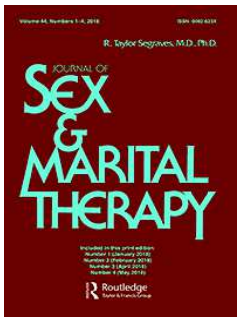

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Sexual Cognitions, Trait Anxiety, Sexual Anxiety, and Distress in Men With Different Subtypes of Premature Ejaculation and in Their Partners

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ABSTRACT

This study examined trait anxiety and sexual cognitions in 610 men with premature ejaculation (PE) (*DSM-IV-TR* criteria) and in 107 partners of these men, and compared their scores to normative data. Sexual anxiety, intravaginal ejaculatory latency time, feeling of control over ejaculation, and PE-related distress were also assessed. The scores of 343 participants (56.23%) with clearly identifiable subtypes of PE according to Waldinger's classification system (lifelong, acquired, variable, and subjective subtypes) were compared in these domains. Finally, the predictive value of these factors in determining PE-related distress was explored. The following conclusions can be summarized from the results: (1) Men affected by PE are more distressed by the problem than their partners; (2) there is no evidence that levels of trait anxiety in individuals with PE are dissimilar to those found in the general population; (3) "dysfunctional" sexual cognitions likely play a role in PE, especially with regard to PE-related distress; (4) different subtypes of PE have similar profiles on measures of trait anxiety, sexual anxiety, and sexual cognitions; (5) differences between subtypes are only apparent with regard to feeling of control over ejaculation, with men with lifelong or acquired PE scoring significantly lower than those with a subjective form of the problem.

Introduction

There is agreement among the scientific community that three criteria are necessary for the diagnosis of premature ejaculation (PE): (1) rapidly occurring ejaculation, (2) a sense of not being able to control the onset of ejaculation, and (3) significant distress in the man and/or in his partner.

Within this broad clinical presentation, several forms of PE complaints can be identified depending on the severity, onset, and course of the problem. Specifically, a four-subtype model proposed by Waldinger (2006, 2007) has subsequently been elaborated and promoted by a number of authors (Althof et al., 2014; Gao et al., 2014; Jannini, McMahon, & Waldinger, 2013; Rajkumar & Kumaran, 2014, Serefoglu & Saitz, 2012). This classification system identifies four categories of PE problems: (1) lifelong PE, affecting men who have practically never been able to delay ejaculation beyond one to two minutes of penetration; (2) acquired PE, occurring when inability to delay ejaculation beyond two to three minutes develops after a period of "normal" sexual functioning; (3) variable PE, occurring intermittently or in specific situations; and (4) subjective PE, where the estimated duration of penetration is within statistical norms

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(i.e., greater than three minutes). It should be noted that the "variable" and "subjective" forms of PE are sometimes termed "naturally variable," and "premature-like ejaculatory dysfunction" respectively, suggesting some reluctance to consider these as clinically significant sexual problems. Currently, some authors argue that, at least provisionally, only the first two categories (lifelong and acquired PE) should be regarded as genuine disorders (Althof et al., 2014; McMahon, 2013; McMahon et al., 2008; Serefoglu et al., 2014; Waldinger & Schweitzer, 2008).

Although the etiology of PE is not well understood, a number of contributing factors have been suggested, which may vary in impact according to subtype of PE, and thus may have treatment implications.

Constitutional factors have frequently been implicated, and these may be particularly important in cases of lifelong PE (Waldinger, 2007, 2016a). In such cases, long-term pharmacological intervention has sometimes been hypothesized as being the most appropriate form of treatment (Althof et al., 2010; Porst, 2012; Waldinger, 2007). Comorbid problems such as erectile dysfunction, hormonal imbalance, or prostate infection or inflammation, have also been suggested as potential causative factors, particularly for acquired forms of PE. When men with PE present with such comorbid physical problems, treatment plans may benefit from considering the impact of any intervention for the primary physical problem on symptoms of PE (Althof et al., 2010; Jannini & Lenzi, 2013; Mulhall & Teloken, 2013).

It seems highly likely that attentional and behavioral factors are implicated in PE. For example, managing one's level of arousal in order to delay ejaculation necessitates attending to one's physiological state and modifying one's behavior in response to this. Behavioral interventions such as the stop-start technique (Kaplan, 1974; Semans,1956), the squeeze technique (Masters & Johnson, 1970), respiratory control, and slow masturbation (De Carufel, 2017; De Carufel & Trudel, 2006; Kempeneers et al., 2012, In press) aim to promote these types of skills. Therefore, it could be hypothesized that some presentations of PE result from deficient skills in these domains.

