Impact of attitudes, social norms, perceived behavioural control and intention on risky behaviour on Facebook: A regression analysis

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Abstract

Cyberstalking increasingly affects users of Facebook. Users' risky online behaviour is one reason why this cybercrime occurs thus it is important to identify ways to reduce this conduct. The aim of this study was to explore whether the Theory of Planned Behaviour's variables attitude, social norm and perceived behavioural control predict intention to engage in risky online behaviour and whether perceived behavioural control and intention predict the behaviour itself. One hundred and fifty Facebook users, comprising 35 males and 115 females with a mean age of 20.51 years (SD=1.89), were recruited using convenience sampling. A novel questionnaire was developed for this correlational study to assess the Theory of Planned Behaviour's variables, participants' online behaviour and their cyberstalking experiences. Facebook and Email were used as distribution methods. In linear regression analyses, all individual predictors of both intention and behaviour emerged as significant. In multiple regression analyses, two out of three predictors (attitude and social norm) significantly accounted for 63% of the variance in intention whereas both perceived behavioural control and intention significantly accounted for 11% of the variance in behaviour. The Theory of Planned Behaviour can be used to understand risky online behaviour on Facebook. Significant predictors were identified which, if targeted, may reduce users' engagement in risky online behaviour and the risks associated with it.

KEY WORDS	THEORY OF PLANNED BEHAVIOUR	ONLINE BEHAVIOUR	FACEBOOK	CYBERSTALKING

1. INTRODUCTION

1.1 Overview

As a result of the huge growth in user numbers on Social Networking Sites (SNS) (e.g. Facebook reported one billion monthly active users in October 2012; Facebook, 2012), SNS-related issues like cyberstalking have become more relevant to society. Risky online behaviour on these sites is linked to an increased likelihood of becoming a cyberstalking victim (Henson *et al.*, 2011). Since this cybercrime often has a negative impact on its victims (Nobles *et al.*, 2009), the online behaviour associated with its occurrence has to be explored more thoroughly.

Considering the prediction of any type of behaviour, the Theory of Planned Behaviour is one of the most prominent models linking cognitions and behaviours (Ajzen, 2011). Thus, this correlational study aims to predict risky online behaviour on Facebook using this theory's variables (attitude, social norm, perceived behavioural control and intention). Significant predictors are considered as targets for behaviour change which, if successfully changed, can minimise the prevalence of this behaviour and its consequences.

1.2 Cyberstalking

Cyberstalking behaviours have similar characteristics as stalking behaviours, which are described as repetitive, unwanted and harassing (Tjaden & Thoennes, 1998). Cyberstalking refers to the particular context of computer communications including email, instant messaging or Social Networking Sites (SNS) (Finn, 2004; National Centre for Cyberstalking Research NCCR, 2011). Due to the frequent use of the Internet, there is an increase in the occurrence of cyberstalking incidents (Holt & Bossler, 2008) with the majority of victims being aged between 18 and 30 years (Working to Halt Online Abuse WHOA, 2012). Victims often experience negative psychological effects such as fear and Posttraumatic Stress Disorder and negative physical effects such as sleep disturbances (Nobles *et al.*, 2009).

SNS are a particularly useful tool for cyberstalkers because the posted information of users is easily accessible (Perry, 2012). The online setting allows high levels of anonymity enabling uninhibited stalking behaviour without having to account for it (Ellison, 2001). Statistics show that cyberstalking increasingly begins on SNS: in the US, stalking was initiated on Facebook in 5.5% of all stalking cases in 2005 and in 16% in 2011 (WHOA, 2012). The vast majority of SNS users are young adults (Kim *et al.*, 2010; Pelling & White, 2009), thus, in terms of age, the main user group of SNS is the most likely group of cyberstalking victims.

1.3 Behaviour on SNS

SNS like Facebook and MySpace are websites which connect people in online communities (Kim *et al.*, 2010). Interaction starts by sending friend requests (Henson *et al.*, 2011); reading and commenting these friends' updates are the main actions (Hinduja & Patchin, 2008; Kim *et al.*, 2010). Considering users' personal profiles, studies revealed that the majority includes personal information such as full name, current city, current school/employer as well as photos (Henson *et al.*, 2011). Providing such identity information is considered as risky since it is presented to a large audience online increasing the risk of information being misused for unintended purposes (Perry, 2012). Another risk factor is geo-location included in pictures or updates. By giving information about the current whereabouts there is the risk of online stalking leading to offline stalking if the stalker decides to make use of this information (Perry, 2012).

