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Application of the Multi-Process Action Control Framework to Understand Parental Support of Child and Youth Physical Activity, Sleep, and Screen Time Behaviors

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2019

The final publication is available at:

https://doi.org/10.1111/aphw.12150

Citation for this paper:

Rhodes, R. E., Berry, T., Faulkner, G., Latimer-Cheung, A. E., O'Reilly, N., Tremblay, M. S., Vanderloo, L., & Spence, J. C. (2019). Application of the multi-process action control framework to understand parental support of child and youth physical activity, sleep, and screen time behaviors. *Applied Psychology: Health and Well-Being, 11*(2), 223-239. https://doi.org/10.1111/aphw.12150.

Application of the Multi-Process Action Control Framework to Understand Parental Support of Child and Youth Physical Activity, Sleep, and Screen Time Behaviors

Abstract

Background: The purpose of this paper was to apply a framework designed to evaluate the intention-behavior gap, known as multi-process action control (M-PAC), to understand parental support for the Canadian 24-Hour Movement Guidelines for Children and Youth. **Method**: Parents (N = 1,208) of children 5 to 17 years of age, completed measures of reflective (attitudes, perceived control), regulatory (planning) and reflexive (identity, habit) processes as well as intention and support behaviors. **Results**: Parents had significantly ($p < .01$) higher intentions in descending order to support sleep (86%), reduce screen time (62%) or support physical activity (65% to 61%). Translation of these intentions into behavior was also significantly ($p < .01$) higher in a descending pattern for sleep support (80%), screen time reduction (68%), and physical activity support (56% to 31%). Congruent with M-PAC, a discriminant function analysis of the results showed that the translation of parental support intentions into behavior was associated with a combination of reflective, regulatory, and reflexive antecedents but these varied by the behaviors. **Conclusion**: The majority of parents have positive intentions to support child and youth health behaviors, yet many fail to enact this support. Translation of intention into action was associated with attitudinal aspects, control over support, self-regulation skills, and parental habits and identity.

Key Words: Planning, intention, affective attitude, perceived control, identity, habit, family

Recently, the Canadian 24-Hour Movement Guidelines for Children and Youth (CMG) were developed to provide public health guidelines integrating recommendations for physical activity (PA), sedentary behavior, and sleep for the pediatric population ranging from 5-17 years (Tremblay et al., 2016). Unfortunately, less than one in five Canadian children aged 5-17 years adhere to these healthy movement behavior guidelines (Roberts et al., 2017). Thus, the promotion of such health behaviors is of paramount importance.

Parental support of sleep (Pyper, Harrington, & Manson, 2017), sedentary behavior (Xu, Wen, & Rissel, 2015), and PA (Rhodes & Quinlan, 2014) has received much research attention, given that children and youth spend considerable time in the care of their parents. There are several different measures and conceptions of a construct as complex as parental support (Trost, McDonald, & Cohen, 2013), which is an umbrella term that represents the functional characteristics associated with the interactions between a parent and his/her children in promoting behaviors (Beets, Cardinal, & Alderman, 2010; Pyper, Harrington, & Manson, 2016). In this study, our conception of parental support is an amalgam of the emotional (encouragement) and instrumental (logistics of transport) facets that underlie the responsiveness (providing encouragement and autonomy), structure (providing social and physical environments) and demandingness (restrictive and punitive practices) aspects of parenting practices (Davison et al., 2013).

One approach to understanding parental support has been to employ behavioral theory. Most of this work has been performed using an adaptation of Ajzen's (1991) theory of planned behavior (TPB) in the PA domain and the results have shown general support of this structure in both observational (Rhodes et al., 2013; Rhodes et al., 2015) and experimental research (Bassett-Gunter, Stone, Jarvis, & Latimer-Cheung, 2017; Laukkanen, Pesola, Finni, & Sääkslahti, 2017). Despite the general evidence for the utility of this TPB framework, the relationship between intention and support behavior has been modest. This "intention-behavior gap" has prompted the development of models that attempt to

