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# Motivational factors in discussing sexual health with young people with chronic conditions or disabilities

Heleen A. Van der Stege<sup>a</sup>\*, Sander R. Hilberink<sup>a</sup>, Adriaan P. Visser<sup>a</sup> and AnneLoes Van Staa<sup>a,b</sup>

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The objective of this study was to identify determinants of professionals' intention to use the new board game SeCZ TaLK to facilitate sexual health discussions with young people with chronic health conditions and disabilities, and to gauge whether intention led to actual use. A cross-sectional web-based survey of 336 professionals before they received the game sought to measure their intention to use SeCZ TaLK, their attitudes towards discussing sexuality, social professional environment, self-efficacy, opinion on the feasibility of using the game and experience discussing sexuality. Actual use of SeCZ TaLK was assessed at follow-up (N = 105). Professionals with higher selfefficacy and more experience in discussing sexual health were more likely to intend to use the game. At follow-up, intention to use explained 21% of the variance in actual use. SeCZ TaLK fits easily into the daily practice of professionals working in assistedliving and day-care facilities; other professionals experienced greater difficulty integrating the game into their practice. Despite this, SeCZ TaLk was also used across a wide range of settings including in psycho-educational groups, group consultations in hospitals and group therapy in rehabilitation centres. Professionals appreciated the board game SeCZ TaLK, but actual use depended on their own motivation and skills and compatibility with work routines.

Keywords: young people; disability; chronic health conditions; sexual health discussion

# Introduction

Having a somatic chronic condition or a physical disability in childhood can adversely affect social functioning and participation (Sawyer et al. 2007; Lock 1998). This may also be the case when it comes to sexual development and functioning, although it may vary between and within diagnostic categories. Using a comprehensive definition, a chronic condition in childhood is one that is diagnosed according to professional standards and has an expected duration of at least three months or is impossible to cure (Van der Lee et al. 2007).

In a US population-based study, Surís et al. (1996) found that young people with chronic diseases were just as sexually involved as their peers and that the visibility of the condition did not affect sexual behaviour. In contrast, more detailed studies comparing specific target populations with able-bodied or healthy peers demonstrated that adolescents with chronic conditions or disabilities lag behind in sexual development. In the Netherlands, this has been documented for adolescents with cerebral palsy

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(Wiegerink et al. 2006, 2008; Wiegerink, Roebroeck, et al. 2010; Wiegerink, Stam, et al. 2010), spina bifida (Verhoef et al. 2005), end-stage renal disease (Stam et al. 2006) and for young adults with a variety of chronic conditions (Verhoof et al. 2011; Sattoe et al. 2013). Documented milestones in sexual development include sexual interest, dating, romantic relationships and sexual activities such as French kissing, caressing, cuddling nude and intercourse. The consequences of a chronic disease may extend over the course of an individual's life, as was demonstrated in a longitudinal study among adults with longstanding juvenile idiopathic arthritis, who reported having more sexual problems and being less satisfied with their sex life than healthy peers (Packham and Hall 2002).

Apart from direct negative impact on sexual development, young people with chronic conditions may also lack information on general and disease-specific aspects of their sexual health (Sawyer 1996; Sawyer and Roberts 1999; Nixon et al. 2003). Studies among young people with diabetes, for example, have established that they were as involved in sexual relationships as their healthy peers but knew very little about prevention of pregnancy and sexually transmitted diseases (Scaramuzza et al. 2010; Charron-Prochownik et al. 2006). Young people with disabilities also participated in sexual relationships without adequate knowledge or skills to be safe and satisfied (Murphy and Young 2005). The need to incorporate sex education into the treatment and care of all young people with chronic conditions is underlined by the fact that they are more likely to become involved in risk-taking behaviours than their healthy peers (Surís et al. 2008).

According to WHO/UNFPA (2009), young people with chronic conditions or disabilities often face barriers to knowledge and services. These barriers are mostly created by lack of information and of means of communication, as well as health care providers' attitudes, skills and level of knowledge, rather than by the disabilities themselves. General services are usually poorly adapted to persons with disabilities. The sexual health of young people with chronic conditions may be hindered both by disease-specific limitations and by societal barriers. As the development of sexuality and intimate relationships is an all-important process in adolescence, sexual and reproductive health is a major area for those working with young people with chronic conditions and disabilities (Surís, Michaud, and Viner 2004; Murphy and Young 2005; Sawyer et al. 2007).