In order to increase control over who can access a profile, SNS offer the use of privacy settings to its users (Kim *et al.*, 2010), hence, there is the ability to set the account to private and to determine who can access private information (Henson e*t al.*, 2011). Overall, the use of this option has significantly increased: in 2006 11.5% and in 2009 37% of MySpace users restricted their profile (Patchin & Hinduja, 2010). However, privacy settings have to be updated regularly, since SNS providers often make changes to these without informing the user (Perry, 2012).

Although there are several possibilities to avoid risky online behaviour, for example by restricting the profile, some SNS users still engage in it. Thus it was aimed to explore whether this risk behaviour can be better understood by applying the Theory of Planned Behaviour.

1.4 The Theory of Planned Behaviour

The Theory of Planned Behaviour (TPB) is a social-cognition model explaining the relationship between cognitions and behaviour in order to understand, predict, and change this behaviour (Ajzen, 1991; Trafimow *et al.*, 2002). TPB is an extended version of the Theory of Reasoned Action (TRA) developed by Fishbein and Ajzen (1975, cited in Ajzen, 1991). According to TRA, intention, i.e. the motivation to perform certain behaviour, is behaviour's immediate antecedent and the key predictor of human behaviour (Sheeran, 2002). Intention indicates how much effort an individual will put into the successful performance (Ajzen, 1991). Attitude and social norm are the determinants of intention. Attitude is the either positive or negative evaluation of performing particular behaviour (Armitage & Conner, 2001; Sutton, 1998) whereas social norm is the perception of social pressure to either perform the behaviour or not (e.g. Ajzen, 1991; Armitage & Conner, 2001). Therefore, attitude and social norm predict intention, whereas intention predicts behaviour.

Since TRA only refers to behaviour over which an individual has complete control, TPB was developed by Ajzen (1991) in order to account for behaviour outside one’s control by including the variable Perceived Behavioural Control (PBC) (Ajzen, 1991). While the above mentioned variables intention, attitude and social norm do not change in TPB, PBC is added as the perceived difficulty or ease regarding behaviour performance (Ajzen, 1991) and includes factors like ability and opportunity (Rhodes *et al.*, 2006).

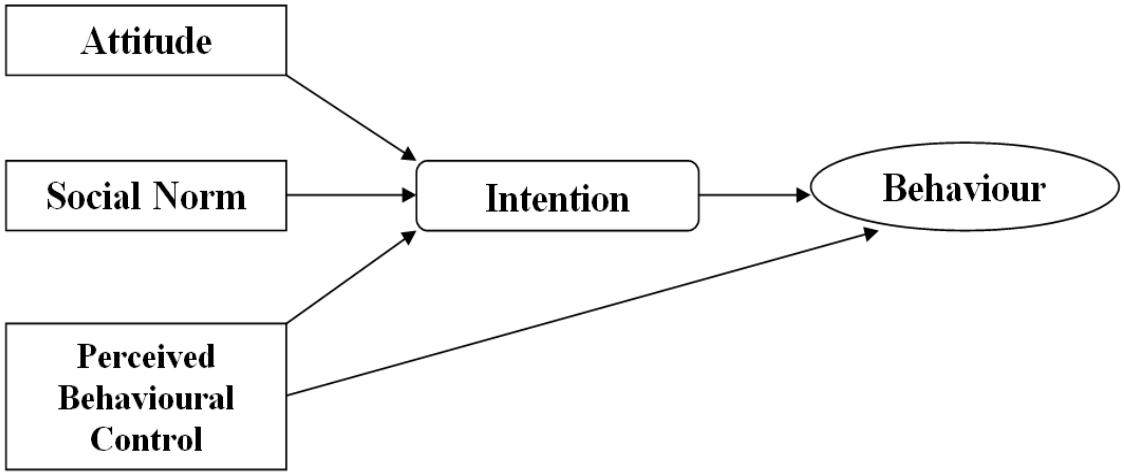
In an extended version of TPB, different beliefs are antecedents of these three variables: normative beliefs (social norm), behavioural beliefs (attitude) and control beliefs (PBC) (Ajzen, 1991). However, only the traditional version was applied in this study in order to identify whether this theory is generally applicable to this online behaviour or not.

Along with attitude and social norm, PBC determines intention, but the relative importance of each variable in the prediction of intention varies across behaviours (Ajzen, 2005). Attitude has been identified as the best predictor followed by PBC and social norm (Ajzen, 2005). Generally, the greater one’s PBC, the more favourable one’s attitude and the higher the social pressure, the stronger is the intention to perform the behaviour (Ajzen, 1991). Thereby, PBC has an indirect influence on behaviour mediated by intentions: s/he has stronger intentions to perform the behaviour when s/he feels to have control over this performance (Notani, 1998; Sheeran, 2002).

