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Mediation by illness perceptions of the association between

the doctor-patient relationship and diabetes-related distress

Harriet A. Bridges & Michael A. Smith*

Health in Action: Stress Research Group, Department of Psychology,

Faculty of Health and Life Sciences, Northumbria University

Running Head: Doctor-patient relationship and diabetes distress

*Corresponding Author:

Dr Michael A. Smith

Department of Psychology

Northumbria University

Northumberland Building

Newcastle upon Tyne

NE1 8ST

United Kingdom

michael4.smith@northumbria.ac.uk

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Abstract

The quality of the doctor-patient relationship has been shown to impact upon a number of
health outcomes in diabetes, including psychological wellbeing. The present cross-sectional
study investigated illness perceptions as mediators of the association between the doctor-
patient relationship and diabetes-related distress. Individuals with diabetes completed
questionnaires which measured their perceptions of their relationship with their doctor,
diabetes-related distress and illness perceptions. The association between doctor-patient
relationship and diabetes-related distress was fully mediated by Personal Control, suggesting
that an individual's beliefs surrounding their capacity to control their diabetes mediate the
association between the doctor-patient relationship and diabetes-related distress.

Keywords: Diabetes, distress, illness perceptions, doctor-patient relationship

Introduction

The influence of effective doctor-patient relationships on the promotion of emotional wellbeing and treatment adherence in chronic illness is well established (Ha and Longnecker, 2010; Stewart, 1995). In diabetes, the quality of the doctor-patient relationship has been shown to predict a range of health outcomes. In one study, diabetes patients who were reluctant to discuss self-management with their doctors reported less frequent self-care, poorer quality of life, poorer psychological functioning and greater diabetes related distress (Beverly et al., 2012). The doctor-patient relationship appears to be associated with diabetes understanding and self-management, with one study reporting that participants who correctly reported their most recent HbA_{1c} level were more likely to report that their doctor answers their questions thoroughly (Heisler et al., 2005). Additionally, a further study found that diabetes patients' reports of their doctor-patient relationship were associated with coping and health-related quality of life, but that the doctor-patient relationship was not significantly related to HbA_{1c} values (Rose et al., 2002). Patient-centred doctor-patient interactions are associated with better diabetes self-care, treatment adherence and psychosocial outcomes (Golin et al., 1996; van Dam et al., 2003; Inzucchi et al., 2012). Furthermore, work by Lawson and colleagues suggests that perceptions of more reassuring health messages during the period following diabetes diagnosis are associated with more adaptive coping and more desirable illness perceptions (Lawson et al., 2010; Lawson et al., 2007a; Lawson et al., 2007b). While previous studies have found a link between the doctor-patient relationship and psychological functioning in diabetes, no studies to date have specifically considered the association between the doctor-patient relationship and diabetes-related distress (feeling overwhelmed, worried and burned out by the frustration of having diabetes and the diabetes management regimen; Polonsky et al., 1995). An aim of the present study is to address this

lacuna by investigating i) the association between the doctor-patient relationship and diabetes-related distress and ii) whether this association is mediated by illness perceptions.

Illness perceptions reflect an individual's cognitive representations of their illness and its symptoms (Petrie and Weinman, 2012). According to the common-sense model of illness perceptions (Leventhal et al., 1984), individuals construct a cognitive model of their illness on the basis of a number of dimensions, including i) identity (the extent to symptoms are attributed to the illness), ii) timeline (how long the symptoms will last and how unpredictably they will occur), iii) consequences (expected outcomes of the illness and the impact on the individual's day-to-day life), iv) cause (perceptions of the contributing factors to development of the illness and its symptoms), and v) cure/control (the extent to which the illness can be cured or controlled by treatment and self-management). Illness perceptions can be measured using the Illness Perception Questionnaire-Revised (IPQ-R; Moss-Morris et al., 2002), which divides the cure/control dimension into separate measures of Personal Control (control over own management of condition) and Treatment Control (expectancies regarding treatment and medical advice), and the timeline dimension into a Timeline Acute/Chronic factor (perceived length of illness) and Timeline Cyclical (unpredictable nature of symptoms). Two further subscales on the IPQ-R measure Emotional Representations (emotional response to illness) and Illness Coherence (overall understanding of condition). Hagger and Orbell (2003) suggest that an individual's cognitive representations of their illness are derived from three sources: i) existing knowledge of the illness from social and cultural sources, ii) information from authoritative sources, such as a doctor, and iii) the individual's own experience of the illness and its symptoms. Given that information garnered from an individual's doctor is likely to contribute substantially to an individual's representations of their illness, it is important to consider the association between the doctor-patient relationship and illness perceptions.

