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Predicting women's intentions to use pain relief medication during childbirth using the Theory of Planned Behaviour and Self-Efficacy Theory

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Women's use of pain relief strategies during childbirth can be predicted to an extent by their prior intentions to use the strategy, although how women arrive at their intentions is currently unclear. This study investigated whether antenatal beliefs about pharmacological and non-pharmacological pain management strategies predicted women's intentions to use Entonox (NO_2&O_2), pethidine, and epidural analgesia during childbirth. A self-selected sample of 100 women in the third trimester of pregnancy completed a questionnaire containing belief-based measures of the attitude, subjective norm, and perceived behavioural control components of the Theory of Planned Behaviour (TPB) for each medication, and the Childbirth Self-Efficacy Inventory. Pharmacological beliefs as assessed by the TPB significantly predicted intentions to use all three medications. Subjective norm independently predicted intentions to use all three medications. Attitude predicted intentions to use NO_2&O_2 and epidural analgesia and perceived behavioural control predicted intentions to use pethidine alone. Beliefs about non-pharmacological pain management strategies as assessed by self-efficacy theory did not significantly enhance the prediction of intentions to use any of the medications. The findings suggest that targeting pharmacological beliefs during antenatal education will impact most upon women's intentions to use analgesia during childbirth.

Keywords: childbirth; theory of planned behaviour; self-efficacy theory; analgesic

Introduction

Each year over 600,000 women in England and Wales experience childbirth (National Statistics, 2006). Concern has been expressed that childbirth in Western countries has become over medicalised, even for women not experiencing complications (Johanson, Newburn, & MacFarlane, 2002; Kitzinger et al., 2006). Some suggest that defensive action has increased to avoid possible litigation (Johanson et al., 2002). However, women have also been encouraged to take a more active role in decision-making (Department of Health, 1993). Since women's intentions towards using pain management strategies in childbirth tend to reflect their subsequent use (Goldberg, Cohen, & Lieberman, 1999; Slade, Escot, Spiby, Henderson, & Fraser, 2000), these decisions are not inconsequential. As such, potential factors influencing women's plans for the pharmacological management of

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childbirth warrant investigation, not least to inform future antenatal intervention strategies preparing women for childbirth.

The most common pharmacological methods of managing pain during childbirth are Entonox, pethidine, and epidural analgesia (Yerby, 2000). Entonox (NO_2&O_2) is also referred to as 'gas and air', but comprises equal measures of nitrous oxide (laughing gas) and oxygen and is inhaled through a mouthpiece or mask as and when needed. It is the most commonly used pain relief medication during childbirth and does not interfere with the progress of labour (Rosen, 2002). Pethidine, in contrast, is an opioid analgesic administered via intramuscular or intravenous injection (Yerby, 2000). Evidence suggests that opioids have a limited effectiveness for pain relief during childbirth and also carry the risk of a number of negative side effects, such as nausea, vomiting, and sedation of the mother (Bricker & Lavender, 2002). The most effective method of pain relief medication is epidural analgesia (Yerby, 2000). However, this is an invasive technique in which local anaesthetic is injected into a space between spinal vertebrae in the lower back, and may increase the risk of complications requiring additional medical intervention (Mansoori, Adams, & Cheater, 2000).

Alternative non-pharmacological methods for managing pain during childbirth include complementary approaches such as acupuncture, hypnosis, aromatherapy and psychological strategies. Psychological strategies include methods such as breathing and relaxation techniques (Wideman & Singer, 1984), and cognitive strategies such as imagery, reconstructing the context of the pain, and distraction (Weisenberg, 1998). However, the effectiveness of psychological pain management strategies largely depends upon individual preferences (Eccleston, 2001), and evidence suggests that the combined use of a number of strategies is associated with effective management of labour pain (Niven & Gijsbers, 1996).