Social and cognitive factors may also be important in the development of PE. Erotic cognitions and behaviors are influenced by more or less narrow "scripts," which are developed and shaped by individuals' previous learning and experiences (Mitchell et al., 2011; Simon & Gagnon, 1987; Wiederman, 2015). Sexual scripts are based on beliefs and values that individuals have acquired through their culture, education, and personal experiences. Certain beliefs and values can appear distorted against the reality of most people's physiological abilities. For example, it is not uncommon for men to aspire to a duration of penetration of more than 10 minutes (Amidu et al., 2015; Burri et al., 2014; Miller & Byers, 2004; Montorsi, 2005). Unhelpful sexual cognitions can also hinder duration of penetration, or lead one to neglect extracoital sexual behaviors (Burri et al. 2014). Such cognitions may naturally increase the risk of dissatisfaction regarding duration of penetration. It is possible that cultural differences in sexual scripts may contribute to some of the between-population differences observed in the prevalence of PE (Carson, Glasser, Laumann, West, & Rosen, 2003; Laumann et al., 2005; McMahon et al., 2012). However, although the role of cognitive factors has been explored in the general field of sexual dysfunction and in the area of erectile dysfunction (Barlow, 1986; Nobre & Pinto-Gouveia, 2008; Purdon & Watson, 2011), few researchers to date have specifically investigated the sociocognitive determinants of PE complaints.

Anxiety has also often been associated with PE, either in the form of situation-specific anxiety (e.g., anxiety about sexual performance) or as other forms of anxiety, such as state or social anxiety (Corona et al., 2004; Corretti et al., 2006; Figueira et al., 2001; Gao et al., 2014; Hartmann, Schedlowski, & Krüger, 2005; Kempeneers et al., 2013; McCabe & Connaughton, 2014; Porst et al., 2007; Rajkumar & Kumaran, 2014; Rowland & Cooper, 2013). One way in which anxiety might contribute to PE could be through a physiological mechanism such as overactivation of the sympathetic nervous system, which tends to accelerate the ejaculatory reflex (Rowland, 2010). Cognitive mechanisms could also play a role, through dampening the attentional resources necessary for the control of arousal (Althof, 2007; Kaplan, 1989). On the other hand, it is important to note that interventions that have sought to treat PE solely by reducing anxiety have not been shown to be effective (Lazarus, 1971; Obler, 1974). Moreover, in a small sample of men with ($n = 15$) and without PE ($n = 17$), Strassberg and colleagues (1990) found that variations in perceived anxiety failed to distinguish variations in orgasmic latencies. It should also be noted that traits and symptoms of anxiety are not evident in all patients affected by PE (Mouroukis et al., 2015). Finally, even when PE and anxiety co-occur, it remains difficult to infer a causative relationship. For instance, in a longitudinal study, Ventus et al. (2016) reported correlations between PE and anxiety, but anxiety levels

did not predict PE six years later, nor did PE predict anxiety in the same time period. It is possible that anxiety is a consequence, cause, or both a cause and a consequence of PE (Althof et al., 2014; Jannini & Lenzi, 2005; McMahon, Jannini, Serefoglu, & Hellstrom, 2016). In addition, anxiety and PE might both arise from a common underlying cause (Kempeneers, 2013). The possibility that associations between anxiety and PE vary both according to type of anxiety (e.g., trait, state, social, or sexual anxiety) and the type of PE (lifelong, acquired, variable, or subjective) cannot be excluded, and yet studies have rarely explored this. Therefore, the etiological role of anxiety in PE remains inconclusive.

Some authors have suggested that in contrast to lifelong PE, in which physiological constitution is thought to play a major role, cognitive, behavioral, and emotional factors may be more central to variable or subjective forms of PE (McMahon, 2013; Waldinger, 2007). Nevertheless, cognitive-behavioral interventions have shown some efficacy not only for these forms of the problem, but for lifelong and acquired PE as well (Cormio et al., 2015; De Carufel & Trudel, 2006; Jern, 2013; Kempeneers et al., 2012, In press), suggesting that cognitive and behavioral factors, such as those targeted in these interventions, are also likely to be implicated in lifelong and acquired PE. However, cognitive-behavioral interventions for PE usually target several domains simultaneously (behavioral, cognitive, physiological, emotional, and relational), making it difficult to identify their precise change mechanism, and also to determine the relative causal contribution of each domain. Indeed, more work is needed to understand these processes.

In a similar manner, serotonergic drugs have been used effectively to delay ejaculation in some men with PE, and these may also operate through several mechanisms. For instance, reductions in anxiety and/or sexual arousal brought about by these drugs (Corona et al., 2009) may help to increase duration of penetration, in addition to their effect on putative serotonergic pathways specifically dedicated to the onset of the ejaculatory reflex (Waldinger, 2007).

On the whole, the causes of the different presentations of PE currently remain unclear, and the heuristic value of the current way of classifying PE complaints is rather questionable.

Aims of the study

The general aim of the present study was to explore the role played by trait anxiety, sexual anxiety, and sexual cognitions in PE complaints. More specifically, the points were: (1) to assess the prevalence of anxiety and of unhelpful sexual cognitions in a sample of men reporting PE complaints and in their partners; (2) to examine whether the four subtypes of PE (lifelong, acquired, variable, and subjective) show different profiles on these domains; and (3) to explore to what extent these factors are related to the severity of PE as expressed in terms of distress. We hypothesed that trait anxiety and dysfunctional sexual cognitions would exceed the norms in men with PE, and perhaps in their partners. We also hypothesized that anxiety and unhelpful cognitions would predict higher levels of PE-related distress, and that differences in morbid pathways between PE subtypes would be reflected in differences on those criteria.