understand the translation of intention into behavior, which is also known as action control (Kuhl, 1984). One of the most frequently applied action control models in the PA domain is the multi-process action control framework (M-PAC; Rhodes, 2017; Rhodes & de Bruijn, 2013). In this framework, intention is conceived as a decisional construct (i.e., intend/do not intend). Similar to the tenets of TPB and most social cognitive theories, *reflective processes* of *instrumental attitude* (utility of the behavior), *affective attitude* (enjoyment of the behavior), *perceived capability* (perceptions of ability to perform a behavior) and *perceived opportunity* (time and access to perform a behavior) are considered the key determinants of intention. Reflective processes represent the consciously deliberated and expected consequences of performing a behavior (Rhodes, 2017). In M-PAC, however, the translation of intention into behavior is determined by the reflective processes of affective attitude and perceived opportunity (higher values are considered necessary for successful translation of intentions into behavior than for intention formation) and the enactment of *regulation processes*. Regulation processes include behaviors or cognitions that people enact to translate their intentions into behavior. The behaviors often included as regulatory processes are conceptually similar to action/coping planning in the health action process approach (HAPA; Schwarzer, 2008) or the behavioral processes of change in the transtheoretical model (Prochaska & DiClemente, 1982). Finally, continuance of action control is thought to rely upon the development of *reflexive processes.* Reflexive processes represent impulsive constructs that influence action control most often through learned associations and are triggered through particular circumstances and stimuli (Rhodes, 2017). M-PAC highlights the development of two critical reflexive processes, habit (i.e., behavior performed from stimulus-response bonds) and identity (behavior performed to minimize the dissonance between self-categorization and behavior), as one begins to perform the behavior more regularly. Thus, a developed behavioral pattern of action control will be determined by the independent influence of reflective, regulatory, and reflexive processes (Rhodes, 2017).

M-PAC has been applied to two studies in an attempt to understand parental support of PA. Rhodes et al. (2016) showed that the support for the child MVPA intention-behavior gap was just over 50% among a sample of Canadian mothers and that reflective processes of affective attitude and perceived behavioral control, and regulation processes (planning, monitoring), predicted this gap. Using the M-PAC framework, Tanna et al. (2017) showed that parental support increased among a small sample of parents with intention to support their child's PA through experimental manipulation of regulation processes compared to a control group. Another relevant observational study of parents of young children found evidence that planning was the key predictor of parental support using the HAPA model (Hamilton & Schwarzer, 2016). Despite these initially positive findings, there were limitations to these studies. First, the proposed reflexive processes of habit and identity were not included and have yet to be examined within the context of parental support. It would seem logical that habits and parental identity around support behavior would be critical determinants of action control. Second, the parental support intention-behavior gap and its subsequent prediction have been limited to moderate to vigorous physical activity (MVPA). Thus, research that would extend the framework to the four movement behaviors of the CMG (i.e., light PA, MVPA, screen time, sleep) could be useful to understand differences among these support behaviors.

Thus, the purpose of this study was to explore the parental support intention-behavior gap among the four movement behaviors of the CMG and use the M-PAC framework to predict intention-behavior correspondence. This data-set has been analyzed previously using a standard TPB approach (Rhodes et al. in press) and showed modest associations ($r^2 = .08$ to $.25$) between intention and behavior, thus supporting this follow-up analysis. We had the following hypotheses:

PA support would likely have a larger intention-behavior gap than sleep and screen-time restriction support because these are more complicated parenting behaviors that involve considerable time and structure.

Affective attitude, perceived opportunity, planning, habit and identity would predict successful, compared to unsuccessful intenders, at providing child/youth PA support.

By contrast, because the M-PAC was developed for the PA context, an exploratory examination was undertaken for whether the approach could account for intention-behavior concordance of parental sleep and screen-time restriction support.