# Communication about sexual health with young people with chronic conditions

Discussing sexual health is integral to good health care (Surís, Michaud, and Viner 2004; Sawyer et al. 2007) and an educational mission (Oakley et al. 1995) for those involved in young people's health. Health care providers and special education teachers could be expected to provide the education, support and counselling needed to address the implications of chronic conditions for sexual development and romantic relationships. Unfortunately, professionals often feel unprepared or have reservations about discussing sexuality with clients or patients (Gamel et al. 1995; Magnan, Reynolds, and Galvin 2005; Saunamäki, Andersson, and Engström 2010; Rana et al. 2007). They rarely address sexual health during medical consultations (Sawyer and Roberts 1999; Nixon et al. 2003; Robertson et al. 2006; Sawyer, Tully, and Colin 2001). For example, only 29–39% of young people with spina bifida and 30% of their parents reported ever having discussed aspects of sexuality with a physician (Sawyer and Roberts 1999; Sawin et al. 2002).

In a study among 1039 Dutch young people (12–19 years of age) with various chronic conditions, about 50% said it is important to discuss fertility and sexuality in relation to the chronic condition, but 79% claimed that these had never been addressed (Van Staa, Van der Stege, and Jedeloo 2008). However, a survey among health care providers in Dutch

rehabilitation centres and hospitals showed that three-quarters of them found sexuality important to their health care practice. They are also aware that they need to improve their own teams' practice in this respect (Van Staa, Hilberink, et al. 2008).

# The board game SeCZ TaLK

Because specific tools or interventions that aim to facilitate communication concerning sexual health for young people with chronic conditions were not available in the Netherlands, we developed an educational board game called SeCZ TaLK. Through questions and role play, it addresses a broad range of sexual health issues (Van der Stege et al. 2010). The board game SeCZ TaLK is not targeted at a specific group or diagnostic category, but rather at young people with somatic chronic conditions in general. Young people with different chronic conditions often face the same barriers or challenges (Sawyer et al. 2007). Many items or questions in the game pertain to all, irrespective of specific health care needs. Few items are disease-specific and many items promote positive sexual health.

Eighty-five young people with chronic conditions or disabilities pilot-tested the game: 81% felt that SeCZ TaLK made it easier to discuss sexuality and intimate relationships. The professionals involved in the pilot recommended SeCZ TaLK as a means to stimulate communication about sexual health with adolescents with chronic conditions (Van der Stege et al. 2010). Therefore, SeCZ TaLK was disseminated nationally among children's hospitals, paediatric rehabilitation centres and special schools.

# The use of SeCZ TaLK and the ASE model

Starting to use a tool to facilitate discussions about sexual health may be seen as a professional behavioural change. The attitude – social influence – self-efficacy (ASE) model proposes that behaviour can be predicted by an individual's intention, which is determined by three types of motivational factors: attitude, social influence, and self-efficacy (De Vries and Mudde 1998) (Figure 1). The ASE model has been used to explain and predict various health education behaviours and has explained behaviours of teachers and health care providers (Paulussen, Kok, and Schaalma 1994; Bolman, De Vries, and Mesters 2002). Attitude refers to the professional's opinion about the new behaviour, which in this case is discussing sexual health with the aid of a game. Social influence refers to socio-professional environmental factors such as an innovative team climate and support from management or colleagues. Self-efficacy refers to a person's belief in his or her own ability to perform the desired behaviour.

Attitudes, social influences and self-efficacy predict behaviour through the intention to adopt a behaviour. In general, intentions are stronger determinants of behaviour than

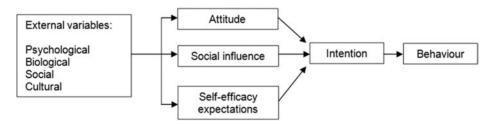


Figure 1. ASE model (De Vries and Mudde 1998).

subjective norms (Armitage and Conner 2001). The ASE model can be extended by including factors that might also affect motivation. In this case, we considered two factors: the expected feasibility of using the board game – both for the clients and for the organisation – and the professional's experience with discussing sexuality with young people.

The professionals in the present study actively requested the board game for use with their patients or clients. Nevertheless, dissemination does not automatically result in implementation of an intervention. Insight into relevant characteristics regarding intention to use the board game and the predictive value of intention for actual use in practice helps to implement a relatively simple intervention to promote positive sexual health among young people with chronic conditions. Therefore, the aims of this study were (1) to explore professionals' intention to use SeCZ TaLK in different care and health care settings and schools for the disabled and (2) to test if the intention to use determines the actual use of SeCZ TaLK in daily practice at follow-up.

