Conceptualization and measurement of resistance to treatment: the resistance to treatment questionnaire for people with diabetes

M Mishali[a], YS Vaknin[d], H Omer[a] and AD Heymann[b,c]

Mishali M, Omer H, Vaknin YS and Heymann AD. Conceptualization and measurement of resistance to treatment: the resistance to treatment questionnaire for people with diabetes. *Family Practice* 2007; **24**: 610–615.

Objective. This research describes the process of building a tool which allows assessment of resistance to treatment and its intensity among patients with diabetes.

Methods. This study was undertaken in Maccabi Health care Services a preferred provider health care organization. This is a multistage study using both qualitative and quantitative methods. A semi-structured interview using 14 key questions identified the reasons for resistance to treatment among 64 people with diabetes. A questionnaire was built based on these themes and then validated with a further 123 people with diabetes. A further validation was undertaken comparing our questionnaire with that of Kavookjian.

Results. This resulted in a four theme, 40-item questionnaire which can be administered in about 10 minutes. Resistance patterns and their intensity were different in each patient. This resistance questionnaire identifies the core reasons for non-compliance: lack of faith or dissatisfaction with the treatment or with the medical team, emotional reasons, specific problems or constraints and factors connected to despair and failure.

Conclusions. We present a tool 'The Resistance to Treatment Questionnaire' which may be used by medical personnel to identify the barriers to treatment for each individual and in turn improve patient compliance to treatment.

Keywords. Adherence, diabetes mellitus, patient education, resistance to treatment.

Introduction

It has been shown that enhancing adherence to treatment recommendations may lead to a reduction in complications associated with diabetes, a chronic condition leading to serious vascular, nephrologic, neurologic and ophthalmological complications[1]. Research suggests adherence to treatment should be improved[2]. Treatment regimens in diabetes are complicated, encompassing lifestyle adaptations and medication intake. A recent Cochrane meta-analysis review assessed the effects of interventions on improving adherence to treatment recommendations in people with type 2 diabetes mellitus. Twenty-one studies assessing interventions aimed at improving adherence to treatment recommendations (excluding diet and exercise) were examined with the conclusion that efforts to improve or facilitate adherence to treatment recommendations in people with type 2 diabetes do not have a significant effect. The question whether interventions exist that effectively enhance adherence to treatment recommendations in diabetes still remains unanswered[3]. The resistance of people with diabetes to treatment and its reasons are poorly understood[4]. It has been shown that patients are more likely to be resistant to treatment the more patient lifestyle changes are needed[5,6]. This is particularly true when there are no clear-cut symptoms, as is the case in most patients diagnosed with diabetes[7,8]. The patient often understands the need for treatment or change and even intends to make the change, but in practice does not make the necessary changes[9]. Much research has been devoted to understanding the connection between psychological factors and adherence to

[a]Department of Psychology, Tel Aviv University, Tel Aviv, [b]Maccabi Healthcare Services, 27 Hamered Street, Tel Aviv, [c]Department of Family Medicine, Sackler Faculty of Medicine, Tel Aviv University, Tel Aviv and [d]Department of Psychology, Bar Ilan University, Ramat Gan, Israel, Correspondence to Dr AD Heymann, Maccabi Healthcare Services, 27 HaMered Street, Tel Aviv, Israel; Email: heymann_t@mac.org.il

treatment[10,11]. Many attempts have been made to improve adherence. One example being health care workers that actively contact patients using the telephone, as opposed to waiting for the patient to visit, are more likely to generate behavior change[12]. Ignorance of the specific reasons for patient resistance to treatment is an obstacle in attempts to enhance patient adherence and causes burn out of the health care professionals involved in diabetes care[13]. The difficulties patients face in adherence to treatment have been assessed using the unique set of questionnaires developed by Kavookjian[14]. Its uniqueness lies in the fact that this is in fact a battery of separate subscales which have been generated by each of the recent theories that explain non-compliance[6,15]. It was constructed to measure the following variables: self-efficacy, decisional balance (pros and cons), stage of change and self-reports regarding the frequency of appropriate patient behavior, as specified in the diabetes guidelines. Each of these four measures addresses different behaviors such as diet, physical exercise, self-monitoring of blood glucose and medication taking. Thus, this set of questionnaires generates many different scores for each patient regarding the different behaviors examined.