Method

Study Design and Participants

Using a cross-sectional study design, an online survey was deployed by a hired vendor (Maru/Matchbox) in October 2017. Drawing on Maru/Matchbox's representative consumer online panel database of approximately 110,000 people recruited via organic joins, referrals, campaigns, and partnering communities, a total of 1,208 parents with children between the ages of 5 and 17 years were randomly selected for participation. Participants receive between $.50 and $3.00 CAD for participating in surveys run by this market research agency in accordance with survey burden. The survey remained open for completion for two weeks to complete the online survey, and it was available in French and English. The sample was stratified by province and population density. All research material received human research ethics approval from one of the co-author's academic institutions (ALC).

Measures

All health behaviors for children and youth were defined to be congruent with the CMG, followed by our definition of parental support for that behavior so that responding parents could understand what was meant by each behavior while answering the questions (see Supplemental Table 1). When parents had more than one child within the five-to-18-year range, they were asked to think of their child whose birthday was closest to the date of the study as the referent for all the questions in the survey.

Background demographics comprised of the variables of parental household income, education, employment status, number of children in the home, age of the child who was considered for the questions in the survey, and MVPA, LPA, sleep, and screen time questions (of their child) started the questionnaire (see Supplementary Table 2).

M-PAC measures about parental support of the four CMG behaviors, as well as their reliabilities, can be found in Supplementary Table 3.

Parental support intention and behavior of the four CMG behaviors, as well as their reliabilities, can be found in Supplementary Table 4.

Analysis Plan

Data were analysed in SPSS 20 (SPSS Inc., Chicago, IL, USA). Normality of all variables was checked and descriptives of all variables were computed. For the creation of the action control framework (i.e., intention-behavior profiles), parental support variables were formatted to include "most days (4)" and "every day (5)" responses as support for that guideline. By contrast, those participants who answered responses that were among the "no days/rarely" to "3-4 days per week" were scored as failing to meet support for a behavioral guideline. Similarly, intention to support was dichotomized to include participant responses of five days per week and higher as intention to support the guideline and responses of lower than five days per week as not intending to meet the guideline. The categorization provides four possible quadrants of: 1) nonintenders (low intention, low support), 2) nonintenders who resulted in support (low intention, high support), 3) unsuccessful intenders (intention, low support), and 4) successful intenders (intention, high support).

Considering a small-medium effect size ($f = .17$), an alpha of .01, and a power of .80, 135 participants were needed in a particular intention-behavior profile across the four support behaviors to be included in the analyses (Faul, Buchner, Erdfelder, & Lang, 2009). Prediction of the category membership used discriminant function analysis and follow-up univariate F-tests, followed by post hoc tests. Alpha was

set at $p < .01$. Given the large sample size, effect sizes were estimated to aid in the interpretation of the inferential statistics results. For the associations with the discriminant function, we used $r = .15$ as the minimum recommended effect size for the social sciences because the estimate is between Ferguson's (2009) $r = .20$ and Cohen's (1992) $r = .10$ recommendations. Similarly, for supplementing Bonferroni post-hoc mean differences, we used $d = .30$ as the minimum recommended effect size because the estimate is between Ferguson's (2009) $d = .41$ and Cohen's (1992) $d = .20$ recommendations.

Results

Participant characteristics can be found in Supplementary Table 5. Briefly, parents reported an average child age of 11.59 years (SD = 3.81). Consistent with national averages (Statistics Canada, 2007), the parent respondents were 52.3% female, 52.1% had completed a University degree, 54.0% had household income above $75,000 CDN, and 69.1% were employed. Parents reported that 12.7% of their children were meeting national MVPA guidelines, 30.5% were meeting LPA guidelines, 25.8% were meeting screen time guidelines, and 72.2% were meeting sleep guidelines.

Descriptives and bivariate correlations of the main constructs can be found in Supplementary Table 6. All predictor constructs showed significant ($p < .01$) and meaningful correlations with intention and support behavior across all four health behaviors.