Method

Sample

Six hundred ten men with PE and 107 female partners of these men were recruited in the context of two clinical trials of a behavioral psychosexual intervention for PE conducted in Belgium between 2009 and 2013 (Kempeneers et al., 2012, In press). These studies were approved by the ethics committee of the University of Liege. Participants were recruited through advertisements in the press, and diagnosis of PE was confirmed through telephone interviews according to *DSM-IV-TR* criteria (American Psychiatric Association, 2000), as the protocol was designed before the publication of *DSM-5* (American Psychiatric Association, 2013). During phone interviews, PE was also categorized as primary or secondary and as generalized or situational in accordance with *DSM-IV-TR* subtyping. The 610 male participants who enrolled in the studies completed an online questionnaire, at least partially, before going on to engage in treatment. They were asked to invite their (main) sexual partner to provide her view of the situation. One hundred seven partners completed at least part of an online questionnaire.

Measures

Characteristics of the PE-related problem were operationalized and assessed using the following scales:

Ejaculation latency time: "During the last few months, what has been the mean duration of intravaginal penetration?" (1. ejaculation before intromission; 2. less than 30 seconds; 3. between 30 sec and 1 minute; 4. 1–2 min; 5. 2–4 min; 6. 4–6 min; 7. 6–10 min; 8. >10 minutes);

Distress: "To what extent is PE a problem for you now?" (1. not a problem at all → 7. an enormous problem);

Feeling of control: "During the last few months, to what extent have you felt in control of your ejaculation? " (1. no control → 7. total control).

Questions about ejaculation latency time and distress were worded identically for men with PE and their partners, but only men with PE were asked about their feeling of control.

Information regarding the age of participants and their level of education was also collected.

Trait anxiety was assessed using the French version of Spielberger's State-Trait Anxiety Inventory (STAI-trait; Schweitzer & Paulhan, 1990). The Cronbach's alpha coefficient of this scale was .91.

Sexual anxiety was measured using an adaptation of the French version of Spielberger's State-Trait Anxiety Inventory (STAI-state; Schweitzer & Paulhan, 1990), where the original period of time taken into account ("now") was replaced by "when you have sexual intercourse." This produced a scale ranging from 20 (*minimal anxiety*) to 80 (*maximal anxiety*).

Sexual cognitions were assessed using the French version of McCormick and Jordan's Sexual Irrationality Questionnaire (Sexual Irrationality Questionnaire (SIQ); Kempeneers, Louwette, Mormont, & Doudali, 2000; McCormick & Jordan, 1986) which is presented in Table 1. The SIQ yields five scores : a total score (SIQ) obtained by adding the scores of the 32 individual items, and four subscale scores derived from a factor analysis, each relating to a specific domain of sexual irrationality. The four sexual irrationality subscales were constructed according to a factorial eigenvalue > 1, and a .35 cutoff loading for significant items. SIQ-F1 (so called "Control"; corresponds to the sum of items 2, 7, 8, 9, 15, 19, 21, 25, 26 and 27) reflects a subjective need to maintain control over sexual desires and responses. SIQ-F2 ("Communication"; items 5, 6, 18, 20, 22, and 23) measures communication difficulties around sexual desires and preferences. SIQ-F3 ("Fantasy"; items 4, 23, and 31) assesses a tendency to view certain fantasies as unbecoming, and SIQ-F4 ("Frustration"; items 2, 10, 30, and 32) measures intolerance of sexual frustration. High scores on the SIQ indicate a high prevalence of dysfunctional or "irrational" beliefs about sexual functioning. The Cronbach's alpha was .73 for the English-language version of the total scale (McCormick & Jordan, 1986); internal consistency coefficients of the four subscales were not reported in validation studies.

Statistical analysis

Data were analyzed using Statisca 10.0 from StatSoft Inc. Participants' scores on the STAI Y-B and the SIQ were compared to normative data using *t* tests. Bonferroni corrections were applied to allow for multiple comparisons, and effect sizes were calculated using Cohen's *d*. The hypothesis that specific subtypes of PE would have different profiles was evaluated using Tukey's HSD tests for unequal sample sizes. The relationship between self-reported ejaculation latency time and PE-related distress of men with PE, and partner responses to the same questions were explored through *t* tests and Pearson's correlations (*r*). The predictive value of ejaculation latency time, feeling of control, anxiety, and sexual cognitions in determining PE-related distress was evaluated in two stages. First, Pearson's correlations were performed between potential predictors and distress. Subsequently, predictors that were significantly correlated ($p < .05$) to distress were entered into a stepwise forward regression model of distress.

Results

Descriptive Statistics

According to the *DSM-IV-TR*, 454 out of the 608 participants who could be classified (74.67%) presented with primary PE, and 154 (25.33%) presented with a secondary form of the problem. Four hundred

Table 1 The Sexual Irrationality Questionnaire (SIQ; McCormick & Jordan, 1986.)

