

Autobiographical memory in diabetes mellitus patients

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Abstract

Objective: Although current theorizing proposes that adjustment to insulin-dependent diabetes mellitus (IDDM) is influenced by appraisals of past health, there is little research into the role of autobiographical recall in patients with this condition. Autobiographical memory patterns were investigated in patients with IDDM and controls. **Method:** Fifteen patients with IDDM and 15 control participants were administered the Autobiographical Memory Test, the Beck Depression Inventory (BDI), and the

Multidimensional Health Locus of Control Survey (MHLCS). **Results:** Patients with IDDM displayed impaired access to specific positive memories and took longer to retrieve memories than controls. Impaired retrieval in patients with IDDM was associated with higher scores on the MHLCS-Powerful Others scale. **Conclusions:** Findings suggest that impaired recall of positive experiences is associated with poor adjustment to IDDM. © 2001 Elsevier Science Inc. All rights reserved.

Keywords: Diabetes; Autobiographical memory; Coping; Illness

Although theorists recognize that health beliefs and coping mechanisms develop from information derived from past illness experiences [1], no studies have investigated the patterns of autobiographical recall in patients with insulin-dependent diabetes mellitus (IDDM). This omission is surprising because adjustment to IDDM is mediated in part by one's appraisals of past health [2]. It is possible that deficits in retrieving memories about positive past experiences may impede adaptive evaluations of patients with IDDM. Research with depressed patients indicates that they display a deficit in recalling specific positive memories [3], and this deficit is associated with poor problem solving [4]. The relevance of this issue to patients with IDDM is indicated by the documented prevalence of depression in IDDM populations [5]. There is evidence that autobiographical memory deficits may occur because of restricted cognitive capacity that can be devoted to effortful memory search [6]. Adequate encoding and retrieval of past experiences may be impaired in patients with IDDM because episodes of hyperglycemia [7] and hypoglycemia [8] can lead to cognitive deficits. Moreover, there is considerable evi-

dence of the potential effects of IDDM on neurological functioning [9,10]. Consequently, it is possible that patients with IDDM have impaired ability to retrieve specific memories, and that this impairment may detrimentally affect management of problems associated with the insulin-dependent diabetes.

Autobiographical memories are most commonly indexed by requesting recall of a specific personal memory in response to cue words [11]. Accessibility of memories is indexed by (a) the number of specific memories that are recalled and (b) the response latency to recall specific memories. This paradigm is based on the premise that personal memories are retrieved through sequences of searches that progress through memories of general events before they arrive at memories of specific instances [12]. There is much evidence to suggest that psychological disturbance is associated with retrieval that ceases with general memory retrieval rather than recall of specific experiences [13], and that this pattern contributes to reduced problem-solving and future psychological disorder [14,15]. The aim of this study was to index the accessibility of specific autobiographical memories in patients with IDDM. We hypothesized that patients with IDDM would display a deficit in recalling specific memories of positive experiences relative to controls, and that this deficit would be associated with poor adjustment to one's health status.

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Method

Participants

Fifteen insulin-dependent patients with IDDM (5 male, 10 female) were recruited from a diabetes clinic. Inclusion criteria included being at least 18 years of age, possessing adequate English, at least a 2-year history of insulin dependent diabetes mellitus (IDDM). This latter requirement was indicated by findings that coping patterns are typically established by 2 years after diagnosis of IDDM [16]. The mean long-term blood glucose level for the patients with IDDM (obtained from medical charts) was 9.0 mmol/l (S.D. = 1.9). The mean duration of insulin-dependent diabetes was 17.5 years (S.D. = 10.3). Fifteen control (3 male, 12 female) participants, who were matched for age, were recruited from noticeboards at the University of New South Wales. No controls suffered a chronic health condition.

Materials

The emotional cue words comprised 10 positive (happy, improve, safe, interested, recover, surprise, energetic, successful, healthy, and fit) and 10 negative words (lonely, sick, hurt, pain, clumsy, faint, angry, sorry, ill, and fatigue). The words were matched for word frequency [17]. The practice cues were *leaving* and *window*. Order of presentation was randomized except that positive and negative words were alternated.

Procedure

The experimenter, who was not blind to group status, instructed participants to report the first specific personal memory triggered by each stimulus word. The experimenter transcribed each response verbatim. The experimenter read each word, and if participants did not give a specific memory, the experimenter prompted them with “can you think of a specific time — one particular event.” If participants did not retrieve a specific memory within 60 s, the next word was presented. The experimenter recorded the time to provide a specific response with a stopwatch. Participants then completed the Beck Depression Inventory (BDI) [18] and the Multidimensional Health Locus of Control Survey (MHLCS) [19]. The MHLCS is an 18-item self-report measure that indexes three factors of perceived health control: internal control, belief in powerful others, and chance.

The experimenter coded responses for (1) latency to retrieve the memory (in seconds) and (2) generality or specificity of the memory. Memories were defined as specific when they described an event that occurred on a specific day [20] (e.g., “I was happy last Tuesday when the doctor changed my medication”). To obtain an index of the reliability of the experimenter’s ratings, a second rater, who was blind to group status, also coded the verbatim responses as general or specific. The mean Kappa coefficient of

reliability was 0.88, indicating a high level of agreement between the two raters. The experimenter’s ratings were used for analyses.

Analyses

In recognition of the marginal age difference between groups (7.5 years), separate 2 (Group) \times 2 (Emotion) analyses of covariance (ANCOVAs) were conducted on response latency and specific memories that controlled for age. Parametric statistics were employed to analyze this ordinal data. Response latency data were limited to those responses that included a specific memory within 60 s. Specific memories were defined as the proportion of all memories provided in the 60-s period.

Results

Participant characteristics

Table 1 presents the mean participant characteristics. Planned comparisons indicated that the two groups did not differ in terms of age, BDI, MHLCS-Chance, or MHLCS-Internal Control scores. There was a nonsignificant trend, however, for IDDM patients to be older and have higher BDI scores than controls. Patients with IDDM scored higher on MHLCS-Powerful Others than controls $t(28) = 2.89, P < .01$.

Memory specificity

Table 1 presents the proportion of reported memories that were specific, and the mean response latencies for retrieval of specific memories. A 2 (Group) \times 2 (Emotion) repeated-measures ANCOVA on the proportion of specific memories

Table 1
Mean participant characteristics, specific memories, and response latencies

	Diabetics (<i>n</i> = 15)	Controls (<i>n</i> = 15)	<i>t</i>	<i>P</i>
Age	40.06 (13.10)	32.53 (14.90)	1.05	ns
BDI	8.50 (9.30)	5.07 (4.17)	1.19	ns
MHLCS-Powerful Others	21.28 (5.32)	16.13 (4.27)	2.89	.01
MHLCS-Chance	17.79 (4.76)	16.20 (4.23)	0.67	ns
MHLCS-Internal Control	25.07 (5.40)	25.87 (4.72)	0.67	ns
<i>Specific memories</i>				
Positive	70.00 (19.27)	87.33 (14.86)		
Negative	86.00 (7.37)	93.33 (11.13)		
<i>Response latencies</i>				
Positive	22.13 (8.16)	14.46 (6.18)		
Negative	16.96 (7.71)	11.13 (4.59)		

BDI = Beck Depression Inventory. MHLCS = Multidimensional Health Locus of Control Survey. Response latencies measured in seconds. Standard deviations appear in parentheses.

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