Creation of the Intention-Behavior Profiles for the Four Support Behaviors

The intention-behavior profiles of the action control framework yielded the following distributions for MVPA support: 1) nonintenders (34.8%; $n = 420$); 2) nonintenders who did support (4.2%; $n = 51$); 3) unsuccessful intenders (42.1%; $n = 508$); and, 4) successful intenders (19%; $n = 229$). The same framework yielded a relatively similar profile for LPA support: 1) nonintenders (27.2%; $n = 328$); 2) nonintenders who did support (7.5%; $n = 91$); 3) unsuccessful intenders (28.5%; $n = 344$); and, 4) successful intenders (36.8%; $n = 445$). Sleep support yielded the following profile: 1) nonintenders (10.1%; n = 122); 2) nonintenders who did support (4.4%; $n = 53$); 3) unsuccessful

intenders (17.2%; $n = 208$); and, 4) successful intenders (68.3%; $n = 825$). Finally, the intention-behavior profiles for support of the screen time restriction guidelines were: 1) nonintenders (31.1%; $n = 376$); 2) nonintenders who did support (6.9%; $n = 83$); 3) unsuccessful intenders (19.7%; $n = 238$); and, 4) successful intenders (42.3%; $n = 511$).

Comparisons of intention formation and action control are detailed in Table 1. The highest proportion of intenders was for support of the sleep guidelines (85%), and this was significantly ($p < .01$) higher than the intentions to support each of the other behaviors in the CMG. By contrast, intention to support MVPA showed the lowest proportion of intenders (61%) and this was significantly ($p < .01$) lower than intention to support LPA (65.3%) but not support for screen time restriction (62%). Support of the sleep guidelines also showed the highest proportion of parents who translated their intentions into behavior (79.9%), which was significantly ($p < .01$) higher than the translation between intention and behavior for any of the other support behaviors. Intention translation was subsequently significantly ($p < .01$) higher for screen time restriction (68.2%) than LPA support (56.4%), and LPA support was significantly higher than MVPA support (31.1%).

Predictors of Parental Support Action Control of the 24-Hour Movement Guidelines for Children and Youth

The nonintenders who did support all four behaviors were dropped from subsequent analyses as the groups did not meet power analyses requirements (i.e., small and severely unequal sample sizes). Further, examination of the intention-behavior profiles by family demographics was then performed to determine whether any of these variables should be entered into the multivariate analyses as control variables. Child age was significant ($p <. 01$) for both the MVPA and LPA support intention-behavior profiles and was added to the main analyses as a control variable for MVPA and LPA support. For sleep support, child age, parent gender, and number of children were significantly ($p < .01$) associated with the intention-behavior profiles so these were added into that analysis. Finally, child age and

number of children in the home were associated with the screen time restriction intention-behavior profiles ($p < .01$) so these variables were entered into that analysis.

The main results of the discriminant analyses and follow-up tests for MVPA and LPA support are presented in Table 2. For MVPA support, the discriminant analysis identified one significant discriminant function that distinguished among the three groups [Wilks' $\lambda = .76$; canonical $r = .48$, $\chi^2 = (16) = 317.81$, $p < .01$] and correctly classified 51% of cases. Child age (r = -.19), affective attitude (r = .25), perceived opportunity (r = .21), planning (r = .27), habit (r = .25) and identity (r = .30) had meaningful correlations with the discriminant function. These differentiated nonintenders, unsuccessful intenders, and successful intenders in follow-up tests with consecutively larger values in each predictor variable. Child age showed no differentiation of the groups in post-hoc tests.

For LPA support, the discriminant analysis also identified a single significant discriminant function among the three groups [Wilks' $\lambda = .68$; canonical $r = .55$, $\chi^2 = (16) = 427.06$, $p < .01$] and correctly classified 55.9% of cases. Child age (r = -.30), affective attitude (r = .23), perceived opportunity (r = .41), habit (r = .33) and identity (r = .24) had meaningful correlations with the discriminant function. The variables differentiated nonintenders, unsuccessful intenders, and successful intenders in follow-up tests with consecutively larger values in each predictor variable. Follow-up analyses showed that successful intenders had younger children compared to the unsuccessful intender and nonintender groups.