#### Methods

### Study design

A descriptive, cross-sectional study was conducted to gather information from professionals about their experiences, motivational factors and intentions concerning communication with young people about sexual health. Professionals who worked with young people with chronic conditions or disabilities and were interested in receiving SeCZ TaLK filled out a web-based questionnaire at baseline. At follow-up (12–18 months later), respondents were contacted again to assess their actual use of the board game in daily practice.

#### Recruitment and participants

In 2010, a nationwide call announcing the release of SeCZ TaLK was sent electronically to professionals from health care settings, long-term care settings and special schools. We used an address file of 800 professionals working in this field who subscribed to a newsletter of the On Your Own Feet Research Group. In addition, SeCZ TaLK was introduced in the news sections of three widely distributed health care news bulletins, three websites focusing on adolescent health care and one website focusing on special education. Professionals were invited to order the game for use in their daily practice. They could obtain SeCZ TaLK for free after filling out a web-based questionnaire. A link to the questionnaire was included in all media messages. No further reminders were communicated. In total, 336 professionals responded.

At follow-up, all professionals who completed the first questionnaire received an invitation through email to fill out a second web-based questionnaire. The invitation stressed that their participation in the study was desired irrespective of their actual use of SeCZ TaLK. For the second questionnaire, non-respondents received a reminder six weeks later.

#### Measures

A web-based questionnaire on discussing sexual health with young people with chronic conditions or disabilities was constructed. The outcome measure was the intention to use SeCZ TaLK within six months (1 = I don't know, 2 = no, I will not, 3 = no, I probably will not, 4 = yes, I probably will, 5 = yes, I certainly will). We dichotomised responses as 'yes, I certainly will' (1) and other (0).

Background variables were gender, age, professional discipline and setting. The questionnaire measured three motivational factors derived from the ASE model: attitude towards discussing sexuality (13 items), social influence by the social professional environment (5 items), support for innovation (team climate) (3 items) and self-efficacy, that is, the perception of one's capability to complete specific goals or tasks such as facilitating a discussion on sexual health (7 items). All ASE scales except the support for innovation scale (team climate) consisted of items using a six-point Likert response format (1 = strongly disagree, 2 = disagree, 3 = mildly disagree, 4 = mildly agree, 5 = agree, 6 = strongly agree). Eight items in the attitude scale and four items in the self-efficacy scale were taken from the Sexual Attitudes and Beliefs Survey (Reynolds and Magnan 2005). Team climate was measured with a subscale from the Team Climate Inventoryshort version (Strating and Nieboer 2009), consisting of three items using a five-point Likert response format (1 = strongly disagree, 2 = mildly disagree, 3 = not agree or disagree, 4 = mildly agree, 5 = strongly agree). The perceived feasibility of the board game was measured with four items using a six-point Likert format (1 = strongly disagree, 2 = disagree, 3 = mildly disagree, 4 = mildly agree, 5 = agree, 6 = stronglyagree). Experience was measured with one question: 'How often do you discuss sexuality and relationships in your work with adolescents? (1 = never, 2 = seldom, 3 = not much,4 = regularly, 5 = often). Appendix 1 presents all items.

Table 2 shows the reliability, means, standard deviations and ranges of the scales and items in the questionnaire. The ASE scales had sufficient internal consistency, with Cronbach's  $\alpha$  ranging from 0.70 to 0.86. The internal consistency of the feasibility scale was moderate (Cronbach's  $\alpha = 0.62$ ).

The follow-up web-based questionnaire addressed actual use of SeCZ TaLK as well as impeding and facilitating factors. Actual use of the board game (0 = no, 1 = yes) and the frequency of use of the board game were measured.

# Analysis

Descriptive statistics were applied. All tests were two-tailed, and p values of < 0.05 were considered to be statistically significant. Selective response to the follow-up questionnaire was tested with  $\chi^2$  tests and t-tests. Reliability (Cronbach's  $\alpha$ ) of scales and correlations (Pearson, Spearman,  $\tau$ -b) were calculated. To explore the determinants of the intention to use SeCZ TaLK, variables were entered into a stepwise multivariate logistic regression model. Odds ratios and 95% confidence intervals were calculated. Nagelkerke  $R^2$  was used to express the explained variance of three blocks [(1) background characteristics, (2) feasibility and experience with discussing sexual health and (3) attitudes, social influence and self-efficacy]. Final model fit was checked using the Hosmer–Lemeshow test. The actual use of SeCZ TaLK at follow-up was predicted by the intention to use the board game through logistic regression analyses. All data were analysed using IBM SPSS Statistics 20.

