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ORIGINAL ARTICLE

The development and validation of the Interpersonal Support in Physical Activity Consultations Observational Tool

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Abstract
This study describes the development and psychometric characteristics of an observational instrument that examines four aspects of interpersonal support (or lack of) provided during physical activity (PA) promotion consultations (i.e., Autonomy Support, Involvement, Structure and Interpersonal Control), as identified by Self-determination Theory (SDT). The reliability and validity of the Interpersonal Support in Physical Activity Consultations Observational Tool (ISPACOT) were examined within an exploratory randomised control trial. Recorded consultations (N = 42) conducted by qualified PA advisors (N = 14) at 13 leisure centres across the West Midlands (UK) were rated. Intra-class correlation coefficients (ICC) indicated moderate to high inter-rater reliability for overall interpersonal support (0.80), and the Autonomy Support (0.74), Involvement (0.73) and Structure (0.91) dimensions, but low reliability for Interpersonal Control (0.35). The advisors, who conducted PA promotion consultations that were rated as low in their interpersonally supportive features, were perceived by their clients as being less supportive ($F(1,10) = 5.0$, $p < .05$). Ratings on the ISPACOT differentiated advisors who were trained in SDT principles and those who were not. Overall, the findings provided preliminary evidence for the reliability and convergent validity of the ISPACOT.

Keywords: *Exercise, physical activity consultations, autonomy support, observation*

Introduction

One-to-one physical activity (PA) promotion consultations by exercise advisors are implemented as one intervention approach to counteracting the increasing obesity and sedentary lifestyle trends within the UK (Biddle & Mutrie, 2001) and other Western countries. Self-report measures assessing the client's views regarding the advisor and/or the features of the consultation itself are the predominant method of examining the nature of the social environments created during PA consultations. However, observational measures of the nature of such exchanges between the PA advisor and his/her client are needed to assess the quality of the interpersonal support provided. The availability of a valid and reliable observational measure of PA promotion consultations will allow for a more rigorous evaluation of the contributions of such interventions for PA behaviour change and associated health and well-being.

It has been suggested that PA promotion interventions should pull from theory in terms of the strategies to behavioural change that are adopted (Michie et al., 2008). Self-determination Theory (SDT; Ryan & Deci, 2002) has been successfully employed in the domain of behaviour change (Williams, Lynch, & Glasgow, 2007). SDT proposes that all individuals have three inherent psychological needs (i.e., the need to feel competent, autonomous and related to others) and the degree to which these needs are perceived

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to be satisfied by the social environment effects important outcomes such as the quality of motivation, optimal functioning, sustained engagement and well-being.

Social environments, such as those created by PA promotion advisors during their exchange with the clients they are working with, can facilitate the satisfaction of these three needs. The majority of SDT-based research to date has focused on the concomitants of a dimension of the environment referred to as *autonomy support*. Williams et al. (2006) conceptualised autonomy support as an interpersonal factor that entails the acknowledgement of others' perspective, support of self-initiative, offering of choice, provision of relevant information and minimising of pressure and control. The positive impact of autonomy supportive environments has been demonstrated in the case of a variety of health-related behaviours including smoking cessation, weight control, medication adherence and glycaemic control (for a review, see Ng et al., 2012).

More recently, SDT-based conceptualisations of the social environment have expanded to also include support for competence and relatedness. In a teaching context, Reeve (2002) identified the environmental dimension of *structure* which reflects the provision of clear expectations, optimal challenges and timely and informative feedback to support competence. Reeve (2002) highlighted the existence of a third independent contextual element, *involvement*, which nurtures relatedness. Involvement refers to the quality of the interpersonal relationship that exists between two or more individuals and the dedication of psychological resources (such as time and energy) to the relationship by the authority figure (Reeve, 2002).

Research has studied the implications of the degree to which social environments are characterised by structure and involvement, mainly in educational settings (Reeve, Jang, Carrell, Jeon, & Barch, 2004). However, Edmunds, Ntoumanis, and Duda (2008) revealed that participants in a need supportive exercise environment perceived the exercise class environment to be higher in structure and involvement whereas those in the standard exercise class perceived less instructor-provided autonomy support.