Importantly, PBC is not a measure of *actual* control (which really is the immediate determinant of behaviour), since this is difficult to examine experimentally (Armitage & Conner, 2001). However, if *perceived* behavioural control is an accurate reflection of actual control, it serves as a proxy and directly predicts behaviour over and above the effects of intention (Ajzen, 2002). Thus PBC has both a direct and indirect effect on behaviour.

The assumptions made by traditional TPB can be summarised as follows (see Figure 1): 1) attitude, social norm and PBC individually and combined predict intention, 2) PBC predicts behaviour, 3) intention predicts behaviour, and 4) PBC and intention together predict behaviour.

Figure 1: The Theory of Planned Behaviour and its variables' relationships (based on Ajzen, n.d.)



Since self-reports have been found to be more accurate measures of behaviour than observation (McEachan *et al.*, 2011), TPB studies are generally based on such self-reports. Questionnaires usually have a similar structure based on Ajzen's (n.d.) template: the wording but not the structure of the questions is changed in order to refer to the particular behaviour under investigation.

In terms of efficacy, TPB has been repeatedly found to account for more variance in intention than TRA: PBC accounts for additional variance over and above social norm and attitude (on average 6%; Armitage & Conner, 2001; Madden *et al.*, 1992). Meta-analyses established that, on average, TPB accounts for 36% variance in intention and for 27% variance in behaviour (Armitage & Conner, 2001; Godin & Kok, 1996; Hagger *et al.*, 2002; McEachan *et al.*, 2011).

The intention-behaviour gap (i.e. the fact that TPB accounts for much more variance in intention than in behaviour) is one major issue of criticism (Sheeran, 2002). Similarly, the sufficiency assumption claims that TPB does not account for *enough* variance (Ajzen, 2011). This is why several researchers use extended versions of TPB by adding variables such as past behaviour (Conner & Armitage, 1998). Even though additional variance is explained over and above TPB predictors (e.g. past behaviour explains on average additional 7.2% in intention; Conner & Armitage, 1998), continuously adding predictors is not ideal: Sutton (1998) claims that explaining that amount of variance using such a small number of predictors is more efficient than explaining this variance using a large number.

Values around 40% and 30% for intention and behaviour, respectively, are very strong evidence for the efficacy of TPB even though the variance explained is substantially less than 100%.

While TPB has often been applied to health-promoting behaviours like physical activity (e.g. Hagger *et al.*, 2002), healthy eating (Armitage & Conner, 1999; Povey *et al.*, 2000) or condom use (Sheeran, & Taylor, 1999), it has also been applied successfully to health-related risk behaviours like risky weight-related behaviours (Corry, 2008). TPB is also applicable to different contexts: Yao and Linz (2010) predicted online privacy self-protection behaviour of computer users. It was found that intention was the best predictors of this particular online behaviour. Also in an online context, Pelling and White (2009) successfully predicted participants' use of SNS with intention; attitude and social norm combined predicted intention while PBC was a non-significant contributor to this model. Above-mentioned studies show that TPB is not limited to health behaviour but it is transferable to risky behaviours and to an online context.

1.5 Rationale

Risky online behaviour has been found to increase the risk of becoming a victim of cybercrime: users engaging in risk behaviours such as visiting unknown websites or not having protection software installed are more likely to experience computer viruses and malware (Choi, 2008; Ngo & Paternoster, 2011). Furthermore, Henson *et al.* (2011) found a significant link between risky behaviour on SNS and the risk of cybercrime victimisation. They identified behavioural risk factors which increase interpersonal victimisation (e.g. online harassment). One of the significant risk factors was the number profile updates per week. The risk factor identified as strongest predictor of online victimisation was adding strangers as friends which increased the likelihood of victimisation 2.6 times. Thus, even though a profile might be set to private, this becomes much less effective when strangers, who can access one's profile, are added: according to the NCCR (2011), in 22% of cyberstalking cases the stalker was a complete stranger to the victim.

Although TPB has been applied to a variety of behaviours, application to such an online context and to SNS is rare. Furthermore, although behavioural risk factors for increased cybercrime victimisation on SNS have been identified (Henson *et al.*, 2011), it has not yet been explored whether and how these risk behaviours can be predicted. Since cyberstalking incidents are still rising (Lwin *et al.*, 2012), risky behaviour related to these has to be explored more thoroughly. Thus, the current correlational study applied TPB to predict risky online behaviour on the particular SNS Facebook, thereby expanding the knowledge of its usefulness for understanding this behaviour.

