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Running Head: WITHIN-PERSON AND BETWEEN-PERSON MOTIVATION

The importance of disaggregating within-person changes and individual differences among
internalized motives, self-esteem and self-efficacy

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Abstract

Grounded in self-determination theory, this study examined the implications of differentiating between within-person weekly changes and between-person differences in average levels of autonomy support and internalized motivation for one's self-esteem and self-efficacy. Thirty-nine adults who were socially disadvantaged and unemployed completed weekly questionnaire assessments over 11-weeks of a sports-based educational program. Multilevel modeling revealed that within-person changes in perceptions of autonomy support positively predicted identified regulation and introjected regulation; however, between-person differences in perceived autonomy support predicted identified regulation only. Within-person changes in introjected regulation positively predicted global self-esteem and self-efficacy towards future employment in coaching; however, between-person differences in introjected regulation negatively predicted self-esteem and self-efficacy. In contrast, within-person changes in identified regulation, as well as between-person differences, were positively associated with self-efficacy. Between-person differences in identified regulation also positively predicted self-esteem. It was also demonstrated that many of these contrasting relationships are hidden if the different processes are not disaggregated. As a result, we propose that different internalization processes exist which depend on whether within-person changes or sustained levels of motivation are explored.

Key words: self-determination; autonomy; motivation; within-person; between-person.

The importance of disaggregating within-person changes and individual differences among internalized motives, self-esteem and self-efficacy

Every day individuals take part in activities that are not carried out for inherent interest or enjoyment, but for extrinsic contingent outcomes associated with these activities. It is well known that the quality of these extrinsic motivations are important for long term adherence and persistence in many life domains, such as education, health, sport, work and personal relationships (Deci & Ryan, 2008). However, one's motivation toward an activity may also have important implications for one's sense of self (Leary & Baumeister, 2000). In the present study we demonstrate that the relationship between extrinsic motivation and self-evaluations is not straightforward due to the different repercussions of within-person changes and between-person differences in motivation toward an activity. Self-evaluation is a collective term reflecting individuals' basic appraisals about his or her ability, competence and overall value (Bono & Judge, 2003). The present study explores two distinct self-evaluations. Self-esteem refers to one's global evaluation of his or her overall worthiness (Rosenberg, 1965), whereas, self-efficacy represents one's belief that he or she can be successful in specific contexts (Bandura, 1997). By exploring these two constructs we aimed to demonstrate the implications of holding different motives for global and contextual self-evaluations.

Organismic integration theory, one dimension of the wider self-determination theory, describes a process of internalization whereby external social sanctions which force action are converted into personally endorsed motives (Deci & Ryan, 2000). When this internalization process is successful, an individual will be driven by identified regulation, which reflects motivation to participate in an activity because one values the associated outcomes (Ryan, 1993). Thus, identified regulations are relatively self-determined and autonomous (Deci & Ryan, 2000).

In contrast, introjected regulation manifests when the internalization process is prevented from occurring fully, either by a need-thwarting social context or dysfunctional intrapersonal mechanisms (e.g., maladaptive cognitive schemas). Hence, reasons for behavior have been somewhat internalized but have not become part of the self and, therefore, represent low levels of self-determination (Deci & Ryan, 2000). Examples of introjected regulations include taking part in activities to prove self-worth or avoid guilt or shame for not taking part (Deci & Ryan, 2000)¹.

The tenet that both regulations have been internalized to different degrees (and, therefore, reflect different levels of self-determination) suggests that they will lead to different cognitive, affective and behavioral outcomes (Deci & Ryan, 2008). For instance, in two studies of political attitudes, identified regulation towards politics was positively related to actively seeking political information, multifaceted political attitudes, and increased likelihood to vote. In contrast, introjected regulation was positively related to relying on others for information, conflicting emotions about political outcomes, and susceptibility to persuasion (Koestner, Losier, Vallerand, & Carducci, 1996). In education and sport contexts identified regulation has been shown to have stronger associations with deep-level learning, adaptive affect and performance, compared to introjected regulation (Assor, Vansteenkiste, & Kaplan, 2009; Vansteenkiste, Simons, Lens, Soenens, & Matos, 2005).

Despite these suppositions, negative consequences of introjected regulation have not always been observed. Pelletier, Fortier, Vallerand, and Brière (2001) reported no significant differences in introjected regulation between behaviorally engaged competitive swimmers and those who dropped out. In a systematic review of motivation, exercise, and physical activity, introjected regulation was found to be positively associated with exercise-related benefits in

many studies, with few studies reporting negative associations (Teixeira, Carraca, Markland, Silva, & Ryan, 2012). Regarding associations between introjected regulation and self-esteem, theorists advocating self-esteem as a sociometer propose that motives to maintain one's value in social circles (i.e., a form of introjected regulation) are closely associated with self-esteem and are of evolutionary benefit (Leary & Baumeister, 2000).