Minimising or reducing pressure and external control are also important in creating need adaptive environments (Williams et al., 2006). When external control dominates an interaction, the basic human psychological needs for autonomy, competence and relatedness are undermined. A controlling interpersonal style is characterised by coercion, pressure and using authority to impose specific and preconceived ways of thinking and behaving (Bartholomew, Ntoumanis, & Thogersen-Ntoumani, 2010).

Assessment of the social environment in consultations

The degree of environmental support provided by PA promotion advisors during one-to-one consultations have most frequently been measured through self-report. This is not surprising, as SDT advocates that it is an individual's perception or functional significance (i.e., the motivationally relevant psychological meaning) of the environment that has the greatest consequences for an individual's motivation and related responses (Deci & Ryan, 1987). Moreover, self-report is the most frequently employed method in the social sciences because it allows an understanding of an individual's thoughts, feelings and behaviour (Schwarz, 1999). However, self-report measures are also fallible (Schwarz, 1999). For example, participants are required to draw on their memory which can become distorted, they may alter their judgements for reasons of social desirability and self-presentation, and finally, participants may misunderstand the question being asked of them.

Currently, the predominant measure of the interpersonal style manifested during one-to-one consultations is the Health Care Climate Questionnaire (HCCQ; Williams, Grow, Freedman, Ryan, & Deci, 1996). This SDT-based instrument measures participants' perceptions of the interpersonal style of the social environment created by the advisor during a consultant but is limited by its uni-dimensional structure, only tapping Autonomy Support. In addition, previous research has highlighted ceiling effects in responses to the HCCQ due to participants rating the interpersonal style of their PA promotion consultant favourably, thus reducing the amount of variability in the data (Rouse, Ntoumanis, Duda, Jolly, & Williams, 2011). Therefore, new observational instruments are needed to help supplement existing self-reported measures to identify the most effective methods of creating need supportive environments.

One method of assessing environmental support afforded by PA promotion advisors is to have trained individuals rate the social environment manifested in the consultation (or interpersonal style of the advisor) using an observational rating scheme. Within the context of one-to-one consultations within a health care setting, Williams, Gagné, Ryan, and Deci (2002) demonstrated that trained observers can distinguish between autonomy supportive and controlling environments created by physicians and counsellors during interactions with their patients about smoking cessation. However, to our knowledge, no research has developed an observation instrument suitable to rate

environmental support afforded by exercise advisors during one-to-one PA consultations (note: for this study advisors are exercise professionals working in local leisure centres to a level three of the National Occupational Standards).

Study aims

The primary aim of the present study was to describe the development of a theory grounded observational instrument that assesses the interpersonal support provided by PA promotion advisors during one-to-one consultations with their clients. The second aim was to determine the inter-rater reliability of the instrument. Third, we examined the convergent validity of the observation instrument by comparing observed scores with participants' perceptions of the social environment (HCCQ) created by the PA promotion advisor during the consultation. Finally, we assessed the instrument's ability to distinguish between the one-to-one consultations led by two groups of PA promotion advisors in the context of an exercise on referral scheme. As implemented within an exploratory randomised control trial (Brandon, Taum, Young, & Pottenger, 2008), advisors in one arm were trained in principles of SDT and need supportive strategies. The second group comprised of advisors who were part of the standard provision of the exercise on referral service.

Method

Instrument development

The Interpersonal Support in Physical Activity Consultations Observational Tool (ISPACOT) is a theory-based observational rating tool developed to assess the environment afforded by, or interpersonal style of, PA promotion advisors during one-to-one consultations with their clients. The development of this SDT-based instrument commenced with a review of the relevant literature on environmental support in a variety of settings (e.g., education, physical education, sport and exercise). This review generated an initial pool of behaviours that captured the four environmental dimensions relevant for the satisfaction (or thwarting) of the needs for autonomy, competence and relatedness (Autonomy Support, Involvement, Structure and Interpersonal Control). The behaviours generated were then made more specific to the exercise setting. For example, the behaviour description for provision of choice was "The client was provided with choice over the types, duration and frequency of the physical activity programme where possible".