Illness perceptions are known to be associated with a range of clinical and psychological outcomes in diabetes. Glucoregulatory control has been associated with several illness perceptions (Mc Sharry et al., 2011; Griva et al., 2000; Broadbent et al., 2011), while it has also been observed that illness perceptions, most notably Timeline (cyclical) and Personal Control (Nsereko et al., 2013), are related to diabetes self-care behaviours (Neylon et al., 2013). Adherence to treatment has been associated with greater Control (Broadbent et al., 2011; Cerkoney and Hart, 1980; Griva et al., 2000), while medication adherence is inversely related to Consequences (Broadbent et al., 2011). With respect to psychological functioning in individuals with diabetes, Consequences (Paschalides et al., 2004; Edgar and Skinner, 2003) and Control are related to better emotional wellbeing (Paschalides et al., 2004). A meta-analytic review by Hudson and colleagues (2014) reported that high Timeline (Cyclical), high Consequences and low Personal Control are related to poor emotional health. Further, higher Timeline Cyclical and Consequences scores, as well as lower Illness Coherence scores are all associated with greater diabetes-related distress (Paddison et al., 2010). In addition to the aforementioned relationships between illness perceptions and health outcomes in diabetes, Lawson and colleagues reported that a more reassuring health message was associated wth better coping in diabetes, but also found that this relationship was mediated by Illness Coherence and Personal Control (Lawson et al., 2010). This previous study provides evidence that illness perceptions should be considered as mediators of the relationship between the doctor-patient relationship and health outcomes in diabetes.

Given that illness perceptions have been associated with both doctor-patient relationship and psychological wellbeing in individuals with diabetes, the potentially mediating role of illness perceptions on the association between doctor-patient relationship and diabetes-related distress warrants consideration. Therefore, the present study aimed to investigate this question. Predicated by previous findings suggesting a strong link between

doctor-patient relationship and health outcomes, we hypothesised that an association between doctor-patient relationship and diabetes-related distress would be observed here, and that this relationship would be mediated by diabetes patients' perceptions of their illness.

Method

Participants

In order to take part in the study, participants were required to i) have been diagnosed with either type 1 or type 2 diabetes, ii) be between the ages of 18 and 65 years, iii) be literate in English, and iv) not have been diagnosed with any chronic illnesses other than diabetes. A total of 189 individuals completed the online questionnaires. However, for a number of these individuals the data was incomplete or unusable (due to respondents reporting their age to be below 18 or above 65, or not declaring their diabetes as either type 1 or type 2). The final sample which was used for analysis comprised 117 individuals aged 18-65 years (M_{age} = 36.3, SD_{age} = 11.7; 47 males, 70 females; 88 type 1 diabetes, 29 type 2 diabetes). Recruitment of participants was achieved via the posting of a web link to the online questionnaire on social networking sites including Twitter™, Facebook™ (including diabetes specific Facebook groups) and diabetes blogs. Participants were not offered any incentives for taking part in the study. The majority of participants reported that they lived in the UK (69.2%) or North America (23.1%). A total of six individuals reported that they had been diagnosed with diabetes within the past 12 months, and a further six participants reported that they had been diagnosed within the past 2 years. All remaining participants had been diagnosed 2 or more years prior to taking part in the study.