1	I must be very cautious about trying new sexual activities so that my partner does not reject me.
2	My sex partner should be sensitive enough to know exactly what I want sexually without my having to say anything.
3	Sexual pleasure should be easy and spontaneous, not something I must work hard to achieve.
4*	Sometimes, I try to break away from following normal sex conventions and and rules even though my partner may not always approve.
5*	I don't expect my sex partner to be able to read my mind, so when I want sex satisfaction, I tell my partner how to pleasure me.
6*	I realize that good sex requires effort and that my partner or I might not become aroused or achieve orgasm without hard work.
7	I can't stand it when my sex life is not the way I want it to be.
8	My sex partner must be very skilled and competent in order for me to enjoy sex at all.
9	Sexual intercourse between a man and a woman is the only mature way to satisfy sexual needs.
10*	I accept the fact that my sex life will sometimes be highly frustrating.
11*	My enjoyment of sex is not my partner's responsibility but mainly my own.
12*	There is no single right or mature way to have sex: For example, masturbation or having genitals stroked or kissed by a partner can be enjoyed in place of sexual intercourse.
13	If I fail as a lover, this means that I am an inadequate person.
14	It is entirely up to a male partner to take the lead in sexual activities.
15	For good sex, both partners must climax together in one glorious orgasmic explosion.
16*	My adequacy as a person has nothing to do with my ability to function sexually.
17*	It is okay for a woman to initiate sexual activities.
18*	It is not terrible if sex fails to result in a simultaneous orgasm for both partners.
19	It is terrible if I don't have good control of the timing of my own and my partner's orgasms.
20	My sex partner must follow the same sex rules and customs that I do.
21	Bad early experiences will make a person sexually inadequate forever.
22*	I would like to control the timing of my own and my partner's orgasms, but it is not terrible if I don't.
23*	There is no necessity for my sex partner to follow the same sex rules and customs that I follow.
24*	Negative feelings about sex which originated during traumatic experiences in the past can be overcome.
25	I couldn't stand if someone I was very attracted to rejected me as a lover.
26	For real compatibility, my sex partner must desire sex as frequently or infrequently as I do.
27	It is horrible when I have difficulty fulfilling my sexual desires or am unable to avoid sex problems.
28*	It is okay to have sexual fantasies about someone else when having sex with your partner.
29*	I could get along with a sex partner who desired sex more frequently or less frequently than me.
30*	I can tolerate having difficulties fulfilling my sexual desires and am able to put up with sex problems.
31	When you are having sex with your partner it is wrong to have sexual fantasies about someone else.
32*	I would feel sorry but I could easily bear it if someone I was very attracted to rejected me as a lover.

Each of the proposals matches a 6-point scale by which the respondent indicates his or her degree of agreement:

1	2	3	4	5	6
Strongly false	Rather false	More false than true	More true than false	Rather true	Strongly True

Scoring. The 16 items marked by an asterisk (*) are reverse-scored because they represent rational statements. The remaining 16 items, representing particular irrational beliefs, are scored directly as indicated by the respondent. The higher the total of all the 32 items, the greater the sexual irrationality.

ninety-seven (81.74%) stated that they had a generalized problem, whereas 111 (18.26%) reported that PE was only a problem in certain specific situations.

Table 2 shows the distribution of self-estimated duration of penetration reported by participants. This information, along with the dual-axis classification system from *DSM-IV-TR* (primary/secondary and generalized/situation-specific) enabled 562 participants to be categorized into one of the four subtypes of PE according to Waldinger's classification system. Two hundred fifty-eight participants (45.91%) could be classified as presenting with a lifelong form of PE, that is, a generalized difficulty in prolonging duration of penetration beyond two minutes, present throughout the person's sexually active life. This number decreased to 169 (30.07%) when the maximum duration of penetration was reduced to one minute. One hundred respondents (17.79%) presented with an acquired form of PE, having developed the problem (with duration of penetration less than two minutes) after a period of satisfactory sexual functioning. The number of participants with acquired PE increased to 127 (22.59%) when those with duration of penetration of less than four minutes were included. Twenty-six participants (4.63%) met the criteria for variable PE, that is, fluctuating duration of penetration and a mean of more than four minutes. This proportion increased to 5.7% when the six participants who did not report their average duration of penetration were also included. Thirty-four other participants (6.05%) reported intermittent problems with

Table 2. Perceived Ejaculatory Latency Time.

			Men with PE who had participating partners			
	Men with PE[1]		Men		Partners	
IELT[2]	*n*	%	*n*	%	*n*	%
Ejaculation before intromission	13	2.34%	2	1.87%	2	1.87%
< 30 sec	94	16.91%	16	14.95%	11	8.41%
30 sec–1 min	162	29.14%	32	29.91%	22	20.56%
1 –2 min	135	24.28%	28	26.17%	26	24.3%
2–4 min	99	17.81%	15	14.02%	24	22.23%
4–6 min	41	7.34%	12	11.21%	14	13.08%
6–10 min	8	1.44%	2	1.87%	9	8.41%
> 10 min	4	0.72%	0	0%	1	0.93%
Valid *N*	556		107		107	
Median	1–2 min		1–2 min		1–2 min	

[1]Premature ejaculation.
[2]Intra-vaginal ejaculatory latency time.