Evidence suggests that decisions to use pain management strategies during childbirth are dependent upon many factors including women's beliefs. For example, women who planned to use epidural analgesia were found to differ in their beliefs about the medication from women who planned not to use it (Heinze & Sleigh, 2003), and among antenatal class attendees, beliefs about using psychological pain management strategies predicted intentions to use these strategies (Slade et al., 2000). However, the role of beliefs in predicting intentions to use pharmacological pain management strategies has yet to be explored. The current investigation examined this issue through an application of the Theory of Planned Behaviour (TPB) and self-efficacy theory.

The TPB is a model that accounts for the way in which individuals make decisions about whether or not to perform a specific behaviour (Ajzen, 1988). The model proposes that a person's intentions to perform a particular behaviour are determined by three separate components: the favourability of the individual's attitude towards the behaviour; the favourability of the perceived social opinion about the behaviour, or subjective norm; and the degree of perceived behavioural control. Perceived behavioural control (PBC) has been described as 'people's perception of the ease or difficulty of performing the behaviour of interest' and is useful for predicting behaviour that is not under an individual's volitional control (Ajzen, 1991, p. 183).

Recent evidence found the TPB useful in explaining pregnant women's intentions to exercise (Hausenblas & Symons Downs, 2004) and to breastfeed (Swanson & Power, 2005). However, applications of the TPB to the use of pain relief medication

are sparse. Pellino (1997) carried out an exploratory investigation examining whether the TPB predicted intentions to use post-operative analgesia following elective orthopaedic surgery. Attitude and subjective norm independently predicted pre-operative intentions to use analgesia post-operatively. However, the combined utility of all three components of the TPB was not examined, thus limiting the test of the model.

Self-efficacy theory consists of two components known as self-efficacy expectancies and outcome expectancies (Bandura, 1997). Self-efficacy is the belief that one can perform the behaviours necessary to produce a specific outcome, whereas outcome expectancy is the belief that certain behaviours will produce a specific outcome.

Evidence suggests that self-efficacy theory may be a useful predictor of plans for childbirth. Pregnant women planning to have an elective caesarean section following a previous caesarean section were found to have significantly lower self-efficacy and outcome expectancy scores for managing childbirth than pregnant women planning a vaginal birth following a previous caesarean section (Dilks & Beal, 1997). Higher self-efficacy for self-managing childbirth is also associated with lower reported pain during labour (Larsen, O'Hara, Brewer, & Wenzel, 2001; Stockman & Altmaier, 2001). However, there is mixed evidence that self-efficacy is related to the duration of pain tolerance before requesting analgesic medication, and the frequency of medication use in childbirth (Manning & Wright, 1983; Stockman & Altmaier, 2001). This suggests that other factors such as beliefs about medication and hospital ethos may influence the final decision to use medication and indicates the need to control for beliefs about medication when examining the role of self-efficacy.

In summary, the purpose of the current investigation is to assess the role of beliefs about pain management strategies in predicting women's intentions to use NO_2&O_2, pethidine and epidural analgesia during childbirth. Based upon previous research it is hypothesised that: (1) beliefs about pharmacological strategies as measured by the TPB will significantly improve the prediction of women's intentions to use (a) NO_2&O_2, (b) pethidine and (c) epidural analgesia during childbirth over demographic variables; and (2) beliefs about non-pharmacological strategies as measured by self-efficacy theory will significantly improve the prediction of women's intentions to use (a) NO_2&O_2, (b) pethidine, and (c) epidural analgesia during childbirth over both demographic and TPB variables.

Method

Participants

One hundred women planning a vaginal birth were recruited across various NHS locations during their third trimester of pregnancy. The majority was married or cohabiting with their partner (89%) and had educational qualifications at A-level standard or above (74%). This sample size is sufficient to detect an effect size (R^2) in line with previous research findings of 0.30 (e.g. Armitage & Conner, 2001), with the alpha level set at 0.05 and power of 0.80 (Clark-Carter, 2004).