An understanding of the specific reasons for each patient's resistance may allow health care professionals to move from standard responses to improve adherence to a tailored approach that suits each patient. This research describes the process of building a tool, The Resistance to Treatment Questionnaire (RTQ), which allows health care professionals to understand patients' reasons for resistance to treatment and to assess the intensity of their resistance.

Methods

Setting
This study was undertaken in Maccabi Health care Services, a preferred provider health care organization, serving over one and a half million members (23% of the population) throughout Israel.

Overview
This is a multistage study, using both qualitative and quantitative methods. In the first stage of the study, people with diabetes were interviewed, as part of the development of the RTQ, which assesses resistance to treatment and the reasons underlying it. In the second stage of the study, the internal consistency (reliability) of the RTQ was examined. Consequently, some factors and items were removed, thus shortening the questionnaire. In the third stage of the study, the validity of the RTQ was assessed against the extensive and well-validated set of questionnaires developed by Kavookjian.

Stage 1
The first stage was undertaken by health care professionals, actively involved in treating patients with diabetes that attended courses for improving adherence by using motivation-enhancing interview techniques. As part of the course requirements, they interviewed people with diabetes, using a semi-structured technique, based on the criteria formulated by Hill and Lambert[16]. The interviews were held in the interviewees' homes and lasted for approximately 1 hour. They were recorded on audiotape and transcribed. This procedure was intended to guarantee the data's credibility[17]. The aim of the interviews was to identify different reasons for resistance to treatment and typical phrases expressing resistance. The initial questions included in the interviews were composed by three experts in the treatment of diabetes (two psychologists and a senior dietician), based on the reasons for resistance to treatment as described by Daley and Zuckoff[18]. As the series of interviews progressed, questions were added, based on reasons for resistance expressed by former interviewees. The transcriptions were analyzed independently by the three experts, in a technique known as the Constant Comparative Method[19]. Decisions regarding the different categories of resistance were reached by consensus[20]. The described procedure of analyzing transcriptions and adding questions to the interviews was done in an iterative fashion, until no further reasons for resistance were found in additional interviews.

Stage 2
Based on the reasons for resistance to treatment and the phrases expressing resistance collected in the interviews undertaken in first stage of this study, the RTQ was built. It contained 122 items describing reasons for resistance to treatment, representing six categories of reasons for resistance to treatment. The items representing the different resistance categories appear in random order. Half of the items were phrased negatively (i.e. express reasons for adherence with treatment) to prevent a response set. Patients were asked to rate their agreement with each item on a Likert scale ranging from 1 = strongly disagree to 5 = strongly agree.

After receiving written consent to participate in this study, a different group of people with diabetes, recruited by their health care provider, were asked to fill in the RTQ and details regarding their demographic and diabetic background. Each participant was assessed on each of the resistance categories in addition to getting a mark representing general resistance.

Stage 3
In order to further test the reliability of the RTQ, we undertook a test/retest after a period of 1 month. We also examined the correlation between the self-reported resistance pattern and that observed by a

close family member, in order to assess external validity. As part of the validation process of the RTQ, the correspondence between the RTQ and the set of questionnaires developed by Kavookjian[14] (Stage of Change Algorithm, frequency of adherence to guideline recommendations, Decisional Balance Sheet of Incentives and Self-Efficacy) was examined. These questionnaires were measured against four specific treatment recommendations: self-monitoring of blood glucose, physical activity, taking prescribed medication and following an appropriate diet.

In the Stages of Change Algorithm, the participant is asked to score his or her readiness to undertake each of the treatment recommendations in different time frames, thus assessing the stage of change for each recommendation. The questionnaire that assesses the frequency of adherence to guideline recommendations improves the validity of the Stage of Change Algorithm by allowing the researcher to make sure the participant understood the algorithm and reported a suitable frequency for the stage of change he or she is in. We hypothesized that a higher the degree of resistance to treatment according to the RTQ would correlate with earlier stages of change and with a low self-reported frequency of adherence to the different treatment recommendations. The Decisional Balance Sheet of Incentives' statements describing possible pros and cons for adhering for each of the treatment recommendations. The participants are asked to grade their agreement with each of the statements, thus enabling the researcher to assess the pro to con ratio. We hypothesized that a higher the degree of resistance according to the RTQ would correlate with a lower pro to con ratio. The Self-Efficacy questionnaire assessed the degree to which participants felt competent to adhere to the different treatment recommendations in different situations; the hypothesis being that a high score on the RTQ would correlate with low self-efficacy.