#### Results

#### Sample

Because the recruitment strategy was not personalised, no exact response rates could be determined at baseline. A total of 336 professionals from 281 organisations ordered the board game SeCZ TaLK and completed the questionnaire. The vast majority were female (86.9%). The mean age was 40.5 years (SD 10.8 years, range 20–68 years). Professionals

came from different settings. The most frequent setting was school (28.6%), followed by assisted-living or day-care facility (20.5%) and outpatient clinic or hospital (14.1%). A little over one-quarter (25.9%) worked exclusively with older adolescents (16 years and older), while most worked with children of all ages (72.6%). Table 1 summarises professionals' main characteristics.

At follow-up, 105 of the 336 professionals filled out the questionnaire. The overall response rate was 31.2%. Men complied less often with the follow-up measurement (15.7% vs. 7.5%;  $\chi^2 = 4.4$ , df = 1, p = 0.037), and follow-up respondents were older (39.5 [SD 10.3] vs. 42.7 [SD 11.6] years, t = -2.5, df = 334, p = 0.012); no differences appeared regarding professional discipline, setting, ASE variables, perceived feasibility and intention to use.

# Intention to use SeCZ TaLK

In responses to the baseline survey, professionals were positive about the game (Appendix 1: items 29–32): 87.2% found it to be useful, while 28.1% agreed and 63.2% strongly agreed with the statement that SeCZ TaLK would facilitate discussions about sexuality and intimate relationships. In addition, 24.4% agreed and 69.0% strongly agreed with the statement that the game fit schedules or routines very well. More than half of the professionals (54.8%) reported that they intended to use SeCZ TaLK within six months; 33.3% said they probably would; 1.8% did not intend to use it; and 10.1% did not know yet (Appendix 1: item 34). Most professionals said that they were experienced in discussing sexuality in relation to disability in their work with adolescents: 9.2% never or seldom discussed sexuality, 21.4% sometimes, 40.5% frequently and 28.9% very often (Appendix 1: item 33). Professionals had a positive attitude towards the importance of discussing sexual health (mean 65.8; SD 7.5) and felt self-efficacious in applying SeCZ

Table 1. Background characteristics of survey participants (n = 336).

Variable	Professionals
Gender (female) (n (%)) Age in years (mean (SD))	292 (86.9) 40.5 (10.8)
Setting (n (%)) Outpatient clinic/hospital Rehabilitation centre School Assisted-living and day care facility Patient organisation Psychology centre or social work Other	47 (14.1) 26 (7.7) 96 (28.6) 69 (20.5) 22 (6.5) 44 (13.1) 32 (9.5)
Discipline (n (%)) Medical professionals Allied health care and psychosocial care Education Professional in assisted-living and day care facility Management, consultants and others	40 (11.9) 95 (28.3) 70 (20.8) 41 (12.2) 90 (26.8)
Age of client population (n (%)) Range < 10 to 18 + years Only 16 + years Missing	244 (72.6) 87 (25.9) 5 (1.5)

Table 2. Scales and single item variables.

	No. of items	Scores on Likert scale	N	Cronbach's $\alpha$	M	SD	Theoretical range	Actual range
ASE scales								
– Attitude								
Attitude towards	13	6	315	0.79	65.80	7.45	13 - 78	43 - 78
discussing sexuality  – Social influence								
Social professional environment	5	6	333	0.70	26.20	5.75	6–36	10-36
Innovative team climate  – Self-efficacy	3	5	336	0.86	12.87	2.12	3-15	6-15
Self-efficacy of professional	7	6	331	0.79	32.35	5.43	7-42	18-42
External factors								
Feasibility of the game	4	6	334	0.62	21.88	2.45	4-24	14 - 24
Experience in discussing sexuality (1 = never, 5 = very often) (single item)	1	5	336	_	3.88	0.95	1-5	1-5
Outcome measure Intention to use SeCZ TaLK within six months (1 = I don't know, 5 = yes, I certainly will) (single item)	1	5	336	-	4.22	1.19	1-5	1-5

TaLK (mean 32.4; SD 5.4). Professionals experienced their social professional environment as supportive (mean 26.2; SD 5.7) and innovative (mean 12.8; SD 2.1) (see Table 2).

