Social Influences and the Physical Activity Intentions of Parents of Young-Children Families: An Extended Theory of Planned Behavior Approach

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Abstract

Evidence within Australia and internationally suggests parenthood as a risk factor for inactivity; however, research into understanding parental physical activity is scarce. Given that active parents can create active families and social factors are important for parents' decision making, we investigated a range of social influences on parents' intentions to be physically active. Parents (N = 580; 288 mothers and 292 fathers) of children younger than 5 years completed an extended Theory of Planned Behavior questionnaire either on-line or paper-based. For both sexes, attitude, control factors, group norms, friend general support, and an active parent identity predicted intentions, with social pressure and family support further predicting mothers' intentions and active others further predicting fathers' intentions. Attention to these factors and those specific to the sexes may improve parents' intentions to be physically active, thus maximising the benefits to their own health and the healthy lifestyle practices for other family members.

Key words: parents, physical activity, theory of planned behavior, social influences

Parenthood is suggested to be a risk factor for inactivity (Bellows-Riecken & Rhodes, 2008), affecting both mothers' (McIntyre & Rhodes, 2009) and fathers' (Burton & Turrell, 2000; Hull et al., 2010) physical activity (PA) behavior. Having a family is a major life event with many lifestyle changes needed, especially in the early years of establishing a family (Glade, Bean, & Rohini, 2005). Given the considerable care and attention needs of young children, parents often find themselves competing against the demands of their family role obligations with their need to engage in health promoting behavior, including PA (Hamilton & White, 2010a; Nomaguchi & Bianchi, 2004). Although the family context provides many challenges for parents, parenthood does not make engaging in PA impossible, but rather can create opportunities to be physically active (Hamilton & White, 2010a; Lewis & Ridge, 2005). Thus, a better understanding of the factors that facilitate parental PA is needed to inform intervention work that is aimed at increasing PA participation among parents of young children. Investigating the influences for parents' PA performance rather than adults in general is especially important given that targeted interventions (e.g., targeting a family context vs. a community context in general) are suggested to be most effective in promoting increases in PA (Müller-Riemenschneiderl et al., 2008).

Parents, who are key influential figures within the family unit, can affect the socialization process of their children's behavior, including PA (Pugliese & Tinsley, 2007). Recent research has identified that positive relations between parental modelling of PA and child PA is dependent on the gender of the parent (Zach & Netz, 2007) and the age of the child (Pugliese & Tinsley, 2007). Specifically, longitudinal research has found that parents' PA when the child is young is associated with PA of the child in the pre adolescent years (Mattocks et al., 2007) and that physically active fathers positively influence their sons' participation in sports and inactive mothers negatively influence their daughters' sports participation (Martin, Dollman, Norton, & Robertson, 2005). PA can also have positive effects on parenting practices, such as having greater confidence in child rearing abilities and

helping to cope with the challenges of being a parent (Hamilton & White, 2010b; Lewis & Ridge, 2005). Given these findings, it is important that both mothers and fathers are physically active, especially when their children are young.

Despite the plethora of literature examining adults' PA in general, to date, little research has examined those factors that specifically determine parental PA. In the scant research available it is suggested that family structure variables (e.g., marital status, number and age of children) and general demographic factors (e.g., gender, employment, ethnicity, socioeconomic status) may affect parents' PA performance (Bellows-Riecken & Rhodes, 2008). The research, however, is equivocal on the role that many of these factors may exert on parents' PA. Furthermore, while these largely demographic and family structure characteristics may be important, the majority is not readily modifiable and does not explain the complexity of social and psychological influences that underpin parents' decisions about regular PA. Some consistent barriers, however, for parents in relation to performing regular PA have been reported. These barriers include lack of time and support, fatigue, and commitment to other role obligations (Bellows-Riecken & Rhodes, 2008; Brown, Brown, Miller, & Hansen, 2001; Hamilton & White, 2010b; McIntyre & Rhodes, 2009). However, research applying established theoretical models for understanding PA among parents is limited (Bellows-Riecken & Rhodes, 2008). The theory of planned behavior (TPB; Ajzen, 1991) is one of the major predictive models utilized in research on social and health behavior.

The TPB proposes the most proximal determinant of behavioral outcomes is intention to perform a given behavior which is, in turn, predicted by three belief-based constructs: attitude, subjective norm, and perceived behavioral control (Ajzen, 1991). Attitudes are the perceived positive or negative outcomes of performing a particular behavior. Subjective norms refer to the perceived pressure from important others to perform or not to perform an action. Perceived behavioral control refers to one's perceived ease of performing a given behavior and is also proposed to influence behavior directly. The TPB is considered a

parsimonious model of behavior prediction which has been successful in predicting PA-related behaviors, where meta-analytic research has shown the model to account for an average of 45% of the variance in people's intentions and 27% of the variance in PA behavior, respectively (Hagger, Chatzisarantis, & Biddle, 2002; Symons Downs & Hausenblas, 2005). Despite the strong support demonstrated for the TPB, there remains a proportion of unaccounted variance. Ajzen (1991) supports the inclusion of additional predictors as long as there is a strong theoretical justification for their inclusion and that they capture a significant portion of unique variance in intentions or behavior.