Materials and procedure

An online questionnaire was developed for the collection of the cross-sectional data, which was hosted by SurveyMonkey. The questionnaire first asked a series of demographic questions, including date of birth, sex, type of diabetes and age at diabetes diagnosis. Validated questionnaires were then included to measure doctor-patient relationship, diabetes-

related distress and illness perceptions. The study was approved by the relevant institutional ethics committee.

Patient-Doctor Relationship Questionnaire (PDRQ). The PDRQ (Van der Feltz-Cornelis et al., 2004) is a 9-item questionnaire designed to assess the patient's perceptions of their relationship with their primary care practitioner (PCP). For the purposes of this study, we substituted the term 'PCP' with that of 'doctor' to avoid any confusion for participants. It was made clear that participants were to respond on the basis of their perceived relationship with the doctor whom is primarily responsible for their diabetes treatment provision. Reponses to the nine items (e.g. 'My doctor helps me', 'I trust my doctor', 'My doctor and I agree on the nature of my medical symptoms') were provided on a 5-point scale ranging between 1 (not at all appropriate) and 5 (totally appropriate) according to how appropriate each statement is in describing the individual's relationship with their doctor. The reliability ($\alpha = 0.94$) and validity of the questionnaire has been demonstrated (Van der Feltz-Cornelis et al., 2004).

Problem Areas in Diabetes Questionnaire (PAID). The PAID (Polonsky et al., 1995) is a 20 item questionnaire designed to measure the extent to which individuals are distressed by various facets associated with diabetes. Responses to the 20 items (e.g. 'Feeling constantly concerned about food and eating', 'Feeling depressed when you think about living with diabetes', 'Coping with complications of diabetes') were provided on a 5-point scale ranging between 0 (not a problem) and 4 (serious problem) according to how problematic each area is for the individual. The PAID is a widely used instrument for determining diabetes-related distress in both clinical and research settings, and the reliability ($\alpha = 0.95$) and validity of the questionnaire has been demonstrated (Welch et al., 1997).

Illness Perception Questionnaire-Revised (IPQ-R). The IPQ-R (Moss-Morris et al., 2002) is a measure of an individual's perceptions about their illness. The version used here

was modified to be diabetes-specific (i.e. the words 'your illness' were changed to 'your diabetes'). It comprises eight subscales: Identity (high scores reflect a greater attribution of symptoms to diabetes), Timeline (Acute/Chronic; high scores reflect a greater belief that diabetes symptoms will last longer), Consequences (high scores indicate that diabetes has greater consequences for the individual's day-to-day functioning), Personal Control (higher scores are indicative of the individual's greater perceived capacity to control their diabetes), Treatment Control (higher scores are suggestive of the individual's greater perceived capacity to manage their diabetes via their treatment regime), Illness Coherence (high scores suggest that the individual believes they have a good understanding of their diabetes), Timeline (Cyclical; high scores suggest that the individual perceives that their symptoms will be more unpredictable) and Emotional Representations (high scores indicate that an individual reacts more emotionally to their diabetes symptoms). The validity and internal reliability (α for each subscale ≥ 0.79) has been demonstrated (Moss-Morris et al., 2002)

Treatment of data

The study employed a cross-sectional design. All analyses comprised hierarchical multiple regression, with sex, age and type of diabetes (type 1 or type 2) being entered at step 1, to investigate the influence of these variables on the dependent variable of interest. The primary independent variable(s) of interest were then added at step 2, which enabled the influence of sex, age and type of diabetes on the primary relationship under investigation to be controlled for statistically. The first regression analysis investigated the association between doctor-patient relationship (independent variable) and diabetes-related distress (dependent variable). Secondly, analyses were conducted to investigate the associations between the doctor-patient relationship and each of the illness perception factors. In the third set of regression analyses, the relationship between each illness perception factor and

diabetes-related distress was considered. Finally, in line with Baron & Kenny (1986), any illness perception factors which were significantly associated with both i) doctor-patient relationship, and ii) diabetes-related distress, were considered as potential mediators of the relationship between doctor-patient relationship and diabetes-related distress. A hierarchical regression was performed to investigate whether the addition of the illness perception to the statistical model decreased the magnitude of the association between doctor-patient relationship and diabetes-related distress. The significance of the mediation effect was investigated using the Sobel test.