Table 3 shows the inter-correlations of the determinants. Most of the correlations were small. However, attitude, social support and self-efficacy scores inter-correlated moderately to strongly.

To identify factors that best determined the intention to use the board game, a multivariate model was tested (Table 4). Only the professional discipline contributed to the model. We controlled for gender, age and professional disciplines (accounting for 9.5% of the variance,  $\chi^2 = 22.6$ , df = 6, p = 0.001). A secondary analysis showed that gender and age explained no more than 0.4% of the variance ( $\chi^2 = 0.8$ , df = 2, p = 0.647). In the second step, we entered perceived feasibility of the board game and experience with discussing sexual health ( $\chi^2 = 54.6$ , df = 2, p < 0.001,  $R^2$ -change = 0.20); both factors proved positively associated with intention. The third step added attitude, team climate, social support and self-efficacy to the equation ( $\chi^2 = 15.0$ , df = 4, p = 0.005,  $R^2$ -change = 0.05) and found that only self-efficacy contributed significantly. The final model thus consisted of nine determinants explaining about 35% of the variance ( $\chi^2 = 92.2$ , df = 12, p < 0.001; Hosmer–Lemeshow test:  $\chi^2 = 5.7$ , df = 8, p = 0.682). These were: gender, age, discipline, feasibility of the game, experience in discussing sexual health, attitude towards discussing sexuality, social professional environment, innovative team climate and self-efficacy.

Table 3. Inter-correlations of the determinants.

		2	3	4	5	9	7	∞	6	10	11	12	13
1. Gender 2. Age	-0.11	ı											
Discipline 3. Medical professionals 4. Allied health care 5. Education 6. Assisted-living and day care 7. Management, consultants and others 8. Age of client population	0.03 0.11 - 0.02 - 0.04 - 0.08 0.01	$\begin{array}{c} 0.07 \\ -0.06 \\ 0.10 \\ -0.11 \\ 0.00 \\ -0.12 \end{array}$	0.05	0.11+	_ _ _  0.12+	0.28*	0.00	I					
External factors 9. Feasibility of the game 10. Experience in discussing sexuality	$0.13^{+}$ $0.13^{+}$	0.02	$-0.11^{+}$ $-0.16^{^{\wedge}}$	$-0.05 \\ 0.02$	0.09	0.05	0.00	$\begin{array}{c} 0.02 \\ 0.16^{^{\wedge}} \end{array}$	0.18	I			
ASE variables 11. Attitude towards discussing sexuality 12. Social professional environment 13. Innovative team climate 14. Self-efficacy	$0.19^{^{\circ}}$ $0.06$ $0.07$ $0.10$	$-0.08 \\ 0.07 \\ -0.01 \\ -0.09$	$\begin{array}{c} -0.14^{+} \\ -0.11^{+} \\ -0.06 \\ -0.20^{^{\diamond}} \end{array}$	0.03 - 0.09 - 0.08 0.09	0.05 0.01 0.01 0.10	$0.13^{+}$ $0.12^{+}$ $0.16^{\circ}$ $0.06$	$\begin{array}{c} -0.07 \\ 0.07 \\ 0.01 \\ -0.08 \end{array}$	0.09 0.06 0.10 0.06	0.39* 0.28* 0.25* 0.34*	0.52* 0.34* 0.22* 0.46*	0.42* 0.31* 0.63*	0.37*	0.28*

Notes: Pearson correlation (scale by scale), Spearman's  $\rho$  (dichotomy by scale),  $\tau$ -b (dichotomy by dichotomy). 
-, Not tested. 
\* $\rho < 0.001$ ;  $^{\circ}\rho < 0.01$ ;  $^{\circ}\rho < 0.05$ .