Social Influences

One aspect of the TPB that has been questioned in the literature is the role of subjective norms in explaining health-related behaviors (Armitage & Conner, 2001). In particular, meta-analytic research in the PA domain has found that the relationship between subjective norm and intention is weaker than either the attitude-intention and perceived behavioral control-intention relationships (Hagger et al., 2002; Symons Downs & Hausenblas, 2005). Researchers have suggested that the conceptualization of the subjective norm construct is inadequate, arguing that there might be other types of social influences which are more important in determining people's intentions (White, Hogg, & Terry, 2002). In particular, for behaviors that lend themselves to social approval, such as PA, it has been suggested that a measure of descriptive norms where the perceptions of important others' own behavioral performance influences an individual's actions (Rivis & Sheeran, 2003a) be included within the TPB. Given that parents are intertwined within social networks, the family unit being one such network, social influences might be especially salient for parents of young children. Qualitative research has identified the potential importance of social contexts in shaping parental PA decision making (Hamilton & White, 2010a); thus, examining other social influences, in addition to social pressures, on parents' PA seems warranted.

Group norms. In contrast to the subjective norm construct of the TPB which focuses on perceived social pressure to perform the behavior (Ajzen, 1991), group norms refer to the explicit or implicit prescriptions regarding one's appropriate attitudes and behaviors as a member of a specific reference group in a specific context (White et al., 2002). Social identity theorists (Hogg & Abrams, 1988; Turner, Hogg, Oakes, Reicher, & Wetherell, 1987), therefore, argue that the normative influence from an ingroup with whom one identifies is very powerful in determining group members' behavior. As such, an individual's intention to perform a given behavior is more likely when there is normative support from a relevant group for performing the behavior and for attitudes towards the given behavior than without ingroup support (Terry & Hogg, 1996). Accordingly, group norms influence behavioral performance as the individual, based on their observations of group members, seeks to act in a manner similar with their ingroup, therefore achieving categorization as a group member (Hogg & Abrams, 1988; Turner et al., 1987).

More recent evidence, however, suggests that group norms predict behavioral intentions irrespective of level of identification (Johnson & White, 2003). The normative influences of relevant social groups are argued to be an important predictor of parenting behavior (Abidin, 1992). Furthermore, being surrounded by physically active others, specifically other parents in similar family groups who exercise (Brown, Brown, Miller, & Hansen, 2001; Hamilton & White, 2010b), is important for parents' PA engagement. In particular, a qualitative study investigating parental PA beliefs (Hamilton & White, 2010b) revealed that other parents with young children is an appropriate reference group for parents with young children. Thus, investigating, more specifically, the perceived actions of other referents who are of particular importance to parents (i.e., friends with young children) to examine their effect on mothers' and fathers' PA intentions may be beneficial.

Social support. Social support is another social influence that is found to have strong positive associations with people's intentions to perform PA. Social support implies

perception of aid and assistance in performing a given behavior (Heaney & Israel, 2002) which is conceptually distinct from social pressures asserted by the subjective norm construct. It has been suggested that, for behaviors that are non-volitional, social support may be more influential in predicting intentions as assistance is more likely to be required for performing the behavior (Courneya, Plonikoff, Holz, & Birkett, 2000).

While the importance of social support for PA performance has been widely accepted, investigations of social support within the TPB framework have resulted in equivocal findings in which some studies have found social support to add predictive value to intentions (Courneya et al., 2000) whereas others have found no such effect (Hamilton & White, 2008). The lack of examination of a range of other social influences (e.g., social pressures and normative behaviors) alongside social support (see Hamilton & White, 2008) might account for the discrepancy in findings as might the way in which specific cohorts of the population perceive social support as influencing their PA performance. For example, social support is found to be more influential for females' rather than for males' PA-related behavior (Leslie et al., 1999; Phongsavan, McLean, & Bauman, 2007).

Alternatively, social support conceptualizations might influence outcomes where it is suggested that single item social support scales are insufficient in capturing the multiple dimensions inherent in the construct (House, 1981). Specifically, research has shown that social support from different sources, such as family members and friends, significantly and positively influences people's PA decision making (Brown et al., 2001; Sallis, Grossman, Pinski, Patterson, & Nader, 1987). This social support typically relates to various types of support that are provided by significant others to help facilitate behavioral performance. For example, social support for PA can be instrumental (e.g., providing childcare), emotional (e.g., giving companionship), informational (e.g., giving advice), or appraisal (e.g., giving encouragement) (House, 1981).