A 7-point scale (1 = *Not at all true*; 7 = *Very true*) was employed to rate the degree to which the different need supportive (or need thwarting, in the case of controlling) behaviours were exhibited. In addition, where behaviours were absent due to lack of opportunity (i.e., when the PA promotion advisor did not have the opportunity to acknowledge any negative affective states because the client did not exhibit any), an option for "not applicable" was included.

Data collection

Data were collected as part of a larger exploratory cluster randomised controlled trial (ISRCTN076 82833) comparing a standard provision of exercise on referral service with a SDT-based exercise on referral intervention (Duda et al., 2014; Jolly et al., 2009; Rouse et al., 2011). Within the targeted scheme, patients that are deemed to possess at least one major risk factor for cardiovascular disease are referred to a PA promotion advisor located at a community leisure centre. Thirteen leisure centres were randomised to current standard practice (N = 7) or to a SDT-based intervention arm (N = 6); the HFAs working at these centres, randomised to the intervention arm, received training in how to create a need supportive environment. Each leisure centre employed a single PA promotion advisor, except one centre that employed two advisors.

Although the content of the standard provision and SDT-based consultation differed, both arms began with an initial 1 hour one-to-one interaction between the PA promotion advisor and client. All data were collected from this initial and more formal consultation and recorded using a Sony Handycam DCR-DVD101E in the PA promotion advisor's office. The camera was directed to visually capture the PA promotion advisor, although the verbalisations from both the PA promotion advisor and the client were recorded. Ethical approval was obtained from the first author's university ethics review committee and informed consent was obtained from the PA promotion advisor and participants to film the consultations.

Procedure

Observers were two post-graduates who were paid to complete the observations. Throughout the process, the observers remained blind to the experimental condition that the PA promotion advisors were assigned.

Observer training. The observers received training totalling 17 hours. To familiarise the observers with the principles of SDT, the first author provided an introductory seminar. Two mock consultations between the last author and two patients were filmed and used for the first training consultations. Further,

seven separate consultations (Sum = 335.31 minutes, min 17.51 max 89.48) between PA promotion advisors and clients were filmed and used for training. A series of tutorials, led by the first author, then took place to train the observers how to rate the seven videotaped consultations using the observational rating tool. The tutorials involved joint observations, interactive discussions and independent observations. Once training had been completed observers rated 42 consultations (*M* length = 47.55, *SD* = 14.680). All PA promotion advisors (*N* = 14) were requested to provide videotaped consultations with new clients (*N* = 42).

The observational instrument

The observational instrument (ISPACOT; See Table I) assesses behaviours that represent Autonomy Support (7 items), Involvement (2), Structure (4) and Interpersonal Control (8). The number of items differed per category due to the range of behaviours relevant to each category as identified in the literature review (i.e., more differential behaviours were identified for Autonomy Support and Interpersonal Control than the other two dimensions).

Convergent validity

To examine the convergent validity of the ISPACOT, observer ratings were compared with data collected from a self-report measure, completed by clients, of the psychological environment created by the PA promotion advisor following the conclusion of the initial consultation. Perceptions of Autonomy Support provided by the PA promotion advisors was assessed through the previously validated HCCQ (Williams et al., 1996). Participants rated their experience with their PA promotion advisor via 10 items using a scale ranging from 1 *(not at all true)* to 7 *(very true)*. The 10 items were averaged to form a composite need support score, with an example item being "My health and fitness advisor listens to how I would like to do things regarding my participation in physical activity".

Predictive validity

Evidence for the validity of an assessment tool is also provided if scores on the measure can significantly distinguish between groups that, based on theoretical reasoning, they should be capable of differentiating. In the present study, the predictive validity of the ISPACOT was examined by testing whether the dimensional ratings of the videotaped consultations delivered by a SDT trained PA promotion advisor significantly differed from the consultations provided by advisors in the standard provision arm.