Results

Association between doctor-patient relationship and diabetes-related distress

At step 1, sex was significantly associated with diabetes-related distress, with females reporting greater levels of distress, $\beta = 0.25$, $p < 0.05$. This regression model was significant and explained 9.7% of the variance in PAID scores, $F(3, 116) = 4.05$, $p < 0.01$. At step 2, PDRQ scores were significantly related to diabetes-related distress, with better doctor-patient relationships being associated with lower levels of distress, $\beta = -0.22$, $p < 0.05$. The relationship between sex and PAID scores remained significant, $\beta = 0.22$, $p < 0.05$. This regression model was also significant and explained 14.4% of the variance in PAID scores, $F(4, 116) = 4.70$, $p < 0.01$, with the additional 4.7% of the variance explained by PDRQ scores being significant, $F(1, 112) = 6.11$, $p < 0.05$ (see Table 1).

INSERT TABLE 1 ABOUT HERE

Association between doctor-patient relationship and illness perceptions

At step 1, a significant association was observed between sex and Identity, $\beta = 0.25$, $p < 0.05$. Further, a significant association was observed between age and Personal Control, $\beta = 0.46$, $p < 0.001$, and between age and Illness Coherence, $\beta = 0.24$, $p < 0.05$. In addition, significant associations were observed between type of diabetes and Timeline (Acute/Chronic), $\beta = -0.43$, $p < 0.001$; Consequences $\beta = -0.28$, $p < 0.01$; Treatment Control, $\beta = 0.21$, $p < 0.05$; and Illness Coherence, $\beta = -0.38$, $p < 0.001$.

At step 2, PDRQ scores were significantly associated with scores for Timeline (Acute/Chronic), $\beta = -0.17$, $p < 0.05$; and Personal Control, $\beta = 0.25$, $p < 0.01$, from the IPQ-R. No other illness perceptions were related to PDRQ scores. All analyses controlled for sex, age and type of diabetes (see Supplementary Table 1).

Association between illness perceptions and diabetes-related distress

Identity, β = 0.38, *p* < 0.001; Consequences, β = 0.48, *p* < 0.001; Timeline (Cyclical), β = 0.24, *p* < 0.05; and Emotional Representations scores, β = 0.68, *p* < 0.001, were all positively associated with diabetes-related distress. Further, Personal Control, β = -0.29, *p* < 0.01; Treatment Control, β = -0.21, *p* < 0.05; and Illness Coherence scores, β = -0.50, *p* < 0.001, were all negatively associated with diabetes-related distress. Timeline (Acute/Chronic) was not significantly associated with diabetes-related distress (see Supplementary Table 2).

Mediation by illness perceptions of the relationship between doctor-patient relationship and diabetes-related distress

Personal Control was the only illness perception factor which met the assumptions for mediation, by being significantly associated with both the independent variable (PDRQ) and dependent variable (PAID). When PDRQ and Personal Control scores were both entered into the regression analysis as IVs, along with the covariates of sex, age and type of diabetes, Personal Control, β = -0.25, *p* < 0.01, but not PDRQ, β = -0.16, *p* = 0.09, was a significant predictor of PAID score, suggesting that the association between doctor-patient relationship and diabetes-related distress was fully mediated by Personal Control. The Sobel test confirmed this full mediation of the relationship by Personal Control, *Z* = -2.00, *p* < 0.05 (see Supplementary Table 3 and Figure 1).