Those parents who care for young children report social support, specifically from family members and friends, as important in helping to alleviate some of the barriers to PA participation (Brown et al., 2001; Hamilton & White, 2010c). Furthermore, support from family and significant others have been identified as essential to maintaining participation in PA at key transitional phases (Allender, Cowburn, & Foster, 2006). It might be beneficial, then, to examine the effect of social support on parental PA decision making and to differentiate the effect it may exert on both mothers' and fathers' behavioral intentions from that of other social influences, such as social pressures.

Self-identity. Self-identity originated with identity theory (Stryker, 1968) and refers to the salient part of an individual's self which relates to a particular behavior (Conner & Armitage, 1998) and is suggested to be inextricably linked to the wider social structure (Terry, Hogg, & White, 1999). Thus, social influence can also be conceptualized in the PA context in terms of role identity or self-identity where the individual values the role of being a physically active person and considers this an important part of their self-concept. Research has shown that individuals who identify themselves as exercisers have more favourable exercise intentions than those who do not (Kendzierski, 1988). Furthermore, it has been shown that individuals engage in significantly more exercise when they identify as a type of person who exercises (Rivis & Sheeran, 2003b). Thus, it might be important to consider the social implications of behavior in relation to identity with specific roles, which are socially prescribed and embedded within social contexts such as the family unit, when understanding the intentions of parents toward behavioral performance.

According to identity theory (Stryker, 1968), the self is composed of a collection of identities that reflect the roles the individual may fulfil in a social context. A key proposition to this view of identity theory is that the multiple identities that comprise an individual's self-concept are organized into a hierarchy according to the most valued self-identities and the more salient the self-identity, the more likely the individual will behave in accordance with

the identity (Stryker, 1968). Thus, when an individual identifies strongly as a person who performs a particular behavior, the behavior then becomes an important part of their self-concept, in turn, influencing their motivation to engage in the behavior.

Support for the inclusion for self-identity within the TPB was demonstrated in a meta-analysis that found self-identity to account for an additional 1% of the variance in behavioral intentions over and above the TPB constructs (Conner & Armitage, 1998), with a significant effect for self-identity found in the context of PA (Hamilton & White, 2008; Jackson, Smith, & Conner, 2003). More specifically, qualitative research examining the influence of social roles on parental PA suggests that, through the experience of parenthood, the meanings of PA is altered and that having an active role identity is viewed within the framework of parenting not within the framework of the individual (Hamilton & White, 2010a). As such, an active role is often merged with the parental role and, therefore, investigating the role that an active parent identity has on parental PA intentions may be important to consider in this context.

The Current Study

Raising a family may present many additional challenges (e.g., time constraints due to childcare commitments) that can ultimately affect parents' PA participation. Accordingly, there may be specific drivers and inhibitors of PA within the family context of parents of young children. Thus, rather than assuming that the influences that affect adults' PA in general can be applied to everyone in that broad category, it would be useful to investigate variables thought to impact on parents' PA decision making. The current study had a number of hypotheses. First, as per the TPB, we expected that attitudes, social pressures (subjective norms), and perceptions of control (perceived behavioral control) would predict mothers' and fathers' intentions to engage in regular PA. Second, we extended the TPB to include additional variables including the normative influence variables of descriptive norm and group norm, social support influence variables of family social support and friend social support, and a self-identity measure of active parent identity, to determine their effect on

parents' PA intentions. We predicted that these additional variables, which are likely to be important to parents with young children, would influence mothers' and fathers' behavioral intentions (see Figure 1). Finally, given that the impact of the TPB variables may differ in different target populations and that females rather than males are affected more by social influences, we investigated whether mothers' and fathers' PA intentions are governed by different psychological processes. The results reported are part of a larger study investigating measurement of parental PA, mediators of parental PA intentions and behavior, and key beliefs and social influences guiding parental PA. The results reported here focus solely on understanding the range of social variables that influence both mothers' and fathers' intentions to engage in regular PA.

Method

Participants and Procedure

The research was carried out between September 2009 and January 2010 and ethical clearance by the University Human Research Ethics Committee was granted (reference number 0800000516). Participants were 580 parents (n = 288 mothers, n = 292 fathers) living in Australia with at least one child younger than 5 years. Individuals who were pregnant and/or had a medical condition that prevented performing PA at recommended levels (see Australian Government Department of Health and Ageing, 2005) were excluded from participation (see Table 1 for a description of the parents in this study). All of the parents were independent of each other (i.e., participants were not in a couple relationship) with just over half of the parents (53%) rating themselves (rating of 6 or 7 on a 7-point scale) as being much more physically active prior to having children. Parents were recruited via various family and parenting networks including mothers' and fathers' groups, baby/toddler swim schools, and child play centres as well as through the local Playgroup Association (an organization which bring groups of parents and children together for play and socializing), one prominent day care association, two online parenting forums in Australia, and a major

Australian University's Alumni association. Parents completed an extended TPB questionnaire, either on-line or paper-based. A prize draw of a chance to win one of five $150 sporting store gift vouches was offered as an incentive for participation.