Since there is an established link between risky online behaviour and becoming a victim of cybercrime, predicting this behaviour helps to identify targets (i.e. significant predictors) which, if successfully changed, reduce this risk of cybercrime. If the prevalence of cyberstalking can be reduced by changing Facebook users' online behaviour, users will also be protected against its negative consequences.

Regression analyses were performed in order to predict the behaviour in question. Based on previous research, the following hypotheses were identified:

Hypothesis 1: Attitude, social norm and perceived behavioural control individually predict intention to engage in risky online behaviour on Facebook (H_1).

Hypothesis 2: Together, attitude, social norm and perceived behavioural control predict intention to engage in risky online behaviour on Facebook (H_2).
Hypothesis 3: Perceived behavioural control and intention individually predict risky online behaviour on Facebook (H_3).
Hypothesis 4: Together, perceived behavioural control and intention predict risky online behaviour on Facebook (H_4).

2. METHOD

2.1 Participants

In order to meet the inclusion criteria, participants had to be aged 18-25 years, to have a Facebook account and to have basic knowledge of the English language. The age range was determined based on the characteristics of the main groups of SNS users and cyberstalking victims. Anyone younger than 18 or older than 25 years, not having a Facebook account and/or having difficulties understanding the questions due to language barriers was excluded.

Participants were recruited via convenience sampling. A minimum of 90 participants was determined based on the number of predictors (Field, 2005). Among the 150 participants who actually took part, 23.3% (N=35) were male and 76.7% (N=115) were female. On average, they were aged 20.51 years (SD=1.89). The majority were students (97.3%, N=146) whereas two participants were professionals (1.3%) and two participants preferred not to answer (1.3%). Everyone confirmed to have a Facebook account.

2.2 Design

Using a correlational design, linear and multiple regression models were developed in order to identify possible predictors of risky online behaviour on Facebook. TPB variables were analysed in terms of their individual and interactive predictive ability: attitude, PBC and social norms were the predictor variables for the outcome variable intention, whereas intention and PBC were the predictor variables for the outcome variable behaviour.

2.3 Materials

The questionnaire used was a novel one including different sections measuring the variables of interest (see Appendix 1). Any questions about risky online behaviour and cyberstalking were based on previous research exploring the relationship between online behaviour and risk of interpersonal victimisation (Henson *et al*., 2011) whereas questions about TPB variables were based on Ajzen's (n.d.) guidelines. Having a TPB questionnaire similar to the ones used by previous research enabled a comparison of findings across studies. Since participants were asked about the sensitive issue cyberstalking, distributing the questionnaire online was advantageous because anonymity could be ensured.

The questionnaire, which was devised using the Bristol Online Survey tool, consisted of three sections with 28 items in total. Item 1 asked participants to give consent by clicking 'yes' or 'no', thus this item was not included in the main analysis. Section 1 included 3 demographical questions about gender, age, and occupation (items 2-4). Item 3 was devised as a forced-choice question in order to make sure that participants did not enter any age values outside the allowed range either by accident or by not paying attention to the inclusion criteria. Item 5, which asked participants to verify that they currently have a Facebook account, was included as control in order to ensure that all participants are Facebook users.

In section 2, questions about TPB variables (PBC: items 6-9, social norm SN: items 10-13, attitude ATT: items 14-17, intention INT: items 18-20) were arranged on a 7-point likert scale involving bipolar words. The lowest score possible for PBC, SN and ATT was 4 whereas the highest score possible was 28. For INT, the lowest score possible was 3 compared to 21 as the highest one. Items about risky behaviour (BEH) were multiple choice questions asking participants about the number of photos they post per week (item 21), the number of times they include geo-tagging (item 22), whether their account is set to private (item 23), whether they have ever added strangers as friends (item 24), and how frequently privacy settings are updated (item 25). Item 26 contained a list of information that can be posted in an account (e.g. name, home address); participants had to tick all that applied to them. High scores (highest possible 27) for BEH indicate high levels of risk, whereas low scores (lowest possible 6) describe safe online behaviour.

In section 3, participants determined whether they have ever experienced cyberstalking on Facebook (item 27). If 'yes' was ticked, a further question appeared asking them to specify whether their experience was 'online only', 'online to offline' or 'offline to online' (item 27a).

Reliability analyses using Cronbach's α indicated good internal reliability for ATT scale (α=0.83), SN scale (α=0.75) and INT scale (α=0.96). However, the α for PBC was relatively low (α=0.48): since item 7 ("Whether or not I engage in risky online behaviour on Facebook is completely up to me") was identified as being problematic, it was excluded from the further analysis leading to an improved internal reliability (α=0.63). Internal consistency of BEH was not particularly high (α = .6). However, it must be considered that only those BEH responses which could be analysed using this reliability analysis were included (i.e. item 26). Items 21-25 did therefore not contribute to this analysis.