INSERT FIGURE 1 ABOUT HERE

Discussion

The present study supported the notion that the doctor-patient relationship is associated with psychological wellbeing in diabetes patients, with patient reports of their relationship with their doctor being associated with diabetes-related distress. Further, a more positively rated doctor-patient relationship was associated with greater perceived Personal Control over the patient's diabetes, and a perception that the symptoms of their illness will last for a shorter duration. Several illness perceptions were also related to diabetes-related distress, with Identity, Consequences, Personal Control, Treatment Control, Illness Coherence, Timeline (Cyclical) and Emotional Representations all being significantly associated with PAID scores. On the basis of these aforementioned relationships, Personal Control was the only illness perception factor which met the criteria (Baron and Kenny, 1986) for consideration as a mediator of the relationship between the doctor-patient relationship and diabetes-related distress. The mediation analysis performed suggested that Personal Control fully mediated the relationship between doctor-patient relationship and diabetes-related distress.

This very important finding has implications for clinicians involved in the treatment of individuals with diabetes. Given that diabetes self-management is critically important in terms of attenuating adverse clinical consequences in diabetes patients (Funnell et al., 2009), it is important that doctors involved in diabetes treatment are explicitly aware that the rapport with their patient impacts specifically on the patient's perceived ability to self-manage their condition. While the cross-sectional nature of the present study makes it difficult to attribute causality to the associations observed, a speculative interpretation of the findings is that perceptions of greater capacity for diabetes self-management that patients gain through a better relationship with their doctor are related to lower levels of diabetes-related distress, to the extent that perceived Personal Control fully mediates the relationship between the doctor-

patient relationship and diabetes-related distress. The implication of this finding is that diabetes-related distress is significantly reduced when the doctor-patient relationship provides the patient with a greater perceived capacity to self-manage their condition. It has been suggested that such communication techniques as i) encouraging patients to repeat back in their own words the information provided by a practitioner, ii) tailoring information provision to the patients' own health concerns and previous experiences, and iii) explaining the impact of recommended self-care behaviours on future health outcomes, can all positively impact upon diabetes self-care (Heisler et al., 2007). Further, Ha and Longnecker (2010) suggest that effective doctor-patient relationship relies upon good communication by the doctor (e.g. attentive listening, empathy and use of open-ended questions), involvement of the patient in treatment decision-making and acknowledgement of the patients' health beliefs while ensuring that the patient has a complete understanding of the benefits and importance of the treatment regimen. Thus, there is a potential avenue for intervention in healthcare practitioners, whereby practitioners could aim to actively promote personal control beliefs in their patients by implementing communication strategies that are known to impact positively upon diabetes self-care. However, given the cross-sectional nature of this study, an equally plausible interpretation of the present study findings is that greater perceptions of Personal Control are predictive of a better appraisal of one's doctor-patient relationship.

Our findings support previous studies which suggest that the doctor-patient relationship is associated with psychological wellbeing in diabetes patients (Beverly et al., 2012; Rose et al., 2002). We have also found support for previous work which has linked illness perceptions to emotional wellbeing in diabetes. For example, the data reported here support the findings of a recent meta-analytic review which found that higher Timeline (Cyclical), higher Consequences and lower Personal Control scores are associated with poor emotional health in diabetes (Hudson et al., 2014). In addition, we replicated the findings of