Measures

Parents were asked to answer questions in relation to performing regular PA. Regular PA was defined according to current guidelines (i.e., PA performed of at least a moderate-intensity on 5 days or more of the week for at least 30 minutes) (see Australian Government Department of Health and Ageing, 2005; Haskell et al., 2007). To maximize congruence between the prediction and criterion variables, the standard TPB variables were measured at the same level of specificity in terms of action, target, and time and were constructed in line with TPB recommendations (Ajzen, 1991). The specific items for each TPB construct were chosen based on those commonly used in the PA literature with the stem of each item reflecting the target behaviour under investigation in this study. Composite scores were created so that higher scores equated to stronger levels of the construct.

Principal component analysis. Given that the social influence variables may exhibit some conceptual overlap, an initial principal components analysis with varimax rotation was performed to assess the discriminant and convergent validity of the social influence measures. Based on eigenvalues greater than 1 and a scree test, seven factors were rotated. The analysis revealed that the items measuring family social support loaded on Factor 1 (factor loadings 0.83 – 0.48). The items measuring active parent identity loaded on Factor 3 (factor loading 0.84, 0.85), group norm items loaded on Factor 4 (factor loadings 0.93, 0.93), descriptive norm items loaded on Factor 6 (factor loadings 0.87, 0.85), and the items measuring subjective norm loaded on Factor 7 (factor loadings 0.88, 0.83). The items measuring friend social support, however, loaded on Factor 2 (factor loadings 0.86 - 0.53) and Factor 5 (factor loadings 0.86, 0.79). Inspection of the items loading on these latter two factors indicated that Factor 5 items measured elements of instrumental friend support (i.e., childcare and assistance

with household chores) whereas Factor 2 items measured more general types of friend support (e.g., emotional, informational, appraisal). Given the target group in this study (i.e., parents with children younger than 5 years of age), it is feasible that childcare and household chores are mainly the responsibility of those living within the family household (see Australian Bureau of Statistics, 2009) and that these types of support provided by friends are conceptually distinct from friends proving more general types of support. Thus, we considered friend social support as two separate types of support; friend general support and friend instrumental support. Among the 22 items, only small factor loadings were observed on the other factors (0.00 to 0.32), with only one item's cross loading being 0.41. Overall, these results support the empirical distinction among the social influence variables.

Intention. Three items assessed the strength of intention to perform regular PA ("I intend to do regular PA in the next week", "I plan to do regular PA in the next week", "I expect that I will do regular PA in the next week", scored *strongly disagree* [1] to *strongly agree* [7]). The scale was reliable ($\alpha = .95$).

Attitude. Attitude towards doing regular PA was assessed by three, 7-point semantic differential scales, all reversed scored ("For me to do regular PA in the next week would be …", *valuable* [1] to *worthless* [7], *pleasant* [1] to *unpleasant* [7], *good* [1] to *bad* [7]). The scale was reliable ($\alpha = .71$).

Subjective norm. Subjective norm was assessed by two items assessing perceived social pressures toward performing the behavior ("Most people who are important to me would approve of my doing regular PA in the next week", "Those people who are important to me think that I should do regular PA in the next week", scored *strongly disagree* [1] to *strongly agree* [7]). The items were significantly correlated ($r = .52$, $p < .001$).

Perceived behavioral control. Perceived behavioral control was measured by two items assessing the participant's sense of control about performing the target behavior ("I have complete control over whether I do regular PA in the next week", "It is mostly up to me

whether or not I do regular PA in the next week", scored *strongly disagree* [1] to *strongly agree* [7]). The items were significantly correlated ($r = .67$, $p < .001$).

Descriptive norm. Descriptive norms was assessed by two items measuring the actions of important others ("The people in my life whose opinions I value do regular PA", "Most people who are important to me do regular PA", scored *strongly disagree* [1] to *strongly agree* [7]). The items were significantly correlated ($r = .85$, $p < .001$).

Group norm. Group norm was measured by two items developed by Terry and Hogg (1996) and assessed the behaviors of other important referents in this context ("How many of your friends with young children would do regular PA in the next week", scored *none* [1] to *all* [7]; "Think about your friends with young children, what percentage of them do you think would do regular PA in the next week, scored *0%* [1] to *100%* [7]). The items were significantly correlated ($r = .82$, $p < .001$).

Family and friend social support. The family social support (all 7 items) and friend general (first 5 items) and friend instrumental support (last 2 items) scales were measured by items based on Sallis et al. (1987) and Brown et al. (2001). The scales assessed the frequency, during the past 3 months, with which a (1) partner/other family member of the household and (2) friends provided specific types of support for PA. Items included "During the past 3-months, my partner/other family member of my household …; my friends …; gave me encouragement to engage in PA, offered to be physically active with me, helped plan activities around my PA, gave me ideas on how I can get more PA, asked me for ideas on how they can get more PA, offered to mind the children so I could be more physically active, took over chores so I had more time to be physically active", scored *none* (1) to *very often* (5). The family social support scale ($\alpha = .86$) and the friend general and friend instrumental support scales ($\alpha = .86$ and $r = .58$, $p < .001$, respectively) were reliable.