PE, despite average self-estimated duration of penetration of less than two minutes ($n = 26$) or between two and four minutes ($n = 8$). Although these men reported variable ejaculation latency times, the fact that their estimated mean duration of penetration was very brief makes it difficult to categorize them as presenting with the "variable" subtype of PE. Another subgroup that was difficult to classify consisted of 17 men (3.02%) who stated that PE was only a problem for them during vaginal penetration. Strictly speaking, these men should not be categorized in the variable PE group, as their ejaculation latency time was consistently short during intravaginal penetration. However, this raises questions concerning the validity of a diagnostic system for PE based primarily on duration of penetration. Forty-two participants (7.4%) presented with a clearly subjective form of PE; they judged their average duration of penetration as being too brief, even though it fell within the statistically normal range (mean duration of penetration greater than four minutes). Fifty-two other participants (9.25%) might meet the criteria for subjective PE, in that their self-reported mean duration of penetration of between two and four minutes, while not falling within the statistically normal range, still exceeded the time criterion required to diagnose lifelong PE. Rosen, McMahon, Neiderberger, Broderick, Jamieson, and Gagnon (2007) have noted that although there is generally a strong correlation between self-estimated intra-vaginal ejaculatory latency time (IELT) and that measured with a stopwatch among men with PE, the strength of association tends to decrease as duration of penetration increases, and men with higher IELT have a tendency to overestimate their duration of penetration. If this bias is operating in the present sample, it may well lead to an overestimation of the prevalence of subjective PE.

Only participants who could be unequivocally classified as presenting with a subtype of PE were included in the comparative analyses, as the purpose of these analyses was to identify similarities and differences between subtypes of the problem. This yielded 343 participants: 169 with primary PE (49.27%), 100 with acquired PE (29.15%), 32 with variable PE (9.33%), and 42 with subjective PE (12.24%). The respective numbers of partner respondents across the subtypes were 34 (48.57%), 16 (22.86%), 6 (8.57%), and 14 (20%).

Anxiety and sexual cognitions

Table 3 summarizes participants' scores on measures of trait anxiety and sexual irrationality, and compares them to normative data. Trait anxiety was slightly but significantly elevated in study participants. More substantial differences compared to normative data were found on the measure of sexual cognitions, specifically the SIQ total score, and the F1, F2, and F3 subscales of this measure. It would appear that men with PE endorse significantly more dysfunctional sexual cognitions than those found in the general

Table 3. Trait anxiety (STAI Y-B) and sexual cognitions (SIQ) in the whole sample.

	M (SD)	norms	*d*	*t*	*df*	*p*
Male Subjects						
STAI-trait (Trait Anxiety)	50.78 (5.11)*	50	0.10	3.60	554	<.002
SIQ (Sexual Irrationality Questionnaire - Total index)	107.34 (13.16)*	102.50	0.36	8.56	541	<.001
SIQ-F1 (Control subscale)	37.80 (6.68)*	36.30	0.20	5.25	544	<.001
SIQ-F2 (Communication subscale)	17.58 (3.73)*	16.80	0.18	4.86	544	<.001
SIQ-F3 (Fantasies subscale)	10.96 (3.09)*	10.02	0.28	5.70	544	<.001
SIQ-F4 (Frustration subscale)	14.24 (3.18)	14.10	0.05	1.00	544	ns
Partners						
STAI-trait (Trait Anxiety)	50.50 (5.06)	50	0.06	1.01	106	ns
SIQ (Sexual Irrationality Questionnaire–Total index)	97.16 (13.75)	99.80	0.18	1.97	104	ns
SIQ-F1 (Control subscale)	32.08 (7.40)*	35.20	0.41	4.34	105	<.001
SIQ-F2 (Communication subscale)	15.63 (3.76)	16.20	0.14	1.56	105	ns
SIQ-F3 (Fantasies subscale)	11.53 (3.65)*	10.20	0.37	3.79	106	<.002
SIQ-F4 (Frustration subscale)	13.36 (3.71)	13.80	0.12	1.21	106	ns

Note. d = Cohen's d; t = Student's t test; df = degree of freedom; p = corrected p values according to Bonferroni Method; ns = not significant; *STAI* = state-trait anxiety inventory; *SIQ* = sexual irrationality questionnaire.
*Statistically different from the norms at $p < .05$.

population. With regard to partners' responses, no statistically significant differences were found compared to normative data for trait anxiety, but partners tended to score higher than the normative sample on the SIQ-F3 subscale (Fantasy). Interestingly, partners tended to report lower levels of sexual irrationality than the normative sample on the F1 subscale (Control) of the SIQ. No significant differences were found on the other two subscales or on the index score of the SIQ.

As shown in Table 4, results were quite similar when only the 238 participants with lifelong or acquired PE and latency times of less than one minute were included in the analysis, that is to say those participants who undoubtedly met the criteria for clinically significant PE, whatever the diagnostic system chosen.