The main results of the discriminant analyses and follow-up tests for sleep and screen time restriction support are presented in Table 3. For sleep support, the discriminant analysis identified a significant discriminant function to differentiate the three groups [Wilk's $\lambda = .58$; canonical $r = .63$, $\chi^2 = (20) = 627.92$, $p < .01$] and correctly classified 69.6% of cases. Child age (r = -.30), parent gender (r = .15), instrumental attitude (r = .28), perceived capability (r = .16), perceived opportunity (r = .25), planning (r = .28), and habit (r = .31) had meaningful correlations with the discriminant function. All

constructs differentiated nonintenders, unsuccessful intenders, and successful intenders in follow-up tests with consecutively larger values in each predictor variable. Follow-up analyses of child age showed that successful intenders had younger children compared to the unsuccessful intender and nonintender groups. Follow-up tests of parent gender showed that nonintenders were more likely to be fathers, compared to successful intenders.

Finally, the results of the discriminant analyses for screen time restriction also showed a single significant discriminant function [Wilks' $\lambda = .58$; canonical $r = .64$, $\chi^2 = (18) = 416.28$, $p < .01$] and correctly classified 62.9% of cases. Child age (r = -.17), affective attitude (r = .16), instrumental attitude (r = .32), perceived capability (r = .22), perceived opportunity (r = .15), habit (r = .39) and identity (r = .22) had meaningful correlations with the discriminant function. All of the previously noted constructs differentiated nonintenders, unsuccessful intenders, and successful intenders in follow-up tests with consecutively larger values in each predictor variable. Follow-up analyses of child age showed that nonintenders had older children than the unsuccessful and successful intender groups.

Discussion

The purpose of this paper was to apply a framework designed to evaluate the intention-behavior gap, known as M-PAC (Rhodes, 2017), in an effort to understand parental support of the constituent components of the CMG (Tremblay et al., 2016). It was hypothesized that PA support behaviors would likely have the largest intention-behavior gap, compared to sleep and screen-time restriction support. This hypothesis had clear support. The majority of parents did have intentions to support their children in each of the four health behaviors (from 61% to 86%). However, only 31% of parents had correspondent support intentions and behavior for MVPA and this was followed by 56% of parents for LPA. By contrast, 68% of parents had correspondent support intentions and behavior for screen time restriction and 80% of parents had correspondent intention and support behavior for sleep.

These wide discrepancies in the intention-behavior relationship highlight that theories that position intention as the proximal antecedent of behavior may be better suited for some health behaviors than others (McEachan, Conner, Taylor, & Lawton, 2011). Commensurate with past research in parental support (Rhodes et al., 2016), intention-behavior relations are problematic in the PA domain and highlight the utility of action control approaches. This is likely due to the considerable time and effort in the parenting structure practices (driving children/youth to activities/ active involvement with the kids) needed to turn good intentions into actual PA support behavior. By contrast, sleep support does appear to be fairly well accounted for by an intention-behavior model approach. The benefits of parental support of sleep are well-established and highly valued (Giannotti & Cortesi, 2011). Furthermore, parental support of sleep is likely a lower burden (e.g., short in duration each night, no cost) and thus easier to accomplish, as parents are most likely available for the opportunity to provide sleep support (e.g., home in the evening). From a practical perspective, the findings suggest that building intentions to support child and youth sleep (and to a lesser degree, screen time reduction, perhaps in tandem) may hold considerable value to the actual enactment of the support behavior but this may only be an intermediary step in helping parents support their children/youth to engage in PA.

The second purpose of the study was to predict the intention-behavior profiles of parental support for the CMG using the M-PAC approach, after controlling for demographic covariates. It was hypothesized that reflective, regulatory, and reflexive processes would independently predict intention-behavior profiles in PA behaviors while we considered the results for screen time restriction and sleep as exploratory. We found overall support for our PA hypothesis in our multivariate analyses. The reflective constructs of affective attitude and perceived opportunity, but not instrumental attitude and perceived capability were associated with PA action control. Rhodes (2017) has specifically outlined affective attitude and perceived opportunity as ongoing reflective processes in PA action control compared to instrumental attitude and perceived capability. This reasoning is based on the supposition

that the benefits of PA (instrumental attitude) and one's basic PA skills (perceived capability) remain fairly constant, but feelings about performing the act (affective attitude) and the opportunity to perform the act (perceived opportunity) are constantly challenged by daily events. While our assessment of these concepts through a cross-sectional design yielded positive findings, this theorizing is best examined through dynamic modeling in future research (Maher et al., 2017).