Statistical analysis
Gender-related differences in resistance to treatment were calculated by *t*-test for independent samples.

The relationship between resistance to treatment and demographic factors and factors related to diabetes was measured by Pearson's correlations. Reliability of the RTQ and its categories was assessed by calculating internal consistency (alpha Cronbach[21]). The correspondence between the set of questionnaires developed by Kavookjian and the results of the RTQ was calculated using Spearman's rho and Pearson's correlations. Statistical software used for the analyses was the Statistical Package for the Social Science (SPSS), Version 13.0 (SPSS Corp., 2004).

Results

Stage 1
Two physicians, 45 dieticians and 15 nurses interviewed 64 people (37 women) with diabetes between October and December 2004. Their mean age was 52.4 (SD = 13.1). Three interviewees did not disclose their age. The participants were diagnosed as diabetic between 1 and 30 years (mean 9.2 years, SD = 7.6 years) prior to their participation in this study. There were 14 key questions that were used in the semi-structured interview. For example: Did someone try and persuade you, in the past, to treat these problems? How did you feel about this? and What are the reasons that you may not be seeking treatment at the moment?

Six categories of reasons for resistance to treatment were found. An example, which was true for 73% of patients, was lack of faith or dissatisfaction with the treatment or with the medical team. The different reasons for resistance to treatment and the percentage of patients that mentioned each of them are summarized (Table 1).

Stage 2
A total of 123 patients (54 women) took part in this stage of the study. Mean age 57.3 (SD = 12). The diagnosis of diabetes was made when they were 8–75 years old (mean = 45.2, SD = 12.5). They were recruited to participate in the study by 55 health care professionals

TABLE 1 *Summary of the reasons for resistance to treatment*

	Grouping	Item example	Percentage of patients that described a reason for resistance in each of the groups (%)
1	Lack of faith or dissatisfaction with the treatment or with the medical team	I dont believe that the treatment can help me	73
2	Emotional reasons	I eat when I am stressed or bored	16
3	Specific problems or constraints	Diabetes care takes too much time	63
4	Factors connected to despair and failure	After so many disappointments I don't believe that things can change	53
5	Factors connected to denial of illness, its seriousness or implications	I don't consider myself as ill	41
6	Factors connected to the environment	If I stick to my diet when I go out with friends others will relate to me as a sick person	37

TABLE 2 *Pearson's correlations between resistance to treatment and the different categories of reasons for resistance and their reliability (in alpha Cronbach, in bold in the diagonal)*

		1	2	3	5	Total
1	Lack of faith or dissatisfaction with the treatment or with the medical team ($K = 10$)	**0.81**				
2	Emotional reasons ($K = 10$)	0.38**	**0.75**			
3	Specific problems or constraints ($K = 10$)	0.42**	0.70**	**0.71**		
4	Factors connected to despair and failure ($K = 10$)	0.52**	0.70**	0.63**	**0.80**	
5	Total (all 40 items included in the shortened questionnaire)	0.69**	0.86**	0.84**	0.87**	**0.90**

**$P < 0.01$.

TABLE 3 *Correlations (Spearman's rho) between the RTQ and the Stages of Change Algorithm developed by Kavookjian, regarding the different guideline recommendations for treating diabetes*

	Dietary	Physical activity	Home glucose monitoring	Taking prescribed medication
RTQ	–0.33 ($P < 0.01$), $n = 118$	–0.35 ($P < 0.01$), $n = 118$	–0.19 ($P < 0.05$), $n = 100$	–0.1 (NS), $N = 92$

TABLE 4 *Pearson's correlations between the RTQ and the question assessing frequency of adherence to guideline recommendations developed by Kavookjian, regarding the different guideline recommendations for treating diabetes*

	Dietary	Physical activity	Home glucose monitoring	Taking prescribed medication
RTQ	–0.46 ($P < 0.01$), $n = 118$	–0.41 ($P < 0.01$), $n = 118$	–0.12 (NS), $n = 100$	–0.18 ($P < 0.05$), $n = 92$

TABLE 5 *Pearson's correlations between the RTQ and self-efficacy and decisional balance sheet of incentives developed by Kavookjian, regarding the different guideline recommendations for treating diabetes*

	Dietary, $n = 115$	Physical activity, $n = 115$	Home glucose monitoring, $n = 96$	Taking prescribed medication, $n = 89$
Decisional balance	–0.48 ($P < 0.01$)	–0.35 ($P < 0.01$)	–0.47 ($P < 0.01$)	–0.42 ($P < 0.01$)
Self-efficacy	–0.48 ($P < 0.01$)	–0.37 ($P < 0.01$)	–0.36 ($P < 0.01$)	–0.06 (NS)

(physicians, nurses and dieticians), actively involved in treating diabetes.