Some explanations for these mixed findings are apparent within the literature. For example, holding introjected motives with 'approach' characteristics (e.g., striving for self-worth) may be more favorable, compared to 'avoidance' introjected motives (e.g., evading feelings of guilt; Assor et al., 2009). Temporal considerations may also be important, for example, introjected regulation towards swimming was positively associated with behavioral engagement 10 months later, but unrelated to engagement in the subsequent season (22 months later; Pelletier et al., 2001). We propose a third explanation for the mixed findings pertaining to introjected regulation; the distinction between short-term changes in motivation relative to an individual's average levels (i.e., within-person changes) versus sustained between-person differences in motivation toward an activity. We attempt to demonstrate that this discrepancy is significant when exploring the internalization process and has important ramifications for self-esteem and self-efficacy.

Recently, Curran and Bauer (2011) explain that the psychological field has neglected to differentiate between within-person changes and between-person processes and that 'these two levels of influence can operate simultaneously and even in opposite directions' (pp. 2). Within-person changes refer to short-term deviations from one's average levels. Extrapolating to the internalization process, a within-person change in introjected motives may have some short-term benefits for one's self-esteem or self-efficacy. For example, striving to please others or avoid

negative feelings more than one's average levels may enhance feelings of self-esteem or efficacy towards that specific activity at that point in time. Between-person differences reflect an individual's average levels contrasted to other individuals. It is likely that sustained (i.e., average) levels of introjected motivation over a period of time enhances vulnerability to social pressures, leads to an inauthentic existence and, thus, is detrimental for one's self-esteem or self-efficacy (Ryan & Brown, 2003). In contrast, both within-person changes (e.g., an increase in perceived value of the activity from an individual's average levels) and between-person differences (e.g., sustained worthiness of an activity) of identified regulation should hold positive benefits because one's behavior is autonomous, volitional, and endorsed by the self (Deci & Ryan, 2000).

In addition to the influence of within-person changes versus between-person differences in motivation on self-esteem and self-efficacy, it is of interest to explore the distinction between within-person and between-person levels of contextual support for internalization processes (i.e., autonomy support). Autonomy support reflects a style of interacting with another individual that embraces their needs and interests, allows them to find personal meaning in activity, and encourages volitional functioning. A substantial amount of evidence demonstrates that autonomy support is associated with self-determined motivation (e.g., Taylor & Ntoumanis, 2007; Williams & Deci, 1996). Nonetheless, when an individual perceives a short-term increase in autonomy support from a provider, relative to average levels, it is reasonable to suggest that the individual may be more motivated to avoid the guilt of letting him or her down. In other words, a within-person increase in perceptions of autonomy support may be associated with enhanced introjected regulation. In contrast, sustained autonomy support should allow the individual to be less reliant on the approval of others and ego-involved motives, that is, less driven by introjected regulation.

Since autonomy support facilitates the internalization process (Deci & Ryan, 1987; Williams & Deci, 1996), both within-person increases and average between-person differences in autonomy support should be positively associated with identified regulation.

To summarize, we proposed that disaggregating within-person and between-person influences of two different internalized motives has important implications for one's self-esteem and self-efficacy. We explored this notion within a group of socially disadvantaged adults who were currently unemployed but attending a 12 hour per week sport and education program prepared by a charitable organization. Self-esteem represents an important construct to investigate in this sample because it can be severely damaged during periods of unemployment (Harris et al., 2002). In addition, participants' self-efficacy regarding future coaching roles was assessed because the program aimed to provide participants with the necessary skills and qualifications to become employed as a sports coach (i.e., participants were being trained how to coach). Previous research has found both constructs to be associated with job attainment (Eden & Aviram, 1993; Vinokur & Schul, 1997) and their inclusion allowed us to explore distinct global and contextual evaluations of the self.

We hypothesized that within-person changes in perceived autonomy support from an authority figure would be positively associated with identified and introjected regulation towards program participation. Conversely, we expected that between-person differences in autonomy support would be positively associated with identified regulation, but negatively predict introjected regulation. Next, we hypothesized that within-person changes in identified and introjected regulation would be positively associated with self-esteem and self-efficacy. However, we expected that between-person differences in identified regulation would be

positively associated with self-esteem and self-efficacy, whereas, between-person differences in introjected regulation would be negatively associated with self-esteem and self-efficacy.