Examination of sleep and screen time support yielded different findings compared to PA. Interestingly, sleep support action control was associated with instrumental attitude but not affective attitude, and screen time restriction action control was associated with both instrumental attitude and affective attitude. Both perceived capability and opportunity predicted action control for these support behaviors. There may be a few different reasons for these findings. First, sleep and screen time restrictions likely involve short bursts of parental enforcement that highlight parenting practices around demandingness that follow instrumental attitudes (restrictive and punitive practices) and abrupt intention-behavior coupling (Davison et al., 2013; Trost et al., 2013). Sleep and corresponding bed times may require less affective demands on parenting because of basic norms around this behavior that do not deviate too much across families (Giannotti & Cortesi, 2011). By contrast, screen time restriction is a relatively new public health guideline that could require affective considerations in parenting (e.g., push back from children/youth).

From a practical point of view, the results highlight how educational campaigns based on the importance of child and youth PA are not recommended as a standalone intervention, but may hold some utility for sleep and screen time restriction support. By contrast, some consideration of affect during parental support interventions may facilitate closing the PA intention-behavior gap and assist in screen-time restriction support. As noted previously (Rhodes et al., 2016), this could involve child recreational activities that also provide parents with something pleasant (e.g., urban design aesthetics, activities that both can enjoy), while restriction of screen time may be more about remaining calm and

firm with the initial intention. The results also indicate that interventions that target effective restrictive practices could be useful for parents in enforcing bed time and screen time routines. Interventions that target improved perceived opportunities (from policy to an individual-level focus) for parents to be present (e.g., flexible work policies) seem important for support of all the CMG behaviors. Regulation processes, which in this study included an aggregate of action and coping planning (Schwarzer, 2008), predicted action control for MVPA but not LPA. The finding for MVPA replicates past research (Rhodes et al., 2016). Upon reflection, LPA may represent more spontaneous play than MVPA and thus it could follow that support for these different types of activities differs around the extensiveness of planning and problem solving (Gray et al., 2015). Planning also predicted action control of sleep support but not screen time limitation. Similar to our arguments for PA, this discrepancy may be about the relative spontaneity of the different behaviors. Bed times are predictable so it seems natural that plans will follow intentions. By contrast, screen time restriction is likely somewhat dependent on the child/youth and their screen viewing behavior and thus parents may need to engage in more situationally responsive parenting practices.

Related to this final point, the reflexive processes (habit and identity) predicted variance in action control of parental support across all four behaviors independent of reflective and regulatory processes (see also Supplementary Table 7). This finding, aligned with our hypothesis, represents a novel contribution to understanding parental support. In terms of action control, the presence of a habit is expected to increase the efficiency of the behavioral response, and protect against the deliberation of alternative actions (Rhodes & Rebar, in press). Our results showed that habit was the most consistent correlate of action control with a medium effect size across all four CMG support behaviors. From a practical perspective, this highlights that helping parents develop support habits for their child/youth to meet the CMG may be prudent. Currently, the optimal way to develop a habit is not well understood,

but there is agreement that context-repetition (behavior practiced under the same cues) is a key antecedent (Wood, 2017).

Identity was a correlate of action control in LPA, MVPA, and screen time restriction support but not sleep support. It may be that sleep support identity was not important because most parents view child sleep support as something common place (Giannotti & Cortesi, 2011) and not prominent enough to feature into their identity. Identity is proposed to affect action control reflexively by increasing motivation for a behavior from the dissonance that arises when there is a growing discrepancy between one's identified self and one's behavior (Burke & Stets, 2009). Changing identity has been understudied at present but some theorists have suggested that strict rules, social observation of one's competency compared to others, and repeated sacrifices of one behavior over another may be required to form strong identities (Kendzierski & Morganstein, 2009).