Table 4. Determinants of the intention to use SeCZ TaLK ( $n = 307$	7).
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Variable	Odds ratio	95% confidence interval	$R^2$
Background			0.095***
Gender (female)	1.51	0.75 - 3.05	
Age in years	1.01	0.99 - 1.03	
Discipline			
Medical professionals	0.54	0.24 - 1.19	
Allied health care and psychosocial care	0.85	0.46 - 1.58	
Education	1.92	0.96 - 3.84	
Living and day care	3.71*	1.51 - 9.10	
Management, consultants and others	Ref.		
External factors			0.203***
Feasibility of the game	1.34***	1.20 - 1.50	
Experience in discussing sexual health	1.86***	1.39-2.49	
ASE factors			0.049**
Attitude towards discussing sexuality	1.01	0.96 - 1.06	
Social professional environment	1.03	0.97 - 1.09	
Innovative team climate	0.99	0.87 - 1.14	
Self-efficacy	1.10**	1.03-1.18	
Model			0.347***

Note: Stepwise multivariate logistic regression analysis.

Professionals from assisted-living and day-care facilities appeared to have a greater intention to use the board game (OR = 3.45, 95% CI = 1.24–9.61). Higher perceived feasibility (OR = 1.25, 95% CI = 1.11–1.42) and having experience with discussing sexual health (OR = 1.42, 95% CI = 1.01-1.99) also contributed to greater intention. Of the ASE variables, only a higher self-efficacy (OR = 1.10, 95% CI = 1.03-1.18) additionally determined the intention to use SeCZ TaLK.

# Actual use of SeCZ TaLK in daily practice

At follow-up, 50.5% of the 105 professionals indicated that they had actually used SeCZ TaLK. Of these users, 15.0% used the game once, 28.3% twice, 11.3% three times, 13.2% four times and 32.1% five times or more. Of these 105 professionals, 52.3% had reported in the first survey that they intended to use it, which appeared to be a determinant for actual use (OR = 5.74, 95% CI = 2.47-13.31, Nagelkerke  $R^2 = 0.21$ ).

#### Discussion

#### Intention to use

Not all professionals working with young people with chronic conditions or disabilities discuss sexuality and intimate relationships. A study by Magnan, Reynolds, and Galvin (2005) among nurses in health care settings showed that nearly half of them felt uncomfortable with addressing sexuality – mainly because they perceived that young people do not expect health care providers to address sexuality concerns. Our sample consisted of professionals who responded to a call for obtaining SeCZ TaLK, which suggests that respondents were amenable to discussing sexual development with young people. We expected that all participants had a strong intention to use the game; however,

<sup>\*</sup>p < 0.05; \*\*p < 0.005; \*\*\*p < 0.001.

even in this self-selected sample, the professionals were very cautious: only 55% were very certain to use the game, and 45% had doubts to some extent. Despite their generally positive attitude, professionals with less experience in addressing sexual health issues may have felt reluctant to use the game. More experienced professionals were more inclined to use SeCZ TaLK.

Reluctance to use the game also could be explained by a lack of opportunity. Professionals in assisted-living and day-care facilities showed the greatest intention to use the board game. They may have more time to interact with their clients and undertake group activities. In these settings, it is easier to organise a game session and to integrate SeCZ TaLK into the daily routine. For hospitals, rehabilitation centres and special schools, this would probably require organisational adaptations. In clinical settings and rehabilitation centres, the board game could be introduced as a psycho-educational group intervention (Last et al. 2007; Scholten et al. 2013; Hilberink et al. 2013). Shared medical appointments (group consultations) or group education sessions would also provide an opportunity to use the game (Rijswijk et al. 2010).

The opportunity to use the game may depend on organisational factors such as (lack of) time, availability of a group of young people willing to discuss this topic, support from management and colleagues, school curriculum and protocol demands. A review of determinants of innovation within health care organisations showed that lack of time greatly impeded innovation (Fleuren, Wiefferink, and Paulussen 2004).

#### Multivariate determinants

Not all motivational factors were multivariately associated with the intention to use the board game, although they correlated in bivariate analyses. Attitudes and social influence did not seem to determine the intention state. This might be explained by the fact that the professionals who participated in the study ordered the board game to address sexuality. This self-selected sample of professionals probably was already convinced of the importance of communicating about sexual health. Hence, their attitudes were positive, regardless of their intended behaviour. Self-efficacy, however, made a difference, contributing to the intention to use the board game. As transitions from motivation to action are best predicted by an increase in self-efficacy (De Vries and Backbier 1994), implementation of SeCZ TaLK in organisations might benefit from strategies to enhance the professionals' self-efficacy. Training professionals in sex education and encouragement of discussing sexuality may support the actual use of SeCZ TaLK.