Resistance to treatment was not correlated with demographic variables such as age, gender or years of education. It was also not related to variables connected to diabetes, such as age of onset or years since diagnosed ($r < 0.15$, $P > 0.05$ for the relationship with all variables).

The internal consistency (alpha Cronbach) of the different categories of reasons for resistance to treatment was calculated. In order to shorten the questionnaire and enhance its efficacy, several items and two categories of reasons for resistance were removed. This was done relying on both quantitative and qualitative considerations. First, relying on quantitative considerations, items with low correlations with their own category and which did not contribute to the total internal consistency of the category, were removed. Two categories of reasons for resistance are factors connected to denial of illness, its seriousness or implications and factors connected to the environment, still had low internal consistency ($\alpha = 0.52$, $K = 13$ and $\alpha = 0.60$, $K = 8$, respectively), and were thus removed. Second, relying on qualitative considerations, the 10 most suitable items, in terms of their content, were chosen for each of the remaining categories. This was done relying on consensus between two psychologists specializing in the treatment of diabetes. The result was a 40-item scale, divided into four categories. The reliability (internal consistency) of the shortened version of the RTQ and the different categories included in it and the correlations between them are presented (Table 2). As can be seen from Table 2, the RTQ and the different categories composing it all had acceptable reliability. In addition, statistically significant positive correlations were found among the different categories of reasons for resistance to treatment and between them and the

TABLE 6   *The RTQ*

1   I feel a failure when I come and tell my doctor that I haven't followed their instructions.
2   I feel negative towards myself the illness or my doctor and so don't follow instructions.
3   I don't believe that the treatment will help me.
4   I compensate myself with food that I like.
5   I believe that I can control my weight and my diabetes.
6   Complying with all the diabetes treatments takes a lot of my time.
7   It is difficult for me to accept that the treatments such as diet and tablets will never end.
8   I am embarrassed by the diabetes treatment and that someone else tells me what to do.
9   When I feel too confident, I tend to neglect my treatment.
10 I feel that my medical team doesn't really care about me.
11 Disability that might prevent me from doing what I like frightens me.
12 My lifestyle allows me to eat regularly and undertake physical exercise.
13 The diets offered are boring and lack flexibility.
14 I am often too lazy to do the things necessary to treat my diabetes properly.
15 When I am pressurized by life events I still find time to treat my diabetes.
16 I am confused by the information that is sometimes conflicting that I have received about my illness.
17 Members of my medical team are always changing and don't always know what I have been through.
18 Medical team understands me and my difficulties.
19 I think I can prevent the complications of diabetes in the future.
20 I feel in an emotional turmoil regarding my diabetes and this prevents me from treating myself as I should.
21 If I follow instructions I will have to give up the food and activities that I love.
22 I feel that there is no real reason to make an effort because in any case the treatments don't work.
23 I believe that I can follow the instructions and treatment for a long period.
24 Treating my diabetes requires major changes to my life style.
25 I haven't got the strength to follow the treatment instructions. In this matter I am a lost case.
26 Many issues anger me and that prevents me treating my diabetes.
27 Treating my diabetes take up too much of my physical and emotional energy.
28 I have a good relationship with the medical team treating me.
29 I have tried so many treatments that I feel that there is nothing left to help me.
30 I feel very negative about the fact that I suffer from diabetes.
31 I feel that my medical team is there for me.
32 Treating my diabetes is very frustrating. Despite my best efforts I am not making progress.
33 I can resist temptation when it comes to inappropriate foods.
34 My diabetes treatment plan suits me and my needs.
35 I am well motivated because I think I can comply with the treatment needed.
36 In my opinion I think my treatment will improve the outcome of my diabetes.
37 I am disappointed in myself because I have tried so often to follow my treatment plan and have failed each time.
38 My daily schedule allows me to treat my diabetes as required.
39 I hate dealing with my diabetes because it is the only time in my life when I don't succeed.
40 I can't control my eating when I am angry, frustrated or bored.

total resistance score. The improved short version of the RTQ takes approximately 10 minutes to deliver.