Active parent identity. Active parent identity was measured by two items based on Terry et al. (1999) and assessed the extent to which one has a self-concept of being a

physically active parent ("Being an active parent is an important part of who I am", scored as *no, definitely not* [1] to *yes, definitely* [7]; "I think of myself as being an active parent", scored *completely false* [1] to *completely true* [7]). The items were significantly correlated ($r = .70$, $p < .001$).

Data Analysis

All analyses were carried out using the statistical software SPSS version 17.0. Given that the impact of the TPB variables may vary in different target populations (Ajzen, 1991), we first examined if gender differences in the social-cognitive variables existed using Fisher's *Z* test. Evaluation of the correlations between the predictor variables and intention by gender revealed subjective norms ($z = 3.42$, $p = .0006$) and family social support ($z = 2.98$, $p = .003$) as having higher correlations with mothers' intentions, suggesting that these two social influences are significantly more related to mothers' than fathers' regular PA intentions. As some differences between the social influence variables and intention by gender were observed, we conducted separate hierarchical multiple regression analyses for mothers and fathers to examine the proposed predictors of intentions to engage in regular PA. The standard TPB variables of attitude, subjective norms, and perceived behavioral control were introduced at step 1 with the additional social influence measures (descriptive and group norms, family social support, friend general and instrumental support, and active parent identity) being added at step 2. To ensure that the impact of demographic factors did not affect the results of the study, before performing the regression analyses, we conducted correlational analyses between parents' age, marital status, education level, ethnic background, work status, and number of children and intention and found that none of these variables were significantly related to intention for either parent group. Furthermore, the entering of these factors as covariates at step 1 in the regression analyses revealed the same pattern of results for both mothers and fathers.

Results

Means, standard deviations, and correlations of all the variables investigated in the current study across both mothers and fathers are reported in Table 2. All variables were significantly correlated with behavioral intention. For fathers, the strongest correlate was active parent identity (r = .53) and, for mothers, both active parent identity (r = .51) and subjective norms (r = .51) were the strongest correlates.

Regression Analysis Predicting Mothers' and Fathers' Intentions

As shown in Table 3, step 1 revealed that attitude was the strongest predictor for both mothers' (β = 0.38, p < .001) and fathers' (β = 0.46, p < .001) intentions; however, a slightly different pattern of results among mothers and fathers were revealed for the remaining TPB variables. For mothers' intentions, subjective norms (β = 0.30, p < .001) followed by perceived behavioral control (β = 0.29, p < .001) predicted intentions, while for fathers perceived behavioral control (β = 0.27, p < .001), but not subjective norms (β = 0.05, ns), emerged as significant. The step 1 variables accounted for 45% of the variance in mothers' intentions, F(3, 278) = 76.33, p <.001, and 33% of the variance in fathers' intentions, F(3, 286) = 45.99, p <.001.

The entering of the additional social influence variables at step 2 revealed that attitudes remained the strongest predictor of fathers' intentions with perceived behavioral control remaining significant. All three TPB predictors remained significant predictors of mothers' intentions after the inclusion of the additional social influence variables. For the additional social influences predicting intentions, a slightly different pattern of results were also revealed among mothers and fathers. For both mothers and fathers, group norm, friend general support (but not friend instrumental support), and an active parent identity, were significant predictors of intentions. For mothers, however, family social support predicted intentions (β = 0.11, p < .05 *vs* β = -0.09, ns for fathers), while for fathers descriptive norms predicted intentions (β = 0.19, p < .001 *vs* β = 0.07, ns for mothers). The inclusion of the

social influences significantly added an additional 13% ($F(9, 272) = 41.64$, $p < .001$) and 19% ($F(9, 280) = 32.98$, $p < .001$) of the variance in mothers' and fathers' intentions, respectively.

Discussion

Raising a family presents many challenges for parents and it may not be appropriate to assume that health behavior decision making, including PA decisions, for adults in general can be applied to a cohort of parents. It might be more beneficial, then, to investigate variables that are relevant specifically to parents' decision making when investigating PA. We investigated, using an established theoretical framework with the addition of variables pertinent to parents, the important influences that guide parents' intentions to engage in regular PA and to examine these influences across both mothers and fathers. For both sexes, attitude, perceived behavioral control, group norms, friend general support, and an active parent identity predicted intentions with subjective norms and family support further predicting mothers' intentions and descriptive norms further predicting fathers' intentions.