Differences between subtypes of PE

Table 5 presents scores according to subtype of PE. No significant differences in PE-related distress, sexual anxiety, trait anxiety, or sexual irrationality were found between the four subtypes. Mean scores of participants and their partners in these domains were broadly similar, regardless of their PE presentation. Age and educational level attained were also similar across the four subtypes. The only measure that

Table 4. Trait anxiety (STAI Y-B) and sexual cognitions (SIQ) in participants with lifelong or acquired premature ejaculation (PE) and intra-vaginal ejaculatory latency times (IELT) ≤ 1 minute.

	M (SD)	norms	*d*	*t*	*df*	*p*
Male Subjects						
STAI Y-B (Trait Anxiety)	50.43 (5.20)	50	0.05	1.27	236	*ns*
SIQ (Sexual Irrationality Questionnaire—Total index)	107.11 (13.38)*	102.50	0.34	5.24	230	<.001
SIQ-F1 (Control subscale)	37.51 (7.00)*	36.30	0.16	2.63	231	<.046
SIQ-F2 (Communication subscale)	17.47 (3.80)*	16.80	0.15	2.71	231	<.037
SIQ-F3 (Fantasies subscale)	11.20 (3.20)*	10,02	0.35	5.67	231	<.001
SIQ-F4 (Frustration subscale)	14.09 (3.25)	14.10	0.01	0.02	231	*ns*
Partners						
STAI Y-B (Trait Anxiety)	50.56 (4.73)	50	0.07	0.79	44	*ns*
SIQ (Sexual Irrationality Questionnaire—Total index)	95.76 (13.77)	99.80	0.28	1.95	43	*ns*
SIQ-F1 (Control subscale)	31.98 (7.38)*	35.20	0.42	2.90	43	<.030
SIQ-F2 (Communication subscale)	15.00 (3.90)	16.20	0.28	2.06	44	*ns*
SIQ-F3 (Fantasies subscale)	11.51 (3.89)	10.20	0.35	2.26	44	*ns*
SIQ-F4 (Frustration subscale)	12.62 (3.65)	13.80	0.33	2.17	44	*ns*

Note. d = Cohen's d; t = Student's t test; df =degree of freedom; p = corrected p values according to Bonferroni method; *ns* = not significant.
*Statistically different from the norms at $p < .05$.

Table 5. Significant differences found between subtypes of PE.

	M (SD)							
	Lifelong PE	Acquired PE	Variable PE	Subjective PE	Tukey's HSD test	*F*	*df*	*p*
Control over ejaculation	1.72 (0.74)	1.92 (0.90)	2,5 (0.86)	2.43 (0.89)	Lifelong and Acquired < Subjective	13.29	333	< .001

Note. *F* = Fisher's test; *df* = degree of freedom; *PE* = premature ejaculation.

differed between subtypes of PE was feeling of control over ejaculation. Tukey's HSD tests revealed two subgroups based on this measure: the first consisted of participants with lifelong or acquired PE, who reported less control, and the second consisted of those with subjective PE, who experienced higher levels of control.

Trait anxiety and the recruitment context

Significant and large differences on the STAI Y-B were found between two subgroups of participants. This difference is likely to be due to the context in which participants were recruited rather than to diagnostic subtypes. Participants recruited for the first trial (2009–2010) were expecting to engage in a bibliotherapy intervention, and presented a mean baseline level of trait anxiety of 59.57 (±4.22 ; Kempeneers et al., 2013). Those recruited for the second trial (2013–2014) were expecting to be randomized to receive either bibliotherapy alone or therapist support in addition to bibliotherapy, and these presented with a mean baseline score of 46.31 (±3.85; $d = 3.28$, $t = 40.99$, $df = 135$, $p < .001$). The two subgroups did not differ on any other measure.

Perspectives of participants and their partners

Ratings of PE-related distress given by men with PE and their partners were quite weakly correlated ($r = 0.21$). With a mean PE-related distress score of 6.00, male participants appeared to be more distressed by the problem than their partners, who had a mean score of 4.35 on the same measure. This difference was statistically significant ($d = 0.67$; $t = 7.99$, $df = 212$, $p < .001$). The correlation between estimated duration of penetration reported by participants and their partners was stronger ($r = 0.48$), but the two groups differed on this domain ($d = 0.37$; $t = 2.98$, $df = 212$, $p < .004$), with men estimating their duration of penetration as being briefer ($M = 3.77$) than that estimated by their partners ($M = 4.31$).

Predictors of Distress

Level of PE-related distress was significantly associated ($p < .05$) with sexual "irrationality" of participants as measured by the SIQ total score ($r = 0.22$) and SIQ-F1 ($r = 0.34$), and that of their partners (SIQ total score: $r = 0.27$; SIQ-F1: $r = 0.25$; SIQ-F4: $r = 0.21$). It also correlated significantly with lower feelings of control over ejaculation ($r = -0.32$). As shown in Table 6, a stepwise regression retained only the SIQ

Table 6. Regression analysis of PE-related distress in participants and their partners.