Stage 3

The result of the test–retest ($n = 101$) showed a significant and high correlation between the scores of the RTQ during its first administration and after 1 month, $r = 0.92$ ($P < 0.01$). The Pearson's correlation between the RTQ filled out by family members ($n = 110$) and the RTQ filled out by the patients was 0.65 ($P < 0.01$) and is an indication for the RTQ's external validity. In order to assess the construct validity of the RTQ, we calculated the correlations between the RTQ and the set of questionnaires developed by Kavookjian: the Stages of Change Algorithm (Table 3), the frequency of adherence with guideline recommendations for treating diabetes (Table 4), Decisional Balance Sheet of Incentives and Self-Efficacy (Table 5).

The figures presented in Table 3 demonstrate a significant but rather weak correlation in the expected direction between the RTQ and the Stages of Change Algorithm, i.e. a higher resistance score (the former sentence, before the corrections, is more correct statistically) the patient is at an earlier stage of the change; i.e. is less willing to adhere to the proscribed treatments. This finding was not clear regarding 'taking prescribed medication', probably because most of the patients were taking medication and thus the variance was small.

The figures presented in Table 4 demonstrate a significant but rather weak correlation in the expected direction between the RTQ and the frequency of adherence to guideline recommendations. Thus, a higher resistance score in the RTQ is related to a lower frequency of adherence to guideline recommendations.

In Table 5, we see that the higher resistance to treatment score is, the patient is less confident in his or her ability to adhere with treatment guidelines, as appears in the Self-Efficacy questionnaire. Again this was not seen in adherence to medication. In addition, the higher the resistance to treatment score was the ratio between the pros and cons in the Decisional Balance Sheet of Incentives was lower. These findings support to the construct validity of the RTQ (Table 6).

Discussion

The aim of this study was to examine the concept of 'resistance to treatment' in people with diabetes by addressing the intensity of resistance and its multidimensional nature. This resulted in the development of the RTQ, a practical and easily administered working tool for assessment of resistance to treatment of people with diabetes. It enables the medical staff to quickly assess the reasons and characteristics of resistance and thus address them in the initial interview. This approach is believed to enable an improved dialog with potential patients, thus enhancing chances for their

recruitment to treatment and enabling building a suitable treatment strategy with them, that can improve adherence and hence, outcome.

The RTQ was found to be reliable (i.e. have both internal consistency and test–retest reliability). The comparison between the scores of the RTQ filled out by the participant and the RTQ filled out by a family member supports the external validity of the questionnaire. The significant but rather weak correlations in the expected direction between the RTQ and the set of questionnaires developed by Kavookjian further strengthens the construct validity of the RTQ, while demonstrating it examines a similar but different construct.

The categories of reasons for resistance to treatment found in this study were similar to the theoretical model proposed by Daley and Zuckoff which stated that individuals have a multidimensional resistance profile. All the participants mentioned resistance to treatment for more than one reason.

A strength of this study is that we examined resistance to treatment by combining qualitative and quantitative methods which enabled us to get a comprehensive understanding of this complex phenomena[22].

A potential weakness of the study is that the subjects from an Israeli population may have different reasons for resistance to treatment than other populations. However, our findings were similar to those found in other populations and so this is unlikely. The participants in this study were chosen by care providers and thus might be a non-representative sample of all people in need of treatment, and especially those most resistant to treatment, not known to the health care systems, that were not included at all.

The categories of resistance to treatment that were removed based on statistical considerations, factors connected to denial of illness, its seriousness or implications and factors related to the environment are not necessarily unimportant. Future research is needed to refine these categories and recheck their contribution to our understanding of resistance to treatment.

Our study focused on resistance to treatment of people with diabetes, but may shed light on the understanding of resistance to treatment of different problems and conditions. Therefore, an examination of resistance to treatment or change in other domains, such as other chronic diseases or other health-related behaviors, may add to our understanding of the phenomenon of resistance to treatment.