Data analyses

To estimate inter-rater reliability, intra-class correlation coefficients (ICC) of two-way analysis of variance (ANOVA) random models were used, which is the most frequently employed method when different participants are rated by two or more observers (Li & Lopez, 2005). The ICC measures the degree of agreement between observers (Shrout & Fleiss, 1979). Individual scores for each of the behavioural items comprising the four interpersonal dimensions were averaged. The mean scores for overall need support and each dimension were then used to calculate the inter-rater reliability (Shrout & Fleiss, 1979). In line with the revised recommendations of Shrout (1998), the following descriptors have been used to establish levels of reliability: <0.10 is virtually none, 0.11 – 0.40 is slight, 0.41 – 0.60 is fair, 0.61 – 0.80 is moderate and finally, 0.81 – 1.0 is substantial.

To establish whether the observational instrument demonstrated predictive validity, we conducted a median split (5.01) on the overall need support score from 14 PA promotion advisors and compared participants' perceptions of the social environment manifested in the consultation (HCCQ) based on this split. To examine whether scores on the ISPACOT could distinguish between the consultation environments manifested in the SDT-based intervention arm versus the standard provision exercise on referral arm, a multivariate analysis of variance was conducted.

Results

Inter-rater reliability

Table II provides the ICCs for all subscales and the overall score. Following the rating of 42 consultations, the inter-rater reliability coefficient for the overall need support score (ICC = 0.80), Autonomy Support (0.74) and Involvement (0.73) dimensions were moderate. Structure (0.91) demonstrated a substantial level of inter-rater agreement however the inter-rater agreement for the Interpersonal Control subscale was slight (.35) (Shrout, 1998).

Mean values of and intercorrelations between the observed ratings

Table III reveals the mean observed scores for each dimension (Autonomy Support, Involvement, Structure and Interpersonal Control) and the overall need support score [including Autonomy Support, Involvement, Structure and Interpersonal Control (scores were reversed)], separately for the SDT-based intervention arm and the standard practice arm. The means indicate that both the standard practice and

Table I. The Interpersonal Support in Physical Activity Consultations Observational Tool

Subject	Description	N/A	Rating: Not at all true						Very true
Autonomy Support									
Acknowledging feelings	The HFA acknowledged negative affective states that the client has experienced/may experience regarding physical activity.		1	2	3	4	5	6	7
Acknowledging feelings (2)	The HFA acknowledged any positive affect that the client has experienced/may experience regarding physical activity.		1	2	3	4	5	6	7
Providing rationale	A meaningful rationale was provided for setting goals in a physical activity program.		1	2	3	4	5	6	7
Encouraging self-initiative	The HFA encouraged the client to put forward solutions to barriers.		1	2	3	4	5	6	7
Effective non-verbal skills	The HFA listened carefully to how the client wanted to do things.		1	2	3	4	5	6	7
Providing choice	The client was provided with choice over the types, pace and frequency of the physical activity program where possible.		1	2	3	4	5	6	7
Taking perspective	The HFA really understood how the client felt before making any suggestions (e.g., appreciated his /her personal barriers and his /her past experiences with physical activity).		1	2	3	4	5	6	7
Enhancing self-worth	The HFA enhanced the client's sense of importance.		1	2	3	4	5	6	7
Involvement									
Demonstrating affection	The HFA demonstrated dedication to and care for the client.		1	2	3	4	5	6	7
Accepting all behaviours and beliefs	The HFA accepted the client unconditionally.		1	2	3	4	5	6	7
Structure									
Non-controlling reinforcement	The HFA gave positive informational feedback to the client for effort, improvement and task mastery.		1	2	3	4	5	6	7
Encouraging questions	The HFA encouraged the client to ask questions and answered any posed, fully and carefully.		1	2	3	4	5	6	7
Appropriate goal setting	The HFA helped the client to identify and formulate realistically achievable goals.		1	2	3	4	5	6	7
Informative	The HFA made sure the client understood the risks of an inactive lifestyle.		1	2	3	4	5	6	7
Informative (2)	The HFA clarified the benefits of an active lifestyle.		1	2	3	4	5	6	7
Controlling									
Over authoritative	The HFA sought to dominate the consultation talking and monopolizing the interaction.		1	2	3	4	5	6	7
Enforcing compliance	The HFA pressured the client to adhere to the physical activity program.		1	2	3	4	5	6	7
Forcing change	The HFA sought to change the client's attitudes, values and perceptions without rationale or discussion.		1	2	3	4	5	6	7
Controlling language	The HFA used controlling language with the client (e.g., "should, have to, must and ought to").		1	2	3	4	5	6	7
Using deadlines	The HFA established deadlines without consulting the client.		1	2	3	4	5	6	7
Highlighting external benefits	Rewards (e.g., passes) and/or extrinsic benefits were offered to initiate exercise behaviour.		1	2	3	4	5	6	7
Using conditional acceptance	Praise and positive non-verbal language was used when the HFA heard what he/she wanted to hear.		1	2	3	4	5	6	7
Encouraging specific beliefs and behaviours	The client was told how they should think, feel and act.		1	2	3	4	5	6	7