2.4 Procedure

The online survey was distributed to potential participants via Facebook using the researcher's private account. Participants were briefly informed about the study in a message posted by the researcher. They were also provided with a link directing them to the actual survey. Since the response rate via Facebook was too low to recruit the minimum amount of participants, the researcher sent an email to first and second year Psychology students asking to take part. Before taking part, all participants were presented with an on-screen version of the Participant Information Sheet providing further information and instructions (see Appendix 2). After giving consent, filling in the survey took approximately 5-10 minutes. An on-screen debriefing sheet was presented at the end of the survey (see Appendix 3).

2.5 Ethics

This study was conducted after ethical approval was given by an Ethics Panel (PSYREP) (see Appendix 4). Before taking part, participants were informed about the procedure and purpose of the study. They were also informed that data withdrawal is not possible. Consent was given electronically by ticking an appropriate box. The experience with cyberstalking was identified as potentially sensitive issue, thus participants were made aware of this. In order to prevent any emotional distress, contact details of a registered charity, Network for Surviving Stalking, were provided.

2.6 Analysis

The data set was exported from the Bristol Online Survey account and analysed using SPSS 18 (see attachment for SPSS data set and outputs). Before running the analysis, the variable view was modified by giving each variable a label and by adding columns

including the total scores for ATT, PBC, SN, INT and BEH. These were calculated using the scoring method outlined above; since the PBC total score did not include item 7, the highest score possible decreased from 28 to 21 and the lowest possible score from 4 to 3. Reliability analysis was carried out for each scale. To test the hypotheses, regression models were used in order to predict the outcome variables using the different predictor variables (Field, 2005). Five linear regression models (see H_1 and H_3) and two multiple regression models (see H_2 and H_4) were tested for assumptions. In multiple regression models, predictors were entered simultaneously using the forced-entry method because no assumptions about an order of entry were made (Field, 2005).

3. RESULTS

3.1 Descriptive Statistics

Since all participants answered each question, any average scores presented are based on N=150 (see Table 1).

Table 1
Mean and Standard Deviations for the Predictor Variables and the Outcome Variables

	M	***SD***
ATT	11.52	5.39
SN	10.11	4.87
PBC	16.06	3.84
INT	6.67	4.77
BEH	13.9	2.99

Low average scores for both SN and ATT indicate low social pressure to perform and a rather negative attitude towards the behaviour in question. In contrast, a high average score indicates high levels of PBC. The low average score for intention and the medium score for behaviour paradoxically show that participants do engage in risky online behaviour despite having low intentions to do so. For all measures, standard deviations were relatively high - especially for INT, SN and ATT - thus the data was widely spread (Field, 2005).

3.2 Testing Assumptions

For all seven regression models, the following assumptions were tested (Field, 2005): no issue of multicollinearity (i.e. tolerance statistics ≤1, variance inflation factors VIF <10), no outliers (i.e. standardised residuals ±3, Mahalanobis distance below a critical value), no unduly influential cases (i.e. Cook's distance ≤1), normally distributed residuals (as indicated by histograms and normal probability plots), and random residuals (as indicated by scatterplots). Most assumptions were met; violations are discussed below.

In the linear regression model including ATT as individual predictor of INT, two outliers were identified (standardised residuals of case numbers 103 and 122 were <3 and >-3), however, since their influence was not considered as cause for concern (Cook's distance ≤1), the cases were not deleted. Similarly, in the multiple regression model including INT as outcome variable, an outlier (case number 103) was revealed by standardised residuals (>3) and Mahalanobis distance. Since Cook's distance was still below 1, the case was not seen as unduly influential and was not deleted. The normal probability plots for the two

linear regression models including PBC and SN as individual predictors of INT showed slight deviations from the line and the scatterplot for PBC indicated low levels of heteroscedasticity, i.e. slightly unequal variances. Furthermore, none of the variables was normally distributed as indicated by the Kolmogorov-Smirnov test (Ds(150)=<2.33, p<.05). However, since residuals were still normally distributed and since the other violations were only minor, the analysis was carried out.

3.3 Predicting Intention

3.3.1 ATT, SN and PBC as individual predictors (H_1)

The positive correlation between ATT and INT was significant and strong (r=.77, p<.05). The R^2 value revealed that ATT accounted for 59% of the variance of INT both in the current sample (R^2=.59) and in a general sample (adjusted R^2=.59). Overall, this regression model significantly predicted INT (F(1, 148)=218.48, p<.05) with ATT being a strong predictor and a significant contributor (see Table 2).