Measures

Demographic information was sought regarding age, marital status, education level, length of pregnancy, pregnancy complications, number of previous childbirths, past medication use during childbirth and antenatal class attendance.

Intentions to use the three medications were measured by three items 'I *intend/plan/want* to use medication X during childbirth'. Participants rated 7-point Likert scales bounded by 'definitely do not' (−3) and 'definitely do' (+3). Intention scores for each medication were calculated using the sum of the scores across the three items. Internal reliability among the three items was high (α=0.95 and above).

Attitude was measured indirectly using ten items per medication, five items each of belief strength and outcome evaluation (Ajzen, 1991). Attitude scores were calculated by summing the product of each pair of belief strength and outcome expectancy scores across each medication (Hankins, French, & Horne, 2000). The internal reliability of all three scales was improved by removing two pairs of items per scale (α between 0.42 and 0.69).

Subjective Norm was assessed indirectly using four items each of normative belief strength and motivation to comply with the beliefs of the woman's partner, family, midwives and medical staff per medication (Ajzen, 1991). Subjective norm scores were calculated by summing the product of each pair of normative belief strength and motivation to comply scores across each medication. Internal reliability across the scales was good (α between 0.74 and 0.79).

Perceived Behavioural Control (PBC) was measured indirectly using ten items per medication, five items each of control belief strength and power of the control factor to influence behavioural performance (Ajzen, 1991). The PBC scores were calculated by summing the product of each pair of control belief strength and power scores across each medication. The internal reliability of all three scales was improved by removing two pairs of items per scale (α between 0.47 and 0.74).

The *Childbirth Self-Efficacy Inventory* (*CBSEI)* is a 62 item, two-part scale measuring women's self-efficacy and outcome expectancies for the performance of coping strategies during the active and birthing stages of labour (Lowe, 1993). Each item consists of a statement and responses are made on a 10-point Likert scale using the criteria of the certainty of performing the strategy and helpfulness of the strategy. For example, 'think positively' is rated from 'Not at all helpful' to 'Very helpful' for the outcome expectancy scales and between 'Not at all sure' to 'Completely sure' for the self-efficacy scales. The scale has established psychometric properties (Drummond & Rickwood, 1997; Lowe, 1993; Sinclair & O'Boyle, 1999) and high internal consistency was found in the current investigation ($\alpha \geqslant 0.89$).

Procedure

Ethical approval was gained from both Staffordshire University Psychology Department Ethics Committee and North Wales Health Authority Research Ethics Committee (West) prior to commencing the investigation. Participants were recruited as they attended routine GP and NHS hospital antenatal check-up appointments or NHS antenatal classes. Midwives informed pregnant women that the investigation was taking place and provided participant information sheets on request. Women signed a consent form prior to filling in the self-report questionnaire. FREEPOST envelopes were provided to women unable to complete the questionnaire on site. Thirteen women returned questionnaires using this method, giving a return rate of 21.3%. The overall response rate of eligible women was 59.3%.

Table 1. Participant characteristics.

	Yes	No
Number of previous childbirth experiences		
0	48	–
1	31	–
2	16	–
3	3	–
4	2	–
Antenatal class attendance	49	51
Complications	31	69
Previous use of $NO_2\&O_2$	47	53
Previous use of pethidine	34	66
Previous use of epidural	26	74

Note. Unit of measurement is both number and percentage.

Results

The demographic background of participants is detailed in Table 1. Women who attended antenatal classes did not differ in their intentions to use each medication from non-attendees ($NO_2\&O_2$, t (98)=−0.93, n.s., pethidine, t (98)=1.01, n.s., and epidural analgesia, t (98)=1.01, n.s.). Similarly, women who had experienced complications during pregnancy did not differ from those without complications in their intentions ($NO_2\&O_2$, t (98)=0.18, n.s., pethidine, t (98)=−0.39, n.s., and epidural analgesia, t (98)=−1.70, n.s.). Table 2 provides the details of participant intentions to use the medications.