Within each stage of our analysis, we also present the relationships among study variables when within-person and between-person influences are not statistically disentangled to highlight the important implications of exploring these divergent processes. These are for comparative purposes and reflect an abstruse mix of within-person and between-person influences; therefore, we offered no hypotheses for this aspect of the study.

Method

Participants and Context

A charitable organization in the UK organized the delivery of a 12 hour per week soccer and education program over an 11-week period. The program aimed to build confidence, extend social networks and develop skills, qualifications and goals for moving into educational and vocational pathways through a combination of soccer coaching and employability support. The soccer component of the program was delivered by one full-time coach who structured and facilitated coaching sessions that aimed to develop skills that participants could transfer into employment or education following the program (e.g., organization of coaching sessions, communication, and teamwork). The educational element provided participants with support and guidance to help them seek employment and educational opportunities (e.g., college application support, interview skills).

All 39 participants of the program (33 male, 6 female; M age = 22.88 years, SD = 5.94, range = 18–51 years) agreed to participate in the study. Participants were predominately White British (94%), followed by mixed White and Asian (3%), and Black African (3%). Prior to the study, 66% of participants were receiving state benefits, and 41% of participants reported having

no formal qualifications. Participants were all unemployed at the time of the study (length of unemployment ranged from 2 months to 30 months) and lived in an urban area with the highest share of deprived zones in Scotland (Scottish Executive National Statistics, 2006). Participants were recruited to the program by outreach workers who engaged with local communities and referral agents, such as job centers and local youth services. Only individuals who were unemployed at the beginning of the study were eligible to attend the program.

Although our Level 2 sample size (39 participants, with 11 observations at Level 1) seems modest if we were to employ traditional single-level analyses (e.g., ordinary least squares regression), it is important to note the suitability of multilevel modeling for such sample sizes. A simulation study showed that there was no meaningful bias associated with fixed regression coefficients when using any combination of 30, 50 or 100 Level 2 units, and 5, 30 or 50 Level 1 observations (Maas & Hox, 2005). The same study also examined bias in standard errors by inspecting whether true values lay outside confidence interval boundaries during simulations (i.e., noncoverage). With a sample of 30 Level 2 units, a noncoverage rate of 6% was found in comparison to 5% with a sample of 100 Level 2 units. Maas and Hox regarded this difference in coverage as ‘unimportant’ (pp. 89). In view of this simulation study, we deemed our sample size acceptable.

Procedure

Approval was granted from a university ethics committee and full consent was obtained from all study participants. Participants were informed that only the research team would have access to their responses and under no circumstances would their answers impact upon their future involvement in the program. Following a brief explanation of the study, the participants completed the week one questionnaire under the supervision of the first author and at least one

member of the program staff. Each participant completed the same multi-section questionnaire once per week and on the same day each week. These were completed before the morning session or during one of the employability support sessions. To maintain anonymity, participant responses at different time points were matched using a coding system using only the participants' date of birth.

Measures

Perceptions of autonomy support. Participants were asked to evaluate the autonomy support received from the coaching staff by responding to three adapted items from the Relevance subscale of the Teacher as Social Context questionnaire (Belmont, Skinner, Wellborn, & Connell, 1992). Participants were asked to respond to the following statements, “the coach talks about how we can use things we learn in normal life”, “the coach explains why what I do in the sport program is important to me”, and “the coach encourages us to find out how what we do in the sport program could be useful to us in normal life” on a 4-point scale, anchored by 1 (*not at all true*) and 4 (*very true*). These items were chosen because demonstrating the relevance of activities has been suggested to be an effective strategy when coaching socially disadvantaged youth, whereas other dimensions of autonomy support, particularly the provision of choice, may not be so effective with this population (Cowan, Taylor, McEwan, & Baker, 2012). This subscale has demonstrated acceptable internal consistency previously (Belmont et al., 1992).

Identified and introjected regulation to participate in the program. Participants' identified and introjected regulation was measured by adapting items from the Multidimensional Work Motivation Scale (Gagné et al., 2014) to program participation, as opposed to work participation. Participants responded to the question “I attend the program...” followed by three items for each subscale, measuring identified regulation (e.g., “Because I personally consider it

important to put effort into the program”), and introjected regulation (e.g., “Because it makes me feel proud of myself”). These items were answered using a 7-point scale, anchored by 1 (*Not at all*) and 7 (*Completely*). Gagné et al. (2014) reported acceptable internal consistency and factorial validity of these subscales.

