of control.
20. When I’m upset, I can still get things done.
21. When I’m upset, I feel ashamed at myself for feeling that way.
22. When I’m upset, I know that I can find a way to eventually that way.
23. When I’m upset, I feel like I am weak.
24. When I’m upset, I feel like I can remain in control of my behaviors.
25. When I’m upset, I feel guilty for feeling that way.
26. When I’m upset, I have difficulty concentrating.
27. When I’m upset, I have difficulty controlling my behaviors.
28. When I’m upset, I believe there is nothing I can do to make myself feel better.
29. When I’m upset, I become irritated at myself for feeling that way.
30. When I’m upset, I start to feel very bad about myself.
31. When I’m upset, I believe that wallowing in it is all I can do.
32. When I’m upset, I lose control over my behavior.
33. When I’m upset, I have difficulty thinking about anything else.
34. When I’m upset, I take time to figure out what I’m really feeling.
35. When I’m upset, it takes me a long time to feel better.
36. When I’m upset, my emotions feel overwhelming.