For predicting mothers' intentions and in support of the TPB, attitude, subjective norms, and perceived behavioral control significantly predicted intentions to engage in regular PA. These findings suggest that mothers who have more favorable attitudes, perceive pressure from important referents, and believe they have more control over their ability to perform regular PA, will have stronger intentions to do so. For predicting fathers' intentions and in partial support of the TPB, attitude and perceived behavioral control, but not subjective norm, predicted fathers' intentions. These findings suggest that overall positive evaluations of the behavior and perceptions of control over performing the behavior, but not social pressures from others, are important in informing fathers' PA intentions. Thus, both attitudes and perceptions of control are important to mothers and fathers. The finding that subjective norm did not predict fathers' intentions is consistent with the conclusions of meta-analytic research in the PA domain (Symons Downs & Hausenblas, 2005); however, subjective norms

predicted mothers' intentions which support the TPB model and Ajzen's (1991) suggestion that the TPB variables may differ in different target populations.

In consideration of the weaker role for subjective norms in the prediction of intentions (Armitage & Conner, 2001; Hagger et al., 2002; Symons Downs & Hausenblas, 2005), and that social influences are particularly salient for parents with young children (Brown et al., 2003; Hamilton & White, 2010a,b), we included the additional normative influence variables of descriptive norm and group norm, social support influence variables of family and friend social support, and a self-identity measure of active parent identity to determine their influence on intentions over and above the TPB variables. For both sexes, group norm, friend general support, and an active parent identity predicted intentions. In addition, family support predicted mothers' intentions and descriptive norms predicted fathers' intentions, but friend instrumental support did not predict the intentions of either mothers or fathers.

The findings of group norm and friend general support predicted intentions suggest that parents are more likely to intend to engage in regular PA if they perceive other parents in similar family groups, specifically their friends with young children, perform the behavior and they are receiving support from their friends (e.g., having physically active companions, getting encouragement, giving and sharing of ideas). These findings are consistent with previous qualitative (Hamilton & White, 2010b,c) and quantitative (Brown et al., 2001) research where support from friends is identified as important for parental PA decision making. These results highlight the importance of groups and friends in providing normative information and support, particularly in the form of companionship, information, and encouragement that parents use when forming intentions to be regularly active. These findings concur with research that suggests social influences are important determinants of adults' behavioral decision making (Rivis & Sheeran, 2003b).

Furthermore, self-identity in the form of having an active parent identity emerged as an independent predictor of intentions for both mothers and fathers. The finding suggests that

those parents who identify with the concept of being an active parent are more likely to perform regular PA than those who do not have an identity of being a physically active parent. These results are consistent with research that have examined more general concepts of self-identity in the context of PA (Hamilton & White, 2008; Jackson et al., 2003) and with more recent qualitative research which suggests that the merging of these two social roles of active role and parental role is a meaningful self conceptualization (Hamilton & White, 2010a).

For mothers, but not fathers, family social support was revealed as a significant predictor of intentions. This finding suggests that the assistance (e.g., childcare, help with household chores, encouragement) from those living within the family home is important for mothers' activity performance and is consistent with previous research examining constraints on mothers' PA (Brown et al., 2001; Lewis & Ridge, 2005). The finding is also consistent with recent qualitative research examining parental PA where it is suggested that fathers might have the ability to be more independently physically active and, thus, do not necessarily rely on the support of their partners to be physically active (Hamilton & White, 2010c) and with previous literature that suggests social support may be more influential for females' rather than for males' PA-related behavior (Leslie et al., 1999; Phongsavan, McLean, & Bauman, 2007).

For fathers, however, intentions to perform regular PA are more likely if they perceive that important referents are performing the behavior (descriptive norm). Thus, the influence of behavioral norms in general (i.e., active others) as well as from a relevant reference group (i.e., friends with young children) are important for fathers' activity levels and suggest that being surrounded by physically active people and, particularly, active friends with young children, is especially important in informing fathers' PA intentions. The social influence of friend instrumental support, however, did not emerge as a significant predictor of both mothers' and fathers' PA intentions. The assistance from friends in the form of offering

assistance with childcare and help with household chores, therefore, may not be important in informing the intentions of mothers' and fathers' to engage in regular PA. This finding might be supported by the feasibility that parents of young children receive these types of assistance predominately from family members as these types of assistance are considered the responsibility of those living within the family home (Australian Bureau of Statistics, 2009).