The finding that the professionals that were more experienced in discussing sexual health showed greater motivation to use SeCZ TaLK suggests that learning by trial might be a strategy to promote self-efficacy. Although SeCZ TaLK is easy to use and comes with a comprehensive manual, professionals who feel uncomfortable talking about sexual issues may be reluctant to try the game or may find it hard to supervise the game and act as a facilitator. Because the facilitator's role is crucial, a short training session might be helpful for these professionals. Other studies have shown that health care professionals would like to be better educated and skilled in working with adolescents with chronic conditions (McDonagh et al. 2006).

# External factors

External factors are assumed to influence behavioural intention through the following determinants: attitude, social influence and self-efficacy (De Vries and Mudde 1998). The

adopted ASE model only moderately predicted the intention to use. Most of the variance was explained by the external variables entered in the model: the experience of the professional in discussing sexuality and the perceived feasibility of the game. The determinants attitude and social influence did not seem relevant, which is in line with the assumption that our sample was already amenable to applying SeCZ TaLK. Perhaps other relevant variables were not identified. The ASE model has been expanded to the Integrated Change Model (I-Change) (De Vries et al. 2005), assuming that these three motivational factors are determined by various distal factors (e.g. awareness factors, information factors and predisposing factors). Applying the I-Change model could give insight into a strategy aimed at the intention to apply SeCZ TaLK in daily practice.

# Intention as determinant for actual use at follow-up

It is generally assumed that intention state is a major determinant of behaviour. Although the meta-analyses of Armitage and Conner (2001) addressed the Theory of Planned Behaviour (Ajzen 1991), which differs from the ASE model, they found that intention to change behaviour was a stronger predictor for actual behavioural change than perceived behaviour control (a construct related to self-efficacy). Although we found a convincing association between intention and actual use at long-term follow-up, approximately 80% of the variance was not explained by the intention state. Evidence shows that implementation of health care innovations can be hampered by social and organisational contexts (Grol and Wensing 2004). Insight into these facilitating and impeding factors could contribute to a strategy for large-scale implementation of SeCZ TaLK.

#### Limitations

The use of a convenience sample of motivated professionals working in health care and education may limit the generalisability of the findings of this study. However, these motivated professionals were recruited from 281 different organisations across the Netherlands, which shows that a broad range of professionals working with adolescents with chronic conditions are interested in tools like this. A limitation in the study is that, while the variable 'having sufficient time to play the game' was included in the feasibility scale, it appeared to be an important determinant of the intention to use SeCZ TaLK. Another limitation is that we did not use a validated measure to assess the professionals' intention. This may have hampered the identification of associations with the ASE factors. However, according to the ASE model, attitudes, social influence and self-efficacy increase according to a so-called Ø pattern (De Vries and Backbier 1994), showing that transitions from an unmotivated to a motivated phase are best predicted by attitudes, while transitions from motivation to action are best predicted by self-efficacy. The association found with self-efficacy seems to confirm this because all professionals in our study were already interested in the board game. Moreover, intention appeared to be a strong determinant of actual use, which proves the predictive validity of our measure.

#### Conclusion

We studied the motivational factors determining the intention to use SeCZ TaLK to facilitate discussions on sexual health. Having the opportunity to use the board game in daily routines appeared to be an important determinant. Professionals working in assisted-living groups and day-care facilities had the strongest intention to use the game.

In addition, experience in discussing sexual health, perceived feasibility of the board game in daily routines and self-efficacy were significant determinants. Greater self-efficacy and having experience in discussing sexual health seem to enhance the intention to use SeCZ TaLK in daily routines. The implementation of SeCZ TaLK deserves further evaluation. A successful strategy to introduce innovations to health care requires insight into determinants that may facilitate or impede this. A well-designed evaluation study will establish actual use, feasibility and experience with SeCZ TaLK in health care, rehabilitation and education settings and the potential for sustained use.