Self-esteem. To reduce the cognitive and temporal burden on participants and minimize the risk of noncompliance or attrition (Bolger, Davis, & Rafaeli, 2003), participants were asked to report their levels of self-esteem by responding to the five positively worded items from the Rosenberg (1965) self-esteem scale (e.g., “I am able to do things as well as most other people”). Shortening measurement scales is a common and often necessary step for researchers using repeated measures designs (Bolger et al., 2003) and this was particularly necessary given the lack of formal education within the present sample. These items were answered using a 4-point scale, anchored by 1 (*Strongly Disagree*) and 4 (*Strongly Agree*) and have well-established reliability and validity (e.g., Flynn-Corwyn, 2000; Rosenberg, 1965).

Self-efficacy towards coaching. We asked participants to report their levels of self-efficacy towards coaching by responding to five items from the New General Self-Efficacy Scale (Chen, Gully, & Eden, 2001) adapted to coaching. We chose this questionnaire because existing coaching-efficacy questionnaires emphasized competitive coaching, rather than general coaching. As none of the participants had previous experience of coaching, we included a statement preceding the items asking participants to consider the future (i.e., “Consider a time when you will be coaching in the future and please respond to the following statements”). An example item was “I believe I can succeed at coaching”. We omitted three items from the full scale because they did not possess adequate face validity with the context of the present study in mind (i.e., efficacy towards future coaching). These items were answered using a 5-point scale,

anchored by 1 (*Strongly Disagree*) and 5 (*Strongly Agree*) and have demonstrated reliability and factorial validity (Chen et al., 2001).

Data Analysis

We constructed multilevel models using MLwiN software (version 2.25; Rasbash, Browne, Healy, Cameron, & Charlton, 2012) to explore the study hypotheses. We used this method of analysis because of the hierarchical structure of the data, that is, measurement time points were nested within program participants. Multilevel analysis takes into account this clustered data by modeling separate, but related equations at both the within-person and between-person levels resulting in a more accurate estimation of the parameters and statistical significance (Hox, 2010). An advantage of multilevel modeling is its robustness against missing data and unbalanced measurements across participants are not deemed to cause any problems with the data (Hox, 2010).

First, we explored the degree of variance in the study variables at the within-person and between-person levels by calculating intraclass correlation coefficients (ICCs) obtained from intercept-only model parameters. To explore the relationships between autonomy support and motivation, we constructed conditional models for each motivational regulation (model 1: identified regulation; model 2: introjected regulation), with coach autonomy support as a grand mean centered predictor variable in the Level 1 equation. This variable in isolation represents an ambiguous mixture of the Level 1 (i.e., within-person) and Level 2 (i.e., between-person) associations (Enders & Tofighi, 2007) between autonomy support and motivation, thus, it serves as an indicator of potentially spurious conclusions when within-person and between-person effects are not disaggregated.

The next stage of our analyses involved disaggregating these within-person and between-person associations by following the procedures outlined by Enders and Tofighi (2007) (model 3: identified regulation; model 4: introjected regulation). First, we centered participants' aggregate (i.e., mean score across the course of the program) autonomy support scores on the grand mean and entered it into the Level 2 equation. This provides an accurate estimation of the between-person associations between average levels of autonomy support and the outcome variable. In other words, does an individual with higher average perceptions of autonomy support report higher motivational regulations, compared to a participant who perceives lower coach support? We then included a time-varying autonomy support variable into the Level 1 equation, which was also centered on the grand mean. The inclusion of the Level 2 aggregate score removes between-person variation from the Level 1 variable, leaving an accurate estimation of the influence of weekly within-person deviations from a participant's average score (Marsh et al., 2012). This represents whether fluctuations around an individual's average levels of autonomy support are associated with fluctuations in motivational regulations. To test the relationships among the two types of motivation, self-esteem and self-efficacy, similar models were constructed with the two motivational regulations entered into the Level 1 equation as an indicator of potentially spurious relationships (model 5: self-esteem; model 7: self-efficacy), and then into the Level 2 equation to disaggregate within-person and between-person relationships (model 6: self-esteem; model 8: self-efficacy).

Results

Descriptive Statistics, Cronbach's Alpha Coefficients, ICCs, and Bivariate Correlations

One percent of the data was missing but due to the advantages of multilevel modeling, it was not imputed or treated in any way. Table 1 shows the means, standard deviations,

Cronbach's alpha coefficients, ICCs, and bivariate correlations for each variable. In general, participants reported all study variables above the midpoint of the scale and all variables had acceptable internal consistency (i.e., $\alpha > .70$). The ICCs indicated that between 50 and 68% of the variance in the study variables was attributable to the between-person level, therefore, between 32 and 50% of the variance in the study variables was attributable to the within-person level. This justifies our rationale for employing multilevel modeling and demonstrates substantial variance at both levels.