intervention arms had the highest observed scores on the Involvement sub-scale with moderate scores for Autonomy Support and Structure. Both conditions were also marked by low levels of controlling behaviours. The small amount of "Not applicable" responses (3.7%) were excluded from analysis.

Significant correlations (see Table IV) were found between Autonomy Support, Involvement and Structure consistent with previous findings reported by Markland and Tobin (2010). This justifies their collapse into a single measure of interpersonal support afforded by the PA promotion advisors (overall need support score). Further, significant negative correlations were observed between controlling behaviours and the three need supportive facets of the environment.

Table II. Intra class correlation coefficients for the development of the observational instrument

	Inter-rater reliability (2 raters; $N = 42$)	95% CI
Autonomy Support	.74	.51–.86
Involvement	.73	.50–.86
Structure	.91	.84–.95
Interpersonal Control	.35	–.22–.65
Overall need support	.80	.64–.89

Validity of the ISPACOT

A one-way ANOVA revealed that participants assigned to PA promotion advisors who were observed to have created a low overall need support score, perceived their environments to be significantly lower in Autonomy Support as measured by the HCCQ ($M = 5.35$, $SD = 1.06$), than participants who were observed to provide a higher level of overall need support ($M = 6.33$, $SD = .20$) ($F(1,10) = 5.0$, $p < .05$).

No significant differences between conditions (SDT-based intervention arm vs. standard practice arm) were revealed in Autonomy Support ($F(1,40) = 1.75$, $p > .05$), or Involvement ($F(1,40) = .09$, $p > .05$). However, significant differences emerged for Structure ($F(1,40) = 6.14$, $p = .018$), Interpersonal Control ($F(1,40) = 6.62$, $p = .014$) and the overall need support score ($F(1,40) = 5.73$, $p = .022$). Clients' perceptions of the environment, as assessed with the HCCQ, did not differ by condition ($F(1,150) = 1.05$, $p > .05$).

Discussion

To our knowledge, the ISPACOT is the first theory-based, systematically developed instrument that examines the environmental support afforded by PA promotion advisors when consulting with their clients. The ISPACOT is an observational rating tool that taps the degree of Autonomy Support, Involvement, Structure and Interpersonal Control exhibited within a one-on-one consultation aimed to foster the adoption and maintenance of PA.

Different environmental aspects

Although previous research (Tessier et al., 2008; Williams et al., 2002) has used observational data to measure autonomy supportive aspects of the environment, limited work has examined the relationships between three different aspects of contextual support (Autonomy Support, Structure and Involvement), and how these relate to motivational, behavioural and psychological outcomes (see Edmunds et al., 2008).