	Adjusted R^2	Retained Criteria	*F*	*p*	*β*
PE men's distress	0,24	Feeling of control over ejaculation	14.86	<.001	−0,34
		Man's score at SIQ-F1	7.66	<.01	0.25
		Partner's score at SIQ	7.41	<.01	0,25
Partners' distress	0.07	Partner's score at SIQ-F1	8,7	<.004	0.28

Note. SIQ = Sexual Irrationality Questionnaire, total index; SIQ-F1 = Sexual Irrationality Questionnaire, first subscale (need of control over sexual desires and responses); *F* = Fisher's test; *PE* = premature ejaculation.

first subscale score of participants (SIQ-F1—need for control), SIQ total score of partners (SIQ total), and feeling of control over ejaculation as significant predictors of PE-related distress in participants.

Partners' distress was significantly associated with their own sexual irrationality (SIQ total score: $r = 0.28$; SIQ-F1: $r = 0.28$; SIQ-F4: $r = 0.25$). However, a stepwise regression analysis found only their scores on the Control subscale of the sexual irrationality questionnaire (SIQ-F1) to be significant predictors of their PE-related distress.

Discussion

In this study, the mean level of trait anxiety found in men with PE seems little different to that found in the general population. This calls into question the previous observations made by Kempeneers, Andrianne, Bauwens, Georis, Pairoux, and Blairy (2013), based on a subgroup of the present sample, who showed more significantly elevated scores on the STAI Y-B. It is more consistent with Mouroukis et al.'s (2015) findings of comparable STAI Y-B scores in men with PE and controls in a Greek sample. More than the PE problem in itself, the context of recruitment might be determinant of trait anxiety levels in men with PE. It is interesting to note that, in this sample, higher trait anxiety was found in a subgroup of men with PE participating in a trial of bibliotherapy without any therapist contact (Kempeneers et al., 2012), while lower trait anxiety was found in a subgroup participating in a trial of bibliotherapy with the possibility of therapist support (Kempeneers et al., In press). The possibility of face-to-face therapist contact was the only condition differing between the two trials; the second trial may have attracted respondents more willing to consult a professional for their problem, as in Mouroukis et al.'s (2015) study. Thus, trait anxiety closer to the nonclinical norms might be a characteristic distinguishing a subset of men who tend to seek help from therapists from the general population of PE sufferers. However, it should also be pointed out that treatment responses to comparable interventions appeared quite similar in both subsets of this sample (Kempeneers et al., 2012, In press).

Nevertheless, substantial differences in trait anxiety in the present sample depending on the recruitment context suggest that these findings should be interpreted with caution. More broadly, it may be that variations in recruitment procedures could be a potential confounding factor in studies investigating PE.

On the whole, trait anxiety as measured by the STAI Y-B is unlikely to play a leading role in the development or maintenance of PE. However, this does not mean that other forms of anxiety can be excluded as contributing factors, and indeed the involvement of sexual anxiety, social anxiety, and emotional reactivity has been proposed by other researchers (Corona et al., 2004; Corretti et al. 2006; Figueira et al., 2001; Gao et al., 2014; Hartmann et al., 2005; McCabe & Connaughton, 2014; Porst et al., 2007; Rajkumar & Kumaran, 2014; Rowland & Cooper, 2013).

The idea that sexual cognitions are implicated in PE has strong face validity, and the present study suggests that sexual cognitions do appear to be slightly more dysfunctional among men with PE than in the general population. Furthermore, they seem to be related to the level of PE-related distress experienced by both the men affected and their partners. Studies evaluating cognitive behavioral interventions for sexual problems have observed that improvements in sexual functioning are accompanied by changes in sexual cognitions (Kempeneers et al., 2012, In press). These findings suggest that sexual cognitions should be specifically targeted in psychological interventions to prevent or treat PE.

Men suffering from PE had particularly elevated scores on the Control subscale of the SIQ (SIQ-F1), which measures endorsement of a relatively standardized and normative sexual script, along with a strong need to control its course. For high scorers on this domain, increasing the flexibility of sexual scripts could therefore be a key goal of a therapeutic intervention. However, it should be noted that two of the items in this subscale (items 7 and 19) measure PE symptoms or consequences quite directly, and therefore high scores on this subscale may partly reflect a simple logical correlation rather than a causative relationship.

The finding that men are more distressed by their PE than their partners is consistent with results from other studies (Byers & Grenier, 2003; Patrick et al., 2005; Rowland et al., 2007). This supports the suggestion that psychosexual interventions for PE may be enhanced if the sexual beliefs, expectations, and behaviors of both partners are assessed and addressed (Abdo, 2016; Althof, 2014;

Kempeneers et al., 2013; Mocanda, 2011; Rowland, 2011). The finding that participants' PE-related distress is linked not only to their own sexual irrationality, but also to some extent to that of their partners adds further weight to this suggestion.

The only variable that differed between subtypes of PE was self-reported feeling of control over ejaculation. As one would expect, this was lower in men with the shortest ejaculation latency times (lifelong and acquired PE). Furthermore, feeling of lack of control – rather than ejaculatory latency time – appeared to be a significant predictor of PE-related distress. As feeling of control is clearly a key factor in PE, (as previously reported by Giuliano et al., 2008; Patrick et al., 2005; Revicki et al., 2008 and Rowland et al., 2004), these findings suggest that grading clinical presentations on a continuum according to severity (e.g., "mild," "moderate," "severe") might be more useful than classifying them in different categories according to clinical thresholds based on duration of penetration (e.g., "PE disorder vs. PE complaint" or "lifelong vs. subjective PE").

