Forming the Action Control Framework

M-PAC uses the action control framework as the dependent variable in observational designs such as cross-sectional or longitudinal data where no intervention has been implemented (Rhodes & de Bruijn, 2013a). This framework relies on dichotomizing intention (yes/no) and subsequent behavior (yes/no) at public health guidelines or any other pre-set guideline. It is recommended that M-PAC predictor variables also use the same guideline when asking the participant to respond. For example, if physical activity guidelines of 5 times per week (at 30 minutes or more of moderate to vigorous intensity) is used, this should be the stem of the items applied to assess reflective, regulatory, and reflexive measures. In this example, those participants who intended to participate in physical activity 5 times per week or more would be scored as a "yes" and those who intended to be active at a lower frequency would be scored as a "no". For physical activity, those who scored 5 times per week or more would also be scored as a "yes" and those who were active at a lower frequency would be scored as a "no". The categorization provides four possible quadrants of: 1) nonintenders (low intention, low behavior), 2) nonintenders who resulted in support (low intention, high behavior), 3) unsuccessful intenders (intention, low behavior), and 4) successful intenders (intention, high behavior).

Dichotomies truncate the range of a distribution, so this approach may be considered unusual for those interested in continuous variables. What is important to remember here is that M-PAC is focused on understanding the intention-behavior relationship at a particular threshold (typically akin with public health) and not all of the possible variance of intentions and behavior. Those who are interested in the full variance of a behavior or intention are likely to find the action control approach inappropriate for their aims. The advantage of this approach, however, is that the intention-behavior relationship can be understood at important behavioral targets, such as public health guidelines, rather than intention-behavior discordance at very low or very high levels of behavior that have limited practical utility. Furthermore, M-PAC's measure of intention is the decisional component of an intention (Rhodes & Rebar, 2017) (i.e., I intend to do ___) and not a measure of intention strength, where there is a fixed decision in place and the response is tantamount to the strength of that decision (e.g., strongly disagree to strongly agree). Finally, the ratio-level scale of measurement (e.g., days of

the week) can allow for a strong correspondence between intention and behavior to create an intention behavior-profile that has straightforward meaning when interpreting the results.

Despite the advantages overviewed above about the action control framework, there is one caveat that should be explored in sensitivity analyses. Given the dichotomization procedure, it is possible that some of the participants will be classified as unsuccessful intenders from a very minor lapse in behavior that isn't particularly meaningful. In the example above this could be participants who intended to engage in physical activity 5 times per week but instead achieved 4 times per week, or were just below the targeted volume of activity (e.g., 25 minutes instead of 30 minutes). We suggest computing descriptives for the behavioral variable among unsuccessful intenders in order to ascertain a basic understanding of the distribution of this group. The group mean and standard deviation should be at a lower value in order to show that the dichotomization is meaningful in terms of deviation from the intention score. Second, we recommend recoding the action control framework as a value just below the threshold of "successful intenders" to examine whether the proportional shift is significant compared to the original coding. Finally, we recommend re-running the analyses of the M-PAC predictors (see subsequent section) to examine whether any of the findings change as a result of this recode. The results should not change unless the findings are sensitive to this minor recode.

Analyzing M-PAC with the Action Control Framework

The action control framework will likely yield three of the four possible categories, which include nonintenders, unsuccessful intenders, and successful intenders (Rhodes & de Bruijn, 2013b). Even if the fourth category emerges, the appropriate analyses involve always those used to predict categorical data as the dependent variable. Our preferred analysis for prediction of category membership has been discriminant function analysis and follow-up univariate *F*-tests (Rhodes & de Bruijn, 2013b). We present a Table below as an example (adapted fromRhodes & Lim, 2016). Nevertheless, logistic regression approaches are also completely appropriate for analysis such as those used in Vallerand et al. (2016).

Example Table.

Prediction of Daily Dog Walking Intention-Behavior Profiles using Multi-Process Action Control Variables.

	Intention-Behavior Profiles			Correlation with Discriminant Function	Univariate Follow-Up $F_{2,218}$	Post Hocs
	Non-intenders (n = 59)	Unsuccessful Intenders (n= 75)	Successful Intenders (n = 91)			
Outcome Expectations	3.98 (0.77)	3.92 (0.83)	4.28 (0.78)	.14	NA	NA
Affective Judgements	4.10 (0.82)	4.35 (0.59)	4.69 (0.41)	.33	18.43**	NI < UI < SI
Perceived Capability	4.48 (0.98)	4.73 (0.52)	4.76 (0.61)	-.03	NA	NA
Perceived Opportunity	4.27 (0.84)	4.54 (0.61)	4.62 (0.67)	.03	NA	NA
Behavioral Regulation	2.73 (0.93)	3.04 (0.93)	3.42 (0.92)	.33	10.27**	NI < UI < SI
Habit	3.00 (1.02)	3.63 (1.09)	3.96 (0.98)	.38	15.65**	NI < UI < SI
Identity	3.33 (1.01)	3.49 (0.85)	4.07 (0.63)	.22	17.53**	NI,UI < SI

Note: *=p<0.05. ** = p < .01. NI = non-intenders; UI = unsuccessful intenders; SI = successful intenders. NA = not applicable. Post hoc tests interpreted as $p < 0.05$ and $d > 0.30$ based on the recommended minimum effect size for social science data (Cohen, 1992; Ferguson, 2009).

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