Descriptive statistics and zero-order correlations between predictor variables and behavioural intentions to use $NO_2\&O_2$, pethidine, and epidural analgesia during childbirth are presented in Tables 3, 4 and 5, respectively. Intentions to use all three medications significantly correlated with the three components of the TPB. The strongest correlations for all three TPB components were for intentions to use epidural analgesia (attitude, r=0.58, p<0.001, subjective norm, r=0.65, p<0.001, and PBC, r=0.45, p<0.001). Intention to use pethidine was most strongly correlated with subjective norm (r=0.57, p<0.001), and intention to use $NO_2\&O_2$ was most strongly correlated with attitude (r=0.46, p<0.001).

Three hierarchical regression analyses were conducted in three stages with intentions to use $NO_2\&O_2$, pethidine, and epidural analgesia during childbirth as the dependent variables (see Tables 6, 7 and 8). In each analysis demographic variables were entered in step 1, TPB variables were entered in step 2, and self-efficacy theory variables were entered in step 3.

Table 2. The number (and percentage) of participants intending to use / not use the medications.

Medication	Strongly intend to use (+6 to +9)	Strongly intend not to use (–6 to −9)
$NO_2\&O_2$	74	2
Pethidine	18	22
Epidural	23	49
$NO_2\&O_2$ & pethidine	17	1
$NO_2\&O_2$ & epidural	15	0
Pethidine & epidural	6	14
All	6	0

Table 3. Zero-order correlations and descriptive statistics for demographic, TPB and self-efficacy variables, together with intentions to use $NO_2\&O_2$ during childbirth.

Variable	2	3	4	5	6	7	8.	9.	10	M	SD
1. Age	−0.01	0.09	0.07	−0.10	−0.08	0.12	0.09	0.18	−0.11	29.76	5.54
2. Number of weeks pregnant	–	−0.00	0.05	−0.05	−0.01	0.17	0.16	0.04	0.04	34.33	4.33
3. Number of previous childbirths		–	0.73**	0.04	0.01	0.01	0.05	0.31**	−0.19	0.80	0.95
4. Previous use of $NO_2\&O_2$			–	0.16	0.10	0.09	−0.01	0.26**	−0.03	0.47	0.50
5. Attitude				–	0.21*	0.41**	0.01	0.08	0.46**	8.19	8.62
6. Subjective norm					–	0.34**	0.18	0.15	0.38**	25.66	22.67
7. Perceived behavioural control						–	0.16	0.14	0.39**	19.51	17.51
8. Outcome expectancy							–	0.55**	0.03	7.93	1.31
9. Self-efficacy								–	−0.12	6.29	1.96
10. Intentions to use $NO_2\&O_2$									–	6.58	3.57

Note: Previous use of $NO_2\&O_2$ is scored 1 (yes) and 0 (no). * $p<0.05$. ** $p<0.01$.

Table 4. Zero-order correlations and descriptive statistics for demographic, TPB and self-efficacy variables, together with intentions to use pethidine during childbirth.

Variable	2	3	4	5	6	7	8	9	10	M	SD
1. Age	−0.01	0.09	0.06	−0.18	−0.03	0.03	0.09	0.18	−0.17	29.76	5.54
2. Number of weeks pregnant	–	−0.00	0.15	0.05	−0.03	0.12	0.16	0.04	0.02	34.33	4.33
3. Number of previous childbirths		–	0.64**	0.13	0.10	0.19	0.05	0.31**	−0.10	0.80	0.95
4. Previous use of pethidine			–	0.14	0.16	0.44**	0.05	0.23*	0.05	0.34	0.48
5. Attitude				–	0.12	0.16	−0.03	−0.09	0.25*	2.64	8.84
6. Subjective Norm					–	0.33**	0.11	0.13	0.57**	6.20	20.07
7. Perceived behavioural control						–	0.14	0.14	0.41**	26.67	21.03
8. Outcome expectancy							–	0.55**	0.11	7.93	1.31
9. Self-efficacy								–	−0.07	6.29	1.96
10. Intentions to use pethidine									–	0.42	5.47

Note: Previous use of pethidine is scored 1 (yes) and 0 (no). * $p<0.05$. ** $p<0.01$.