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Appendix 1. Questionnaire on discussing sexual health for professionals working with adolescents with chronic conditions or disabilities

	%,	%,	- %	+ %	%,++	%,+++	z	M	SD
Attitude 1. Discussing relationships and sexuality is	0.3	0.0	2.4	6.5	24.1	66.7	336	5.54	0.76
necessary for adolescents I work with.  2. Sufficient attention is being paid to relationships and sexuality for adolescents	24.8	37.0	21.5	10.4	5.4	6.0	335	4.63	1.17
with chronic conditions/disabilities.  3. Adolescents I work with find it important to	35.6	39.8	12.6	7.8	2.7	1.5	333	4.93	1.12
discuss sexuality and retailonships.  4. Adolescents I work with want to have information concerning sexuality and	0.0	3.0	9.9	21.2	36.4	32.8	335	4.90	1.03
relationships.  5. For adolescents I work with it is important to discuss safe sex, pregnancy and indicating own	6.0	6.0	3.3	6.0	22.5	66.5	334	5.48	0.92
boundaries.  6. Adolescents expect health care providers to ask	3.0	7.1	15.5	23.2	25.3	25.9	336	4.38	1.36
about their sexual concerns.  7. Sexuality should not be discussed only if initiated by the adolescents with chronic	18.6	37.8	18.0	12.6	8.8	4.5	333	4.32	1.37
conditions.  8. Discussing sexuality is essential to adoles-	0.0	9.0	2.1	9.4	28.1	59.8	331	5.44	0.79
9. I make time to discuss sexual concerns with	2.1	6.9	7.5	15.0	32.9	35.6	334	4.77	1.30
10. Giving an adolescent permission to talk about	1.2	3.6	5.1	12.3	28.2	49.5	333	5.11	1.15
sexual concerns is my responsiounty.  11. Hospitalised adolescents are interested in sexuality.	53.6	30.2	9.9	9.9	1.2	1.8	333	5.23	1.09
								(Continued)	(panu

	%,	%,	- %	%, +	%,++	%,+++	z	M	SD
12. Sexuality is not too private an issue to discuss	63.4	26.2	6.3	6.0	2.1	1.2	336	5.44	0.95
will adolescents.  13. Diseases and treatments can have an effect on sexuality.	0.9	0.3	0.0	2.1	20.8	75.9	336	5.69	89.0
Social professional environment  14. We are on the same wavelength in our team concerning discussing sexuality and	9.0	5.7	11.0	28.3	33.0	21.4	336	4.52	1.14
15. I talked to my colleagues about using SeCZ Tal. R	14.9	11.0	11.0	18.2	23.2	21.7	336	3.89	1.72
16. Lean get advice from my team when I want to	6.5	7.7	8.6	16.4	24.1	35.4	336	4.50	1.55
17. Management is aware that I intend to use SeCZ Tal K	11.3	12.2	8.0	10.7	24.7	33.0	336	4.24	1.76
18. Management supports the initiative to discuss sexuality and relationships.	1.2	2.4	5.4	8.4	26.0	9.99	334	5.25	1.10
Support for innovation (team climate) 19. People in this team are always searching for	0.0	2.1	9.5	34.5	53.9		336	4.40	0.74
120. The take the time needed to develop new	6.0	3.0	11.6	39.9	44.6		336	4.23	0.83
10cas. 21. People in my team cooperatively help develop and apply new ideas.	0.3	2.7	14.3	39.6	43.2		336	4.23	0.81
Self-efficacy 22. I have enough knowledge and skills to	1.5	5.1	8.9	21.7	38.4	26.5	336	4.70	1.16
23. It can facilitate the game without special regime.	22.3	34.2	23.5	13.1	8.4	2.1	335	4.50	1.22
24. I have a lot of experience in discussing sexuality and relationships.	2.7	10.1	6.6	19.7	32.8	24.8	335	4.44	1.37

25. I am more comfortable talking about sexual issues with adolescents I work with than are most of my colleagues.	5.4	14.0	16.7	30.7	20.9	13.1	335	3.89
9.0		1.2	6.3	15.8	47.0	29.2	336	4.95
0.3		1.2	8.9	17.9	44.3	29.5	336	4.93
37.0		37.6	14.0	9.3	1.8	0.3	334	4.98
9.0		9.0	1.8	8.6	26.2	61.0	336	5.43
3.6		1.2	1.8	5.7	25.3	62.5	336	5.35
0.3		2.1	9.0	3.6	24.4	0.69	336	5.56
0.0		0.0	2.1	9.9	28.1	63.2	334	5.52
Never		Seldom	Sometimes	Frequently	Often	Z	M	SD
6:0		8.3	21.4	40.5	28.9	336	3.88	0.95
Don't know 10.1	≱	No 0.0	Probably not 1.8	Probably 33.3	Yes, certainly 54.8	N 336	M 4.22	SD 1.19

Notes: ---, Strongly disagree; --, disagree; -, mildly disagree; +, mildly agree; ++, agree; +++, strongly agree.