Men with different subtypes of PE had similar profiles with regard to trait anxiety, sexual anxiety, and sexual cognitions. Based on this finding, there is no evidence that trait anxiety—which showed very little difference from the norms across all subtypes—has a significant etiological contribution to any form of PE. Levels of sexual anxiety do not appear to distinguish different forms of PE either; sexual anxiety scores appeared elevated to a similar degree across all subtypes, although the direction of the causal relationship is unclear and, furthermore, the absence of a control group prevents comparisons being made with scores in the general population of men without PE. In a recent commentary about underlying mechanisms contributing to ejaculatory dysfunction, Waldinger (2016b) argued that no psychological factors, including anxiety, could be used to distinguish PE subtypes. He suggested that even if some psychological factors do play a different role in different subtypes of PE, the psychological burden of the problem also depends on numerous factors unrelated to subtype, making the direction of causality impossible to establish. With regard to dysfunctional sexual cognitions, evidence suggests that these may contribute to perceived ejaculatory dysfunction by making it difficult to accept, manage, or overcome an ejaculatory latency time subjectively appraised as being too short—regardless of the actual duration of penetration or of the course of the problem. The relative absence of differences found between PE subtypes supports Jannini and Lenzi's (2013) suggestion that although forms of PE may vary in their initial etiology, all forms of PE are maintained to some extent by the development of unhelpful psychorelational responses, which hinder the development of adaptive sexual behaviors. This could explain why certain psychosexual interventions can be effective and are recommended for several subtypes of PE (Kempeneers et al., 2012, In press). Regardless of specific constitutional or physiological vulnerabilities, PE problems might all be at least partly linked to and thus treatable through cognitive and behavioral processes.

In this study, the classification of PE into Waldinger's subtypes according to clinical presentation was not always straightforward. Many individuals reporting an IELT of between two and four minutes had a somewhat "hybrid" clinical picture. Furthermore, the fact that current classification systems do not pay specific attention to variations in IELT in penetrative versus nonpenetrative stimulation is less than ideal; is it accurate not to make a distinction between men who ejaculate too quickly in all circumstances and those who have a significantly longer IELT outside of penetration? Is it right to speculate that the same causative mechanisms operate in both conditions?

These questions, combined with the similarities found in the profiles of different subtypes of PE, echo concerns already raised regarding the validity of the current classification system. The restrictiveness of a classification system focused on intravaginal duration of penetration and that does not take other forms of stimulation (e.g., masturbation, oral sex) into consideration has already been raised by Jern et al. (2009); the dubious benefits of limiting duration of penetration to a maximum of one to two minutes for the diagnosis of a pathology distinct from self-reported problematic premature ejaculation with an IELT greater than two minutes have been discussed by Rowland and Kolba (2015) as well as by Perelman (2017). Furthermore, Ventus and colleagues (2017) have argued that IELTs do not appear to remain stable over the life span, casting doubt over the validity of a diagnosis of lifelong PE based on duration of penetration of less than one minute, even in men who report never having had control over their ejaculation. Kempeneers and Desseilles (2014), along with Rowland and Kolba (2015), have objected

that the evidence supporting the maximum cutoff of one to two minutes duration of penetration for the diagnosis of pathological PE is far from robust; and finally, de Carufel (2017), Jannini and Lenzi (2013), and Kempeneers and Desseilles (2014) have highlighted that in the current status of nosographic systems, the categorization of PE problems has little influence over diagnostic decisions.

Conclusions and limitations

Four main conclusions can be drawn from this study: (1) men affected by PE are more distressed by their problem than their partners; (2) trait anxiety as measured by STAI Y-B does not appear to be specifically associated to any form of PE; (3) "dysfunctional" sexual cognitions appear to play a role in PE and ought to be a focus of treatment; (4) the different subtypes of PE—"lifelong," "acquired," "variable," and "subjective"—as proposed by Waldinger's classification do not have specific profiles with regard to trait anxiety, sexual anxiety, or sexual cognitions. Ultimately, this classification system does not seem built on strong evidence.

Nevertheless, these conclusions should be considered in the context of several methodological limitations. The fact that participants' scores were compared with normative data published in 1990 (STAI Y-B) and 2000 (SIQ), rather than with a matched control group of men without PE, somewhat limits the validity of these findings. Firstly, in the absence of a control group, one cannot conclude for certain that the trait anxiety and sexual cognition profiles of participants in this sample reflect their specific experience of PE, rather than unrelated cultural factors. It should also be noted that the prevalence of PE problems in the general population sampled in the development of the reference norms is estimated to be between 10% and 30% (Gao et al., 2014; Serefoglu, 2013). Therefore, differences from the norms found in the current sample may underestimate the "real" differences that might be found if they were compared with a non-PE control group. Finally, the rather unexpected difference in trait anxiety found between study participants recruited in two different contexts raises the possibility that recruitment context and procedures can affect sample characteristics, and that one should be cautious when drawing conclusions regarding what constitutes the actual experience of PE.

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