Table 5. Zero-order correlations and descriptive statistics for demographic, TPB and self-efficacy variables, together with intentions to have an epidural during childbirth.

Variable	2	3	4	5	6	7	8	9	10	M	SD
1. Age	−0.01	0.09	0.15	−0.05	0.04	0.10	0.09	0.18	−0.02	29.76	5.54
2. Number of weeks pregnant	–	−0.00	−0.09	−0.08	−0.03	0.00	0.16	0.04	−0.02	34.33	4.33
3. Number of previous childbirths		–	0.37**	0.09	−0.05	−0.08	0.05	0.31**	−0.02	0.80	0.95
4. Previous use of epidural			–	0.16	0.17	0.09	−0.16	−0.02	0.31**	0.26	0.44
5. Attitude				–	0.36**	0.38**	−0.14	−0.07	0.58**	−9.84	12.13
6. Subjective Norm					–	0.39**	−0.07	−0.10	0.65**	2.26	26.30
7. Perceived behavioural control						–	0.02	−0.04	0.45**	24.22	16.87
8. Outcome expectancy							–	0.55**	−0.03	7.93	1.31
9. Self–efficacy								–	−0.07	6.29	1.96
10. Intentions to have epidural									–	−2.57	6.76

Note: Previous use of an epidural is scored 1 (yes) and 0 (no). * $p<0.05$. ** $p<0.01$.

Table 6. Hierarchical regression of intentions to use $NO_2\&O_2$ on demographic, TPB and self-efficacy variables.

Predictors	β (step 1)	β (step 2)	β (step 3)	ΔR^2 for step	Total R^2
Step 1. Demographic variables				0.07	0.07
Age	−0.10	−0.06	−0.04		
Number of weeks pregnant	0.03	0.03	0.02		
Number of previous childbirths	−0.35*	−0.24	−0.20		
Previous use of $NO_2\&O_2$	0.23	0.06	0.07		
Step 2. TPB variables				0.30***	0.37***
Attitude		0.33**	0.34***		
Subjective norm		0.25**	0.26**		
Perceived behavioural control		0.17	0.18		
Step 3. Self-efficacy theory variables				0.02	0.39***
Outcome expectancy			0.07		
Self-efficacy			−0.19		

* $p<0.05$. ** $p<0.01$. *** $p<0.001$.

At step 1, the model comprising demographic variables significantly predicted only women's intentions to use epidural analgesia ($R^2=0.12$, $F(4, 95)=3.36$, $p<0.05$), with the previous use of epidural analgesia significantly predicting greater intentions to use epidural analgesia. However, the number of previous childbirth experiences independently predicted intentions to use $NO_2\&O_2$ such that fewer previous childbirth experiences were associated with stronger intentions to use $NO_2\&O_2$.

At step 2, the model including TPB variables explained a significant proportion of the variance in intentions to use $NO_2\&O_2$ ($R^2=0.37$, $F(7, 92)=7.63$, $p<0.001$), pethidine ($R^2=0.46$, $F(7, 92)=11.34$, $p<0.001$) and epidural analgesia ($R^2=0.61$, $F(7, 92)=20.42$, $p<0.001$). This accounted for a significant increase of 30% in

Table 7. Hierarchical regression of intentions to use pethidine on demographic, TPB and self-efficacy variables.