Table 2
Individual Results of Linear Regression Analysis for the Predictor Variables ATT, SN and PBC regarding the Outcome Variable INT

Predictor Variable	*b*	SE *b*	β	t	p
ATT	.68	.05	.77	14.78	.001
SN	.67	.06	.69	11.54	.001
PBC	.29	.09	.23	2.89	.004

SN was positively and strongly correlated with INT in a significant way (r=.69, p<.05). It accounted for 47% of the variance in INT in the present sample (R^2=.47) as well as in the general population (47%, adjusted R^2=.47). In this significant model (F(1, 148)=133.14, p<.05), SN as a relatively strong predictor significantly contributed to the prediction of INT.

PBC was weakly but still significantly and positively correlated with INT (r=.23, p<.05). In this significant model (F(1, 148)=8.34, p<.05), it accounts for 5% of the variance in the current sample and the generalised population (R^2=.05, adjusted R^2=.05). Although being a weak predictor, it significantly contributed to the prediction of INT.

Since ATT, PBC and SN individually predict INT in a significant way, H_1 is supported.

3.3.2 ATT, SN and PBC as combined predictors (H_2)

While all correlations were positive, ATT was correlated most strongly with INT (r=.77, p<.05), followed by SN (r=.69, p<.05) and PBC (r=.23, p<.05). Overall, this regression model was significant (F(3, 146)=84.18, p<.05) and accounted for 63% of the variance in INT in the current sample (R^2 =.63) and for 62% in the general sample (adjusted R^2=.62).

As indicated by correlations, ATT was the strongest predictor followed by SN and PBC (see Table 3). While both ATT and SN were significant contributors to the model, PBC was not. Therefore, H_2 is only partly supported: while ATT and SN together predict INT, PBC is not a significant predictor.

Table 3
Individual Contribution of the Predictor Variables ATT, SN and PBC in the Multiple Regression Model Predicting INT

Predictor Variable	*b*	SE *b*	β	t	p
ATT	.52	.07	.58	7.92	.001
SN	.27	.07	.28	3.84	.001
PBC	-.04	.07	-.03	-.59	.56

3.4 Predicting Behaviour

3.4.1 PBC and INT as individual predictors (H_3)

PBC accounted for 5% of variance in BEH in both the current sample (R^2=.05) and the general population (adjusted R^2=.05). This model was significant (F(1, 148)=8.19, p<.05): PBC was significantly and positively correlated with BEH (r =.23, p<.05) (see Table 4). It was also a significant predictor.

INT was significantly and positively correlated with BEH (r=.28, p<.05) and accounted for 8% of the variance in BEH in the current sample (R^2=.08) and for 7% in the variance of a generalised sample (adjusted R^2=07). This model (F(1, 148)=12.57, p<.05) as well as INT's contribution to it were significant.

Although both INT and PBC were weak predictors of BEH and only weakly correlated with it, H_3 is supported.

Table 4
Individual Results of Linear Regression Analysis for the Predictor Variables PBC and INT regarding the Outcome Variable BEH

Predictor Variable	*b*	SE *b*	β	t	p
PBC	.18	.06	.23	2.86	.005
INT	.18	.05	.28	3.55	.001

3.4.2 PBC and INT as combined predictors (H_4)

Both PBC and INT were significantly and positively correlated with BEH with the latter one being slightly more strongly correlated (INT r=.28, p<.05; PBC r=23, p<.05). This significant regression model (F(2, 147)=8.79, p<.05) accounted for 11% of the variance in BEH in the current sample (R^2=.11) while it accounted for less variance in the generalised sample (9%, adjusted R^2=.09). Both predictors were significant with INT being a stronger predictor than PBC, as indicated by correlations (see Table 5). Thus, H_4 is supported.

Table 5
Individual Contribution of the Predictor Variables PBC and INT in the Multiple Regression Model Predicting BEH

Predictor Variable	*b*	SE *b*	β	t	p
PBC	.14	.06	.17	2.17	.032
INT	.15	.05	.24	2.99	.003

4. DISCUSSION

4.1 Summary of Findings and Reference to Previous Research

This study aimed to predict the intention to engage in risky online behaviour on Facebook using the Theory of Planned Behaviour's variables attitude, social norm, and PBC and to predict the behaviour itself based on PBC and intention. Regarding the prediction of intention, H_1 was supported because attitude, social norm and PBC were significant individual predictors accounting for 60%, 47% and 5% of the variance, respectively. In contrast to expectations, PBC did not significantly contribute to the joint prediction of intention along with the other two variables which accounted for 63%. H_2 could, hence, only be partly supported. Regarding the prediction of behaviour, both PBC and intention significantly accounted for individual variance (PBC: 5%, intention, 8%), hence, H_3 was supported. Together, they accounted for 11% of the variance in behaviour, thus H_4 was supported as well.