Despite the novel findings of this study, the results should be considered within the context of its limitations and may prompt areas for future research. First, the study features a passive cross-sectional design, with a self-reported support behavior measure. Causal attributions in these types of designs are not possible and self-reported behavior in a single administration may inflate the findings due to common methods. Second, besides basic demographics, the sample did not contain specific child-level factors such as body weight status, or chronic health conditions, social factors such as peer influence, or environmental factors such as seasonal effects that may moderate action control. Finally, the sample used for this research showed generally strong representation of the Canadian population, but may not generalize to specific geographical locales or cultures. Future research is needed to test the generalizability of these findings.

Overall, the findings of our study demonstrate the differential range of the intention-behavior gap among parental support of key health behaviors in children and youth and highlight that action control models may be important to apply, particularly when understanding PA and screen-time

reduction. Using the M-PAC framework, our results suggested that intention- support behavior profiles have key reflective, regulatory, and reflexive correlates but these do vary by different behaviors in the CMG. Addressing these should be the focus of interventions aimed at improving parental support for children's health behaviors.

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Table 1

Comparisons of Intention Formation and Intention Translation of Parental Support for Meeting the Four 24 Hour Movement Behavior Guidelines for Children and Youth

Relationship	(1)MVPA Support	(2)LPA Support	(3)Sleep Support	(4)Screen Time Restriction	Cochran's Q	Post-Hoc
Intention Formation	61.0%	65.3%	85.5%	62.0%	340.22*	1<2<3; 4<3
Intention Translation	31.1%	56.4%	79.9%	68.2%	375.13*	1<2<4<3

Note: * $p < .01$; Post-hoc tests at $p < .01$. MVPA = moderate and vigorous intensity physical activity; LPA = light intensity physical activity Intention formation test at DF = 3, 1208. Intention translation test at DF = 3, 489.

Table 2

Prediction of Intention-Behavior Profiles for Parental Support of Meeting the Physical Activity Behavior Guidelines for Children and Youth using Multi-Process Action Control Variables

	Intention-Behavior Profiles			Correlation with Discriminant Function	Univariate Follow-Up	Post Hocs
	Non-intenders	Unsuccessful Intenders	Successful Intenders			
Moderate and Vigorous Intensity Physical Activity Support						
Child Age	12.21 (3.85)	11.30 (3.74)	11.37 (3.64)	-.19	7.58*	-
Affective Attitude	4.90 (1.26)	5.50 (0.99)	5.96 (0.92)	.25	76.76*	NI<UI<SI
Instrumental Attitude	5.38 (1.17)	5.90 (0.94)	6.13 (0.91)	-.02	NA	NA
Perceived Capability	3.75 (0.89)	4.19 (0.73)	4.49 (0.64)	.05	NA	NA
Perceived Opportunity	3.61 (0.96)	4.13 (0.81)	4.42 (0.70)	.21	79.06*	NI<UI<SI
Planning	3.16 (0.97)	3.60 (0.82)	4.18 (0.66)	.27	106.79*	NI<UI<SI
Habit	3.35 (0.97)	3.87 (0.80)	4.22 (0.78)	.25	84.45*	NI<UI<SI
Identity	3.25 (0.83)	3.67 (0.73)	4.18 (0.69)	.30	111.10*	NI<UI<SI
Light Intensity Physical Activity Support						
Child Age	12.37 (3.83)	12.35 (3.43)	10.35 (3.72)	-.30	40.27*	NI,UI>SI
Affective Attitude	5.02 (1.18)	5.50 (1.01)	6.04 (0.89)	.23	95.12*	NI<UI<SI
Instrumental Attitude	5.26 (1.12)	5.72 (1.00)	6.16 (0.88)	-.01	NA	NA
Perceived Capability	3.74 (0.88)	4.16 (0.66)	4.48 (0.67)	-.05	NA	NA
Perceived Opportunity	3.52 (0.96)	4.10 (0.71)	4.44 (0.61)	.41	137.28*	NI<UI<SI
Planning	3.10 (0.94)	3.48 (0.86)	3.98 (0.92)	.11	NA	NA
Habit	3.35 (0.93)	3.89 (0.77)	4.27 (0.70)	.33	124.42*	NI<UI<SI
Identity	3.23 (0.79)	3.62 (0.69)	4.03 (0.72)	.24	114.28*	NI<UI<SI