While the research has a number of strengths including a large sample that was representative of both sexes and using a well established theoretical approach to understand parental PA that included the addition of social influences that are particularly relevant to parents of young children, the current study also has a number of limitations. First, self-report data were obtained which may result in acquiescent bias. Second, the prize draw of a sporting voucher may have biased the type of respondent who volunteered to participate in the study. Third, although the model in the current study explained a substantial amount of variance in intentions, there still remains a proportion of unaccounted variance. Future research, then, needs to concentrate on establishing other variables which might predict one's intentions for engaging in regular PA, such as examining how motivational dispositions (e.g., internal and external motivations; see Deci & Ryan, 1985), within a TPB framework, affect parents' PA decision making. In addition, given that qualitative research suggests that some parents may perceive encouragement for PA as adding to their guilt for being inactive (Hamilton & White, 2010c), investigating the role of emotions and desires (see Perugini & Bagozzi, 2001) may be a useful avenue for future research. Furthermore, research suggests that targeting the individual is beneficial in understanding PA (Kahn et al., 2002); however, it might be useful for future research to investigate the natural interactions that occur within family units (i.e., the couple relationship) or across generations. Finally, this study examined intentions only without explicitly examining actual PA behavior. Although intentions are the strongest predictor of subsequent behavior (Armitage & Conner, 2001) and, within a TPB framework, social influences are expected to influence intentions, further examination of the relationship

between the TPB constructs and behavioral performance may allow for a more comprehensive understanding of parents' PA participation.

Our study highlights a range of practical implications for increasing parental PA intentions which resultant intervention programs should consider. First, highlighting positive attitudes and increasing parental control over performing PA might be effective strategies to use in trying to promote favorable intentions towards PA participation. Second, normative factors were important in informing intentions. Thus, to strengthen parental PA intentions campaigns could foster PA as being a normative behavior within groups of parents with young children, therefore focusing their intervention strategies within family and parenting groups. Additionally, for mothers, campaigns could focus on openly showing important referents (e.g., partners) approving of the behavior. Third, engaging the support of friends (particularly in the form of companionship, encouragement, and advice) may help to increase parents' intentions and, for mothers, also engaging the support from partners/other family members of the household. Finally, given that self-identity predicted intentions, encouraging parents to embrace an identity of being a physically active parent may prove beneficial in improving parents' intentions to perform regular PA. For example, parents and community organizations could be encouraged to consider opportunities for parents to be physically active when parents are fulfilling their parenting role (e.g., schools/sporting clubs organizing parent sporting events alongside child sporting events, parents being physically active with their children in play). Our study provides important applied information that can be used in developing intervention programs aimed at increasing the intentions and, thus, subsequent performance of regular PA in parents of young, which is important given that parental PA may help in the development of healthy lifestyle practices for other family members.

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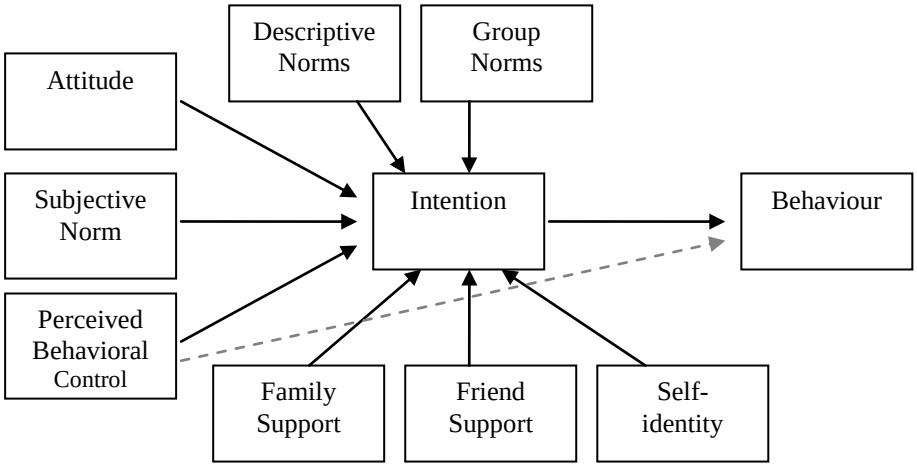

Figure 1. The role of social influences, within a TPB framework, on parents' intentions to be regularly physically active

Table 1

Demographic Characteristics of the Parents that Participated in the Study (*N* = 580)

Characteristics		Full Sample (*N* = 580)	Mother (*n* = 288)	Father (*n* = 292)
Age in years, Mean (SD)		35.57 (5.50)	34.14 (5.12)	37.01 (5.45)
Level of Education, #(%)	No high school diploma	36 (11.7)	14 (4.8)	22 (7.5)
	High school diploma	75 (12.9)	45 (15.6)	30 (10.3)
	Diploma/trade certificate	157 (27.1)	71 (24.7)	86 (29.5)
	University degree	299 (51.6)	155 (53.8)	144 (49.4)
Work Status, #(%)	Full-time	275 (47.4)	21 (7.3)	254 (87.0)
	Part-time/Casual	122 (21.0)	107 (37.1)	15 (5.1)
	Student/work	26 (4.5)	19 (6.6)	7 (2.4)
	Home duties	143 (24.6)	136 (47.2)	7 (2.1)
Marital Status, #(%)	Single	9 (1.5)	6 (2.0)	3 (1.0)
	Married	475 (81.9)	227 (78.8)	248 (84.9)
	Common law	73 (12.6)	46 (16.0)	27 (9.2)
	Separated/Divorced	10 (1.7)	5 (1.7)	5 (1.7)
Number of children, #(%)	1 child	155 (26.7)	88 (30.6)	67 (22.9)
	2 children	277 (47.8)	128 (44.4)	149 (51.0)
	3 children	93 (16.0)	49 (17.0)	44 (15.1)
	4 children	35 (6.0)	17 (5.9)	18 (6.2)
	greater than 4 children	8 (1.4)	3 (1.0)	5 (1.6)
Ethnic Status, #(%)	Australian	427 (73.6)	222 (77.1)	205 (70.2)
	Not Australian	140 (24.13)	62 (21.5)	78 (26.7)