Paddison and colleagues (2010) which suggests that high Identity scores and low Illness Coherence scores are associated with greater diabetes-related distress. We extended this previous finding with the observation that high Consequences, low Personal Control, low Treatment Control, high Timeline (Cyclical) and high Emotional Representations scores are also related to greater diabetes related distress. Thus both the doctor-patient relationship and illness perceptions are associated with the level of diabetes-related distress experienced by patients. To the best of our knowledge, only one study to date has considered whether the relationship between doctor-patient interactions (in this case, health threat communication) and psychological health outcomes in diabetes is mediated by illness perceptions (Lawson et al., 2010). This previous study found that a more reassuring health message was associated with better coping, and that Illness Coherence and Personal Control fully mediated these relationships (Lawson et al., 2010). Our findings partially support this previous work, in that we found that Personal Control fully mediated the association between the doctor-patient relationship and diabetes-related distress. An individual's perception of their capacity to control their diabetes thus appears to play a key role in mediating the relationship between doctor-patient interactions and psychological wellbeing in diabetes. Therefore, it is of interest to extend this finding in future studies, with the aim of also investigating treatment adherence and physical health as outcome measures.

In the present study, individuals were excluded who had been diagnosed with a chronic illness other than diabetes. Therefore, it is likely that individuals with severe depressive comorbidity will not have been included in the sample, despite the fact that the prevalence of depression is higher in individuals with diabetes relative to the general population (Goldney et al., 2004; Smith et al., 2014). A relationship between diabetes-related distress (as measured by the PAID) and depression has been established previously (Reddy et al., 2013), which suggests that by excluding individuals with depression, the average level of

diabetes-related distress reported by our study participants may have been lower than the general population of individuals with diabetes. However, this did enable the association between our variables of interest to be elucidated, unique from any influence of chronic depression.

In terms of the confounding variables which we included in our analyses, it is worthy of note that females reported both greater diabetes-related distress and higher Identity scores, suggesting that females attribute more symptoms to diabetes. The present study findings may therefore be particularly salient for female individuals, and healthcare professionals should consequently pay particular attention to building a rapport with female individuals to promote more positive illness perceptions and reduce the level of diabetes-related distress in females. Further, younger individuals reported relatively reduced Personal Control and Illness Coherence. Diabetes practitioners should be particularly mindful of these issues when treating younger adults, in order to ensure that younger individuals have a good understanding of their diabetes, and have confidence in their capacity to self-manage their condition. A further confounding variable included in our analyses was type of diabetes, as individuals with both Type 1 and Type 2 diabetes were invited to take part in this study. Despite the differences between these two conditions, it is not unusual for studies in this area to include individuals with both Type 1 and Type 2 diabetes (Lawson et al., 2010; Broadbent et al., 2011; Beverly et al., 2012). While type of diabetes was not associated with diabetes-related distress, individuals with Type 1 diabetes had relatively higher scores on Timeline (Acute/Chronic), Consequences and Illness Coherence as well as lower scores on Treatment Control. These findings are in concordance with the notion that patients typically perceive Type 1 diabetes to be more severe than Type 2 (Lawson et al., 2010), but also suggest that Type 1 diabetes patients have a better perceived understanding of their condition.

Strengths of the study included the recruitment of an international sample using an online sampling procedure, which meant that respondents weren't constrained to specific geographical locations. This enabled a more global perspective on the associations under investigation to be ascertained, and eliminated the possibility that any idiosyncrasies that are unique to the specific healthcare trust or service from which individuals were recruited could influence the data. However, as participants were required to be literate in English to take part, it is unlikely that our study fully captured the cross-cultural differences that are likely to exist with respect to the associations under investigation, particularly given that cross-cultural differences in illness perceptions have been reported in diabetes patients (Barnes et al., 2004; Bean et al., 2007; Patel et al., 2012). The use of an online data collection procedure also may encourage more honest, less socially desirable responding from study participants, owing to the potential for greater perceived anonymity and independence from diabetes practitioners (Richman et al., 1999). However, while our methodology may have increased the degree of perceived independence from participants' doctors, the use of online data collection introduced the limitation that participants self-reported their diabetes diagnosis. The study design did not enable us to confirm the self-reported diabetes diagnosis from clinical records, nor did it allow us to access clinical data (such as HbA_{1c}) for use in our analyses. A further issue with such a sampling procedure was that as participants were self-recruited, it is possible that only individuals with a greater interest in psychological or other factors which impact upon diabetes took part in the study, potentially limiting the representativeness of the study sample. Future studies investigating the role of the doctor-patient relationship on health outcomes in diabetes could therefore consider recruiting participants via diabetes clinics to enable clinical data to be obtained, but collect questionnaire data online to decrease the possibility of socially desirable responses confounding the data. In addition, participants were asked about their relationship with their 'doctor', however within some medical