Note: * = $p<0.01$. NA = not applicable. NI = nonintenders (MVPA n = 420; LPA n = 328), UI = unsuccessful intenders (MVPA n = 508; LPA n = 344), SI = successful intenders (MVPA n = 229; LPA n = 445). Bonferroni Post hoc tests interpreted as $p < 0.01$ and $d > 0.30$ based on the recommended minimum effect size for social science data (Cohen, 1992; Ferguson, 2009).

Table 3

Prediction of Intention-Behavior Profiles for Parental Support of Meeting the Sleep and Screen Time Restriction Guidelines for Children and Youth using Multi-Process Action Control Variables

Follow-Up	Intention-Behavior Profiles			Correlation with Discriminant Function	Univariate	Post Hocs
	Non-intenders	Unsuccessful Intenders	Successful Intenders			
<u>Sleep Support</u>						
Child Age	13.61 (3.77)	13.43 (3.46)	10.77 (3.61)	-.30	67.52*	NI,UI>SI
Gender of Parent	1.37 (0.48)	1.42 (0.50)	1.57 (0.50)	.15	14.07*	NI>SI
Number of Children	1.79 (1.84)	1.52 (0.72)	1.89 (0.89)	.00	NA	NA
Affective Attitude	4.31 (1.26)	4.90 (1.25)	5.63 (1.21)	-.05	NA	NA
Instrumental Attitude	4.73 (1.26)	5.59 (1.07)	6.29 (0.86)	.28	165.87*	NI<UI<SI
Perceived Capability	3.16 (0.93)	4.04 (0.71)	4.48 (0.61)	.16	220.24*	NI<UI<SI
Perceived Opportunity	3.15 (0.96)	4.00 (0.76)	4.50 (0.63)	.25	218.48*	NI<UI<SI
Planning	2.79 (0.96)	3.36 (0.87)	4.04 (0.82)	.28	155.15*	NI<UI<SI
Habit	2.97 (0.96)	3.87 (0.77)	4.33 (0.76)	.31	171.68*	NI<UI<SI
Identity	2.74 (0.97)	2.91 (0.90)	3.49 (1.01)	.03	NA	NA
<u>Screen Time Restriction Support</u>						
Child Age	13.39 (3.36)	11.34 (3.84)	10.30 (3.53)	-.17	83.00*	NI>UI,SI
Number of Children	1.63 (1.20)	1.76 (0.78)	1.94 (0.84)	.00	NA	NA
Affective Attitude	3.52 (1.48)	4.17 (1.44)	5.01 (1.47)	.16	112.49*	NI<UI<SI
Instrumental Attitude	4.55 (1.32)	5.28 (1.24)	5.97 (1.07)	.32	104.32*	NI<UI<SI
Perceived Capability	3.03 (1.09)	3.79 (0.81)	4.29 (0.71)	.22	225.96*	NI<UI<SI
Perceived Opportunity	2.97 (1.10)	3.79 (0.82)	4.30 (0.72)	.15	243.54*	NI<UI<SI
Planning	2.48 (0.98)	3.17 (0.86)	3.88 (0.88)	.11	NA	NA
Habit	2.42 (0.97)	3.17 (0.96)	3.95 (0.96)	.39	274.21*	NI<UI<SI
Identity	2.54 (0.91)	3.21 (0.78)	3.89 (0.83)	.22	278.46*	NI<UI<SI

Note: * = $p < 0.01$. NA = not applicable. NI = nonintenders (sleep n = 122; screen n = 376), UI = unsuccessful intenders (sleep n = 208; screen n = 238), SI = successful intenders (sleep n = 825; screen n = 511). Gender of parent coded 1 = male, 2 = female. Bonferroni Post hoc tests interpreted as $p < 0.01$ and $d > 0.30$ based on the recommended minimum effect size for social science data (Cohen, 1992; Ferguson, 2009).