Predictors	β (step 1)	β (step 2)	β (step 3)	ΔR^2 for step	Total R^2
Step 1. Demographic variables				0.06	0.06
Age	−0.17	−0.12	−0.11		
Number of weeks pregnant	−0.01	0.01	−0.01		
Number of previous childbirths	−0.21	−0.18	−0.15		
Previous use of pethidine	0.20	−0.04	−0.03		
Step 2. TPB variables				0.40***	0.46***
Attitude		0.16	0.15		
Subjective norm		0.48***	0.48***		
Perceived behavioural control		0.29**	0.28**		
Step 3. Self-efficacy theory variables				0.02	0.48***
Outcome expectancy			0.13		
Self-efficacy			−0.15		

* $p<0.05$. ** $p<0.01$. *** $p<0.001$.

Table 8. Hierarchical regression of intentions to have an epidural on demographic, TPB and self-efficacy variables.

Predictors	β (step 1)	β (step 2)	β (step 3)	ΔR^2 for step	Total R^2
Step 1. Demographic variables				0.12*	0.12*
Age	−0.07	−0.06	−0.07		
Number of weeks pregnant	0.02	0.04	0.03		
Number of previous childbirths	−0.15	−0.10	−0.11		
Previous use of an epidural	0.38***	0.22**	0.24**		
Step 2. TPB variables				0.48***	0.61***
Attitude		0.35***	0.36***		
Subjective norm		0.43***	0.44***		
Perceived behavioural control		0.13	0.12		
Step 3. Self-efficacy theory variables				0.01	0.62***
Outcome expectancy			0.10		
Self-efficacy			−0.00		

* $p<0.05$. ** $p<0.01$. *** $p<0.001$.

explained variance in intentions to use $NO_2\&O_2$ (F_{change} (3, 92)=14.32, $p<0.001$), 40% in explained variance in intentions to use pethidine (F_{change} (3, 92)=23.07, $p<0.001$) and 48% in explained variance in intentions to use epidural analgesia (F_{change} (3, 92)=37.93, $p<0.001$). Subjective norm emerged as a significant predictor of intentions to use all three medications such that more favourable norms were associated with stronger intentions to use each medication. Attitude independently predicted intentions to use $NO_2\&O_2$ and epidural analgesia such that more favourable attitudes were associated with stronger intentions to use the medications, and PBC significantly predicted intentions to use pethidine such that greater PBC was associated with stronger intentions.

At step 3, the inclusion of the self-efficacy theory variables did not significantly increase the explained variance in intentions to use $NO_2\&O_2$ (R^2_{change}=0.02, F_{change} (2, 90)=1.69, ns), pethidine (R^2_{change}=0.02, F_{change} (2, 90)=1.35, n.s), or epidural analgesia (R^2_{change}=0.01, F_{change} (2, 90)=1.00, ns). In the final models, subjective norm remained a significant predictor of intentions to use each medication,

attitude predicted intentions to use NO_2&$O_2$and epidural analgesia, and PBC predicted intention to use pethidine. Previous use of epidural remained a predictor of intentions to have an epidural.

Discussion

The aim of this study was to investigate whether pregnant women's beliefs about pain management strategies predicted their intentions to use analgesia during childbirth. Hypothesis 1 was supported by the findings that beliefs about the three medications, as assessed in accordance with the TPB, significantly enhanced the prediction of intentions to use each medication over demographic variables. However, no support was found for hypothesis 2 that beliefs about using non-pharmacological pain management strategies, as assessed using self-efficacy theory, predicted women's intentions to use analgesia when controlling for beliefs about the medication and demographic variables.

The support found for hypothesis 1 provides further evidence for the utility of the TPB in explaining pregnant women's decision-making processes in addition to predicting the intention to exercise (Hausenblas & Symons Downs, 2004) and to breastfeed (Swanson & Power, 2005). The findings are also largely in line with those of Pellino (1997) with attitude and subjective norm predicting intentions to use NO_2&O_2 and epidural analgesia, although intentions to use pethidine were predicted by subjective norm and PBC. The TPB accounted for increasing amounts of variance in intentions to use the medication as the strength and invasiveness of the medication increased, suggesting that the importance of beliefs may relate to the magnitude of the behavioural implications.