services/healthcare trusts, other healthcare professionals such as nurses are primarily responsible for diabetes healthcare provision. Future research could address this limitation by asking participants to provide responses for each professional whom they consult with respect to their diabetes care, in order to establish a more complete picture of the associations observed in the present study. A further drawback with the study is that the data collected is cross-sectional; therefore our assumptions regarding the directionality of the associations observed are somewhat hypothetical. Longitudinal evidence is required, possibly involving an intervention programme for healthcare professions relating to their interactions with their diabetes patients, to fully ascertain the true nature of the relationships observed here. In addition, our sample is not representative of the global population of individuals with diabetes, given the over-representation of individuals with type 1 diabetes in our sample, and the fact that over 90% of the participants reported that they live in the UK or North America. Finally, the content validity of the IPQ-R for use in type 2 diabetes has recently been questioned (McCorry et al., 2013), despite this instrument being used in several previous investigations with type 2 diabetes patients.

In conclusion, we have found supporting evidence that the doctor-patient relationship is associated with diabetes-related distress, and also observed that this relationship is fully mediated by Personal Control. This suggests that enhancement of the doctor-patient relationship may impact upon patients' perceived capacity to self-manage their diabetes, which will in turn reduce their level of diabetes-related distress, however longitudinal studies incorporating interventions for healthcare practitioners are required to confirm this assertion. This finding has implications for diabetes healthcare providers to be mindful of the extent to which the rapport with their patients impacts upon their emotional wellbeing. Future studies in this area should consider whether illness perceptions also mediate the association between the doctor-patient relationship and clinical outcomes in diabetes.

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Table 1

Hierarchical regression analysis for the association between diabetes-related distress and

doctor-patient relationship

	Independent Variable	B (SE)	β	R^2	ΔR^2
Step 1	Sex	9.50 (3.68)	0.25*		
	Age	-0.23 (0.17)	-0.14		
	Diabetes Type	1.87 (4.44)	0.04	0.097**	
Step 2	Sex	8.32 (3.64)	0.22*		
	Age	-0.24 (0.17)	-0.15		
	Diabetes Type	0.99 (4.36)	0.02		
	PDRQ	-0.41 (0.17)	-0.22*	0.144**	0.047*

*$p < 0.05$; **$p < 0.01$

$Z = -2.00;\ p < 0.05$

Personal Control

0.25**

-0.29**
(-0.25*)

PDRQ

-0.22* (-0.16)
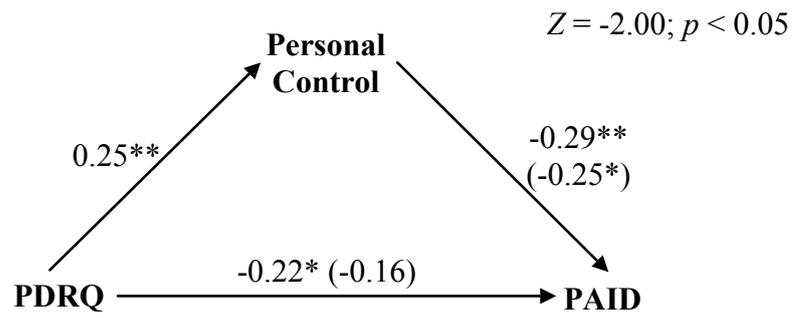
PAID

Figure 1

Results of the mediation analysis, demonstrating that the relationship between PDRQ and

PAID scores is fully mediated by Personal Control.