Although PBC was a non-significant predictor in one model, the overall effectiveness of applying TPB to the behaviour in question was demonstrated. This finding is in line with previous research which successfully applied TPB to a variety of behaviours (e.g. Corry, 2008; Povey *et al.*, 2000). Along with Pelling and White (2009) and Yao and Linz (2010), this study strengthens the evidence that TPB is applicable to an online setting and to SNS. Furthermore, this study extends the findings by Pelling and White (2009) who predicted the use of SNS by successfully predicting the actual behaviour on these sites. Nevertheless, while social norm has been identified as the weakest predictor in previous research (e.g. Armitage & Conner, 2001; Sheeran, 2002), the current findings identified this variable and attitude as being the strongest predictors. However, the amount of variance explained in both intention and behaviour differs considerably from the average values identified by previous meta-analyses (63% vs. 36% in intention, 11% vs. 27% in behaviour) (Armitage & Conner, 2001; Godin & Kok, 1996; Hagger *et al.*, 2002; McEachan *et al.*, 2011).

4.2 Explanation of Findings

The low variance accounted for in behaviour can be explained by evaluating the individual importance of predictors in this particular behaviour as well as by examining the wording used in the questionnaire. As indicated by Ajzen (2005), the predictor's relative contribution depends on the behaviour under investigation. It is possible that intention was not an important contributor because of the nature of the behaviour: when being asked about intentions to perform a *risky* behaviour, participants score low because one usually does not have any intentions to do risky things. Previous research, also the rare studies evaluating an online context, focussed on positive behaviours and on participants' intention to perform these (e.g. eat healthy food, quit smoking). Therefore, intention

accounts for more variance in the prediction of positive behaviours (27%) than in the prediction of negative and risky behaviours (11%).

Furthermore, the wording of the questions, i.e. using the word “risky”, may have biased responses. Participants might have been faster at deciding that they do not intend to engage in risky behaviour than at thinking about whether the description of the behaviour provided in the questionnaire actually applies to them. When comparing mean scores for intention and behaviour, it can be seen that even though participants do report engaging in this behaviour (M=13.9) the intention to do this is very low (M=6.67): since the word “risky” was included in questions about intention but not in questions about behaviour, this could indicate that participants’ answers depended on whether they were confronted with this negative word or not.

The risky nature of the behaviour in question also explains why attitude was such an important predictor of intention. It is possible that being asked about a risky behaviour evokes stronger reactions than being asked about positive behaviours. Therefore, the negative attitude (as indicated by the low average score) towards engaging in risky online behaviour plays a crucial role in forming intentions: the more negative the attitude the lower the intention. Again, including the word “risky” in the questions might have influenced participants by reinforcing their negative attitude towards this behaviour.

Despite any biases due to wording, it is unlikely that the values for variances accounted for would be much lower if the wording was different. The comparison of the nature of behaviours under investigation in previous studies with the one of the current behaviour provides a sound explanation as to why the values differ. Since these amounts of variance are still significant, the current study extends knowledge by indicating that the relative importance of predictors - especially of intention - in risky behaviours is different to the one in behaviours investigated so far.

PBC significantly contributed to the interactive prediction of behaviour but not of intention. This might be due to overlap between variances explained by each predictor: PBC did not account for any unique variance in intention because of possible overlap between the variances explained by this variable and by the other two predictors. In contrast, PBC was a significant predictor of behaviour along with intention because there was no overlap between the variance explained by these two variables. However, there is no statistical evidence for this.

Interestingly, Pelling and White (2009) made a similar finding when predicting the use of SNS: while attitude and social norm were good combined predictors of intention, PBC did not significantly contribute to this. Therefore, the overlap between variance explained might be specific to this particular context of SNS and should be focused on by future investigations. However, it must be taken into account that one of the four PBC items was deleted due to a low Cronbach’s α. This has affected the statistical results to some extent and any interpretations should be made with caution.

4.3 Limitations and Suggestions

Question wording was already identified as a limitation of this study. Since this study indicates that question wording is more important than previously assumed, future research aiming to explore risky behaviours using TPB should consider this issue: labelling behaviours and thus involuntarily giving it a negative value possibly misleads participants. Further limitations and also suggestions for future research are outlined below.