The notion that interventions based on this short resistance to treatment questionnaire may improve recruitment to treatment and improve outcome needs further research.

Declaration

Ethical approval: Approved by institutional ethics committee.
Conflicts of interest: None.

References

1 Adler AI, Stevens RJ, Neil A, Stratton IM, Boulton AJ, Holman RR. UKPDS 59: hyperglycemia and other potentially modifiable risk factors for peripheral vascular disease in type 2 diabetes. *Diabetes Care* 2002; **25:** 894–899.

2 Parris ES, Lawrence DB, Mohn LA, Long LB. Adherence to statin therapy and LDL cholesterol goal attainment by patients with diabetes and dyslipidemia. *Diabetes Care* 2005; **28:** 595–599.

3 Vermeire E, Wens J, Van Royen P, Biot Y, Hearnshaw H, Lindenmeyer A. Interventions for improving adherence to treatment recommendations in people with type 2 diabetes mellitus. *Cochrane Database Syst Rev* 2005; **18** (2): CD003638.

4 Osterberg L, Blaschke T. Adherence to medication. *N Engl J Med* 2005; **24** (6): 610–615.

5 Luepker RV, Murray DM, Jacobs DR Jr *et al*. Community education for cardiovascular disease prevention: risk factor changes in the Minnesota Heart Health Program. *Am J Public Health* 1994; **84:** 1383–1393.

6 Prochaska JO. How do people change? In Hubble MA, Duncan BL, Miller SD (eds). *The Heart and Soul of Change*, Washington, DC: American Psychological Association, 200, pp. 227–259.

7 Dunbar-Jacobs J, Dunning EJ. Compliance with antihypertensive regimen: a review of research in the 1980s. *Ann Behav Med* 2000; **13** (1): 30–39.

8 Green CA. What can patient health education coordinators learn from ten years of compliance research? *Patient Educ Couns* 1987; **10:** 167–174.

9 Abrams DB, Follick MJ, Biener L. Individual versus group self help smoking cessation at the workplace. In Glynn T (chair), *Symposium Conducted at the Annual Association for the Advancement of Behavior Therapy Convention,* 1988: New York.

10 Hunt LM, Valenzuela MA, Pugh JA. NIDDM patients' fears and hopes about insulin therapy: the basis of patient reluctance. *Diabetes Care* 1997; **20:** 292–298.

11 Muscari ME. Rebels with a cause. *Am J Nurs* 1998; **98** (12): 26–30.

12 Orleans CT, George LK, Houpt JL, Brodi KH. Health promotion in primary care: a survey of U.S. family practitioners. *Prev Med* 1985; **14:** 636–647.

13 Miller WR, Rollnick S. *Motivational Interviewing: Preparing People to Change Addictive Behavior.* New York: The Guilford Press, 2002.

14 Kavookjian J. *The Relationship Between Stages of Change and Glycemic Control in Patients with Diabetes.* Doctoral Dissertation, Auburn University, Alabama (2001).

15 Bandura A. *Social Foundations of Thought and Action: A Social Cognitive Theory.* Englewood Cliffs, NJ: Prentice-Hall, 1986.

16 Hill CE, Lambert MJ. Methodological issues in studying psychotherapy processes and outcomes. In Lambert MJ (ed.). 5th edn. *Bergin and Garfield's Handbook of Psychotherapy and Behavior Change*, New York: Wiley, 2003: 84–134.

17 Calandinin DJ, Connelly FM. *Narrative Inquiry.* San Francisco, CA: Jossey-Bass, 2000.

18 Daley DC, Zuckoff A. *Improving Treatment Compliance: Counseling and System Strategies for Substance Abuse & Dual Disorders.* Center City, MN: Hazelde, 1999.

19 Strauss AL, Corbin J. Grounded theory methodology: an overview. In Denzin NK, Lincoln YS (eds). *Handbook of Qualitative Research*, Thousand Oaks, CA: Sage, 1994: 273–285.

20 Strauss AL. *Qualitative Analysis for Social Scientists.* Cambridge, UK: CambridgeUniversity Press, 1987.

21 Cronbach LJ. Coefficient alpha and the internal structure of tests. *Psychometrika* 1951; **16:** 297–334.

22 Zeichner KM, Noffke SE. Practitioner research. In Richardson V (ed.). *Handbook of Research in Teaching*, Washington, DC: American Educational Research Association, 2001.