Table III. Mean (*SD*s) Perceived and observed need support scores for the control (Standard Practice) and intervention (SDT-based) arms

	Control				Intervention			
	Perceived		Observed		Perceived		Observed	
	Mean	*SD*	Mean	*SD*	Mean	*SD*	Mean	*SD*
HCCQ T2	6.01	1.32			6.25	1.12		
Autonomy Support			4.24	.81			4.56	.73
Involvement			5.08	.74			5.14	.50
Structure			2.98*	.70			3.71	1.17
Control			1.51*	.43			1.24	.23
Overall need support			4.86*	.52			5.22	.46

HCCQ, health care climate questionnaire. *$p < .05$.

Table IV. Bi-variate correlations between scores from the four interpersonal facets

	Autonomy support	Involvement	Structure
Involvement	.73**		
Structure	.63**	.49**	
Interpersonal Control	–.31*	–.23	–.35*

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

Data collected in the present study revealed medium to strong positive associations among Autonomy Support, Involvement and Structure and small negative relationships between these constructs and Controlling behaviours. These relationships between the four dimensions of the ISPACOT indicate that these facets may represent different aspects of the environment and provide some evidence regarding the discrimination between Autonomy Support, Involvement, Structure and Interpersonal Control within PA promotion consultations.

Inter-rater reliability

Autonomy support. To establish the inter-rater reliability of the ISPACOT, ratings from independent observers were compared (Shrout, 1998). ICC indicated that observers rated the interactions similarly for the quality of Autonomy Support afforded by the PA promotion advisor. These findings suggest that trained observers can reliably examine the autonomy supportive features of an environment created by PA promotion advisors during one-to-one interactions when using the ISPACOT. Our results are in line with previous research highlighting that trained observers can distinguish between autonomy supportive environments in educational and health care settings (Reeve et al., 2004; Williams et al., 2002).

Involvement. Observations of the provision for Involvement had good levels of inter-rater reliability. Progressive and continuous training of and discussions with the observers facilitated the clarification of what constituted the different qualities of Involvement. For example, for the item "Accepting all Behaviours and Beliefs", an indicator of Involvement, the description was: "The HFA accepted the client unconditionally." To further clarify this item, the following example was provided: "the exercise professional parrots what the client says back to him/her rather than making a judgmental comment".

Structure. Observer ratings of behaviours reflecting Structure demonstrated the strongest levels of inter-rater reliability. This could be because Structure consists of readily observable and tangible behaviours when compared to the behaviours comprising the other interpersonal dimensions. For example, it is easier to observe the act of goal setting (example of Structure) than rate the level of unconditional support (an indicator of Involvement) that the PA promotion consultant invested.

Interpersonal control. It is noteworthy that the data did not result in an appropriate level of inter-rater reliability for controlling behaviours in the present study. With respect to the Interpersonal Control dimension, it is possible that the lack of more overt, tangible behaviour items and the subtlety in content of the Interpersonal Control items considered (e.g., praise and positive non-verbal language was used when the PA promotion advisor heard what he/she wanted to hear) may have led to a decrease in reliability. It could also be the case that PA promotion consultants in such exercise on referral schemes tend not to be very, if at all, controlling. Both of these arguments are supported by the very low levels of Interpersonal Control that was observed during the consultations. Controlling interpersonal styles constitute an understudied area in the SDT literature (Bartholomew et al., 2010). Future research investigating more overt behaviours that are reflective of controlling environments within exercise consultations is needed. This investigation may benefit from qualitative methods to gain the participants' perspective of controlling behaviours during interactions with PA promotion advisors.

Validity of the ISPACOT

Initial evidence of concurrent validity was established by comparing observed scores from the ISPACOT with scores emerging from the clients' responses to the HCCQ. Results indicated that when the PA promotion advisors were split into two groups based on the observed overall need support score, participants' perceptions of the environment were significantly different. Specifically, participants assigned to PA promotion advisors who were independently observed to have provided a lower level of overall need support perceived the environment to be less need supportive. Therefore, the ISPACOT was able to identify variability in the overall need support score in a similar fashion to a well-established measure of perceived environmental support which shares the same theoretical foundation.