First of all, it must be taken into account that none of the variables were normally distributed. Furthermore, since Cronbach's α for the BEH scale did not include all items which were actually part of this scale, it can only be assumed that this scale was internally consistent. Therefore, some items might have been deleted in order to improve internal reliability, if they had been measured as numeric variable.

The current study did not apply the extended version of TPB including the different types of beliefs which predict attitude, social norm and intention (Ajzen, 1991) but only the standard version of TPB. Therefore, considering the sufficiency assumption, it might be argued that not enough variance was accounted for, especially in behaviour (Ajzen, 2011). In order to better understand the three predictor variables included here, their antecedents should be included in future research. In addition, the inclusion of additional variables to TPB has been explicitly left open (Ajzen, 2011). Thus, adding variables such as the amount of time spent on Facebook (which is considered to be important, Henson *et al.*, 2011) might not only explain additional variance over and above TPB predictors but also might reduce the very large intention-behaviour gap (63% vs. 11%; Sheeran, 2002). However, it was not aimed to identify as much variance as possible but to explore whether it is appropriate to apply TPB to the context of SNS and to this particular behaviour on Facebook. Since this evidence was established, future research is now encouraged to apply extended versions. However, using a correlational design like in the current study cannot explain any causality between variables. Using a different design in the future might shed more light on causal relationships.

A further limitation is the use of an overall score to predict risky online behaviour. Although this study included questions about individual behaviours which have been identified as risky by previous research (e.g. number of profile updates, adding strangers as friends; Henson *et al.*, 2011), it cannot be explained whether these individual behaviours are predictable. Similarly, regression analyses using attitude, social norm, PBC and intention were based on an overall score. The importance of individual items was not evaluated. While it is crucial to know whether this overall behaviour is predictable, it is now necessary to look at more specific behaviours in future studies. Furthermore, exploring the behaviour of only cyberstalking victims could shed more light on the particular types of behaviour linked to an increased risk.

4.4 Implications

Understanding why Facebook users engage in risky online behaviour is an important issue when considering that Facebook's main user group is also the main group of cyberstalking victims. In this study, 14%, i.e. 21 participants, admitted to have experiences with cyberstalking on Facebook. However, in two cases this experience was described as offline to online, hence, it was not initiated on Facebook. Excluding these two cases, 12.7% is still a relatively high percentage. Although this study did not analyse the relationship between risky online behaviour and the experience of cyberstalking, research indicates that there is a positive relationship (Henson *et al.*, 2011). Therefore, the cases of cyberstalking identified here *might* be the result of the participants' behaviour. Thus changing this behaviour can successfully reduce prevalence rates and negative consequences of this cybercrime (e.g. Nobles *et al.*, 2009).

Since attitude and social norm were found to be important predictors, they are potential targets for changing risky online behaviour based on TPB principles: when aversive feelings towards this behaviour are evoked by informing about the risk of cyberstalking, the

increasingly negative attitude might reduce prevalence rates of this behaviour. Consequently, if less people engage in this behaviour, the social pressure to perform is reduced as well. Since social norm and attitude directly influence intention, this variable is also an important target for behaviour change.

However, the importance of intention in this context has to be re-evaluated because of flaws in measurement: considering the fact that participants reported engaging in more risky behaviour on Facebook than can be expected by scores for intention, this discrepancy possibly disguised the actual impact intention has on behaviour. Thus even though it was a weak predictor in this study, it still is the key predictor of human behaviour in general and should not be overlooked (Sheeran, 2002). However, any targets identified for this particular sample based on specific inclusion criteria might be different in other samples having, for example, a different age range. Furthermore, the importance of targets might also differ when focussing on individual behaviours compared to an overall score.

4.5 Conclusion

While TPB has usually been applied to health-related behaviour, the current study applied this theory to predict risky online behaviour on Facebook. The effectiveness of applying TPB to an online context was further strengthened. While attitude, social norm, and PBC were identified as significant individual predictors of intention, PBC did not interactively predict intention with social norm and attitude. In contrast, PBC and intention both individually and combined predicted behaviour. In the context of this risky behaviour, this study demonstrated the importance of question wording. Furthermore, differences in the relative contribution of TPB variables in the prediction of risky behaviours compared to positive ones were revealed. Predictors identified here are targets for changing and reducing risky online behaviour on Facebook in order to minimise associated risks such as cyberstalking.

Limitations and their impact were discussed. Suggestions for future investigations were provided which, if addressed, will further extend the knowledge about risky behaviour on Facebook and cyberstalking.

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