Across all three medications, intentions were predicted by subjective norm highlighting an important role for the views of midwives and others. Of the TPB components, subjective norm tends to be the weakest predictor of intentions across various types of behaviours (Armitage & Conner, 2001). However, evidence suggests that intentions to perform health related behaviours are more likely to be predicted by subjective norm than other behavioural intentions (Finlay, Trafimow, & Villareal, 2002). It has been argued that behavioural intentions are influenced more greatly by perceived social pressure to perform the behaviour when the behaviour is to be performed publicly (Garcia & Mann, 2003), or if the behaviour has implications for other people (Quine & Rubin, 1997), both of which apply to medication use during childbirth.

Attitude predicted intentions to use NO_2&O_2 and epidural analgesia but not pethidine. The reasons for this are not clear but possibly relate to the expression of strong intentions to use NO_2&O_2 and not to use epidural analgesia. Women may also be less familiar with pethidine than the other medications. Despite being routinely available, recent evidence suggests that pethidine is used less frequently than the other medications during childbirth (Henry & Nand, 2004) and its use has been decreasing (Horowitz, Yogev, Ben-Haroush, & Kaplan, 2004). The reason for this is unknown, although it is possible that this may reflect a reluctance by health staff to recommend the medication, or a lack of availability of staff to administer it at the point when the woman needs it.

The lack of support for hypothesis 2 went against expectations. The findings indicated that beliefs about non-pharmacological pain management strategies as a

whole did not influence decisions to use each medication during childbirth when beliefs about the medication had been taken into account. This suggests that the mixed evidence regarding whether self-efficacy is related to the duration of pain tolerance before requesting analgesia, and the frequency of medication use in childbirth (Manning & Wright, 1983; Stockman & Altmaier, 2001) may be influenced by underlying differences in beliefs about medication use. However, the prediction of intentions to perform a specific behaviour using self-efficacy for another behaviour may account for the lack of support for hypothesis 2. The TPB literature argues that the components need to be measured in exactly the same detail as the behaviour, a practice known as the principle of compatibility (Ajzen, 2006). The findings suggest that this principle may also apply to measuring self-efficacy.

Despite the sound theoretically driven approach to this investigation the limitations warrant consideration. The study examined behavioural intentions and although these are considered to be key predictors of behaviour within the theoretical framework of the TPB (Ajzen, 1988), other factors may also influence actual behaviour (Conner & Sparks, 2005). Furthermore, the use of a self-selected sample may limit the generalisability of the findings. Finally, the initial internal reliability of the measures of attitude and PBC across medications was generally low. However, Ajzen (2006) and others argue that internal consistency is not a requirement across indirect measures of the TPB components because people may hold inconsistent behavioural, normative or control beliefs about a single behaviour (Francis et al., 2004). Repeat analyses with and without the four least internally consistent items from the attitude and PBC scales of each medication found no differences in the results indicating that the findings were robust to these changes.

The findings have practical implications for the provision of antenatal preparation for childbirth. Evidence suggests that over 80% of antenatal women want some form of shared decision-making with health professionals (O'Cathain, Thomas, Walters, Nicholl, & Kirkham, 2002). However, the current findings indicate that health providers need to ensure that women's intentions to use analgesia are based on accurate information rather than perceived social expectations. As opportunities for antenatal education are time limited (Renkert & Nutbeam, 2001), the findings suggest that targeting women's beliefs about medications will impact upon their plans and in particular highlights the need to include people close to women in discussions about pain relief as subjective (social) norms were found to influence decisions across medications.

In summary, the results support the utility of the TPB in this novel situation, as the degree of pain to be experienced is unknown *a priori*. Future research might examine chronic pain patients' intentions to use analgesic medication to explore how aspects of the medication and the familiarity of the behaviour impact upon PBC as a predictor. The findings suggest that antenatal education addressing pharmacological beliefs will impact upon women's plans to use analgesia during childbirth and also highlight the need to provide women with adequate information and support to facilitate the decision-making process during this time.

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