The ISPACOTs validation would have benefited from establishing correlation coefficients between its four components and participants' perceptions of the same dimensions. However, currently two limitations prevent such validation attempts. Firstly, current

SDT-based measures of perceived environmental support are uni-dimensional. The HCCQ has most frequently been employed as a measure of Autonomy Support (Adie, Duda, & Ntoumanis, 2008; Hurkmans et al., 2010). However, Williams et al. (1996) developed some of the items to be competence supportive (e.g., my advisor gave me clear and understandable instructions). Therefore, the HCCQ could be more appropriately considered a measure of overall environmental support with most of the items targeting Autonomy Support (Markland & Tobin, 2010; Silva et al., 2010). Secondly, data collected using measures such as the HCCQ frequently demonstrate ceiling effects. Once, these limitations to the self-reported measures of environmental support are overcome, future research comparing observed data and self-report data of the same environmental dimension would help further establish the ISPACOTs convergent validity. The convergent validity of the observational instrument could also be supported by future qualitative data collections. Qualitative data would provide a rich description of participants' perspectives on the level and particular dimensions of interpersonal support provided during their PA promotion consultations.

Data collected from the ISPACOT revealed significant differences in overall need support and ratings of Structure between consultations provided in standard provision and a SDT-based intervention arm of a RCT conducted in an exercise on referral scheme. However, no between arm differences were observed in the quality of Autonomy Support or Involvement provided. The significant between arm differences in overall need support and Structure highlights that the ISPACOT can identify variability in the interpersonal styles exhibited by PA promotion advisors that is otherwise missed by subjective perceptions. Regarding the latter and in contrast to the observed score, between arm differences in the perceptions of the degree to which the consultation was need supportive (as assessed via the HCCQ) were not significant.

Practical implications

Observational data can help identify particularly effective need supportive interventions (Su & Reeve, 2011) as well as interventions which are more need thwarting. Therefore the ISPACOT makes a welcome and important contribution to the literature by addressing some of the limitations of other SDT based self-report measures, for example, measuring autonomy support, structure, involvement and controlling behaviours. In addition, although the ISPACOT was focussed on interactions between PA promotion advisors and their clients within an exercise on referral programme, future research may use this tool to examine other one-to-one interactions between health professionals (such as physicians and fitness instructors etc.) and their clients when attempting to support PA behaviour change. With further validation, the ISPACOT can help future studies examine the extent to which SDT-based interventions, that target interactions between PA promotion advisors and their clients, are implemented with fidelity (Brandon et al., 2008; Mowbray, Holter, Teague, & Bybee, 2003). The ISPACOT may also be implemented by service providers to prevent programme drift over time (that is, to longitudinally examine what aspects of a programme are being successfully or unsuccessfully employed at any point during an intervention; Paulson, Post, Herinckx, & Risser, 2002).

This study has provided initial evidence that the Autonomy Support, Structure and Involvement dimensions of the ISPACOT exhibit acceptable reliability and validity, and thus can be used to assess the level of need support provided by PA promotion advisors in one-to-one consultations. Further research with larger samples of observers and consultations provided in a wider variety of PA promotion contexts, such as interactions with GPs and patients (Fortier, Sweet, O'Sullivan, & Williams, 2007) is necessary to provide greater evidence regarding this observational instrument's utility. Despite the encouraging results stemming from the present work, it is noteworthy that the individuals trained to observe the consultations were post-graduate students. Future research should test whether different populations such as PA promotion advisors themselves or other health care personnel can be trained to reliably use the observational instrument. Further, the use of videotaped consultations, particularly with the camera centred on the PA promotion advisor, may have led to a loss of information regarding the interaction between the PA promotion advisor and client (e.g., acknowledging the non-verbally expressed feelings of the client).

Conclusions

In conclusion, the ISPACOT provides an alternative assessment method to self-report to examine facets of interpersonal support offered by an advisor to a client in an exercise consultation. Further, the ISPACOT appears to be a promising assessment tool to use in future research when it is important to examine programme fidelity and the effectiveness of SDT-based PA consultations.

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