Table 2. *Parents Reports of Intention (Intent), Attitude, Subjective Norm (S-Norm), Perceived Behavioral Control (PBC), Descriptive Norm (D-Norm), Group Norm (G-Norm), Active Parent Identity (APid), Family Social Support (Fam-SS), Friend General Support (F-SSa), and Friend Instrumental Support (F-SSb): Correlations and Descriptive Statistics for Mothers (N = 288) and Fathers (N = 292)*

Variable	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	M	SD
1. Intent	-	0.49***	0.27***	0.32***	0.40***	0.32***	0.53***	0.22***	0.26***	0.12*	5.42	1.71
2. Attitude	0.45***	-	0.25***	0.06	0.15*	0.12*	0.34***	0.26***	0.15*	0.03	6.38	0.71
3. S-Norm	0.51***	0.26***	-	0.43***	0.29***	0.22***	0.14*	0.28***	0.14	0.01	5.85	1.33
4. PBC	0.43***	0.02	0.42***	-	0.24***	0.12*	0.10	0.03	-0.02	-0.04	5.34	1.68
5. D-Norm	0.46***	0.22***	0.48***	0.25***	-	0.32***	0.29***	0.42***	0.21***	0.18**	4.38	1.72
6. G-Norm	0.27***	0.06	0.10	0.23***	0.20***	-	0.24***	0.22***	0.18**	0.18**	3.46	1.31
7. APid	0.51***	0.45***	0.17**	0.14*	0.33***	0.11	-	0.21***	0.28***	0.07	5.60	1.44
8. Fam-SS	0.44***	0.28***	0.31***	0.24***	0.41***	0.19**	0.28***	-	0.43***	0.29***	2.44	0.87

9. F-SSa	0.38***	0.24***	0.16**	0.10	0.23***	0.30***	0.32***	0.42***	-	0.46***	1.97	0.81
10. F-SSb	0.17**	0.08	0.06	0.08	0.09	0.21***	0.21***	0.26***	0.49***	-	1.32	0.59
M	5.34	6.40	5.81	4.87	4.65	3.36	5.59	2.37	2.04	1.32		
SD	1.79	0.85	1.35	1.82	1.76	1.28	1.39	0.96	0.86	0.59		

Note. Correlations for mothers (n = 288) presented below diagonal. Correlations for fathers (n = 292) presented above diagonal. Means and standard deviations for mothers are presented in the horizontal rows, and means and standard deviations for fathers are presented in the vertical columns.

Note. Mean scores in the current study are based on 7-point scales (1 to 7), except for the family and friend social support scales which were scored on 5-point scales (1 to 5).

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

Table 3. P*redicting Intentions for Mothers* (*N* = 288) *and Fathers* (*N* = 292) *with Standard TPB Variables (STEP 1) and Additional Social Influence Variables (STEP 2).*

	Mothers (*N* = 288)				Fathers (*N* = 292)			
	R^2(Adjusted R^2)	β	*B*	SE	R^2(Adjusted R^2)	β	*B*	SE
Step 1	0.45(0.45)				0.33(0.32)			
Attitude		0.38***	0.79	0.10		0.46***	1.12	0.12
Subjective norm		0.30***	0.40	0.07		0.05	0.07	0.07
Perceived behavioral control		0.29***	0.29	0.05		0.27***	0.27	0.05
Step 2	0.58(0.57)				0.52(0.50)			
Attitude		0.21***	0.44	0.10		0.34***	0.82	0.11
Subjective norm		0.24***	0.32	0.07		0.01	0.01	0.07
Perceived behavioral control		0.21***	0.21	0.04		0.21***	0.22	0.05
Descriptive norm		0.07	0.07	0.05		0.19***	0.19	0.05

Group norm	0.08*	0.12	0.06	0.11*	0.14	0.06
Family social support	0.11*	0.20	0.09	-0.09	-0.18	0.10
Friend general support	0.12*	0.26	0.11	0.11*	0.22	0.11
Friend instrumental support	-0.03	-0.09	0.14	0.01	0.04	0.14
Active parent identity	0.25***	0.32	0.06	0.30***	0.36	0.06

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