Autonomy support as a predictor of identified and introjected motivational regulations

The results of these models are presented in Table 2. In the models that did not distinguish between within-person changes and between-person differences, autonomy support positively predicted identified regulation (model 1) and introjected regulation (model 2). When differentiating between the two types of relationship, within-person changes in perceptions of autonomy support positively predicted identified regulation (model 3) and introjected regulation (model 4). Between-person differences in autonomy support positively predicted identified regulation (model 3) but not introjected regulation (model 4).

Motivational regulations as predictors of self-esteem and self-efficacy

The results of these models are presented in Table 3. In the model that did not distinguish between within-person changes and between-person differences, identified regulation positively predicted self-esteem, but introjected regulation did not (model 5). When differentiating between the two levels (model 6), within-person changes in introjected regulation positively predicted self-esteem but identified regulation did not. In contrast, between-person levels of introjected regulation negatively predicted self-esteem, whereas identified regulation positively predicted self-esteem.

Regarding self-efficacy, identified regulation and introjected regulation positively predicted self-efficacy when within- and between-person levels were not disaggregated (model 7). When the different relationships were considered (model 8) within-person changes in identified and introjected regulation positively predicted self-efficacy. In contrast, between-person differences in identified regulation positively predicted self-efficacy, whereas introjected regulation negatively predicted self-efficacy.

Discussion

The purpose of this study was to highlight the importance of disaggregating within-person versus between-person processes when exploring the internalization of introjected and identified motives. Specifically, we longitudinally examined socially disadvantaged adults' perceptions of autonomy support, their motives for participation in a sport and education program, self-esteem and self-efficacy towards future coaching roles. The general pattern of findings revealed that within-person changes in both types of internalized motivation had positive associations with one's self-esteem and self-efficacy. However, sustained levels of identification seemed to be beneficial for these adults' self-esteem and efficacy, whereas continued levels of introjection may be detrimental. In the following sections we discuss the specific findings and offer implications for theory and future research.

Autonomy support as a predictor of motivational regulations

Self-determination theorists propose that the interpersonal style of individuals in leadership positions (e.g., teachers, coaches, parents) can facilitate or frustrate the internalization process amongst those under their supervision. In accordance with our hypothesis, our results suggest that an individual who experiences an increase in autonomy support, relative to their own average experiences, may display higher identified and introjected regulation. For example,

when a coach provides a meaningful rationale for an activity, the individual may value the activity more but also want to complete the activity so as not to let the coach down. In contrast, sustained levels of autonomy support were only positively associated with identified regulation, and not introjected regulation (although it should be noted that the coefficients were of a similar magnitude and the statistical significance of the coefficient related to introjected regulation was borderline).

This implies that continued autonomy support is likely to facilitate more optimal forms of internalization (Deci & Ryan, 1987; Williams & Deci, 1996); however, this important theoretical postulate may be masked if researchers do not consider the different within-person and between-person processes associated with receiving autonomy support. An example is the use of cross-sectional studies examining links between autonomy support and motivational regulations. For instance, reported positive indirect relationships between social factors and introjected regulation in school physical education (Ntoumanis, 2001; Standage, Duda, & Ntoumanis, 2005) may be a result of the inability to tease out within- and between-person relationships in cross-sectional studies. Another important implication may exist for interventions which have short term impact but effects dissipate over time. An intervention that successfully increases individuals' perceptions of autonomy support in the short term may facilitate both types of internalized motivation. However, it is only those interventions which sustain those perceptions of autonomy support over time which will lead to optimal internalization.

Motivational regulations as predictors of self-esteem and self-efficacy

Our results indicate it is important to distinguish between within-person and between-person effects when exploring the relationship between internalization, self-esteem and self-efficacy. Perhaps most intriguingly, our findings may shed light on the previous equivocal

findings concerning introjected regulation and associated outcomes (e.g., Edmunds et al., 2006; Pelletier et al., 2001). A relative increase in introjected motives for participation in the program was associated with higher overall feelings of worth (i.e., self-esteem) and future effectiveness in a specific context (i.e., self-efficacy towards coaching). These findings in isolation may imply that similar programs should attempt to foster feelings of contingent self-worth and ego-involvement to enhance the likelihood of positive outcomes. Moreover, this result seems to concur with the notion that motivation to preserve one's social significance is closely associated with positive self-esteem (Leary & Baumeister, 2000). However, those individuals experiencing higher sustained introjection within the program reported lower self-esteem and self-efficacy, compared to participants with less introjected motivation. This provides substance to the proposal that the facilitation of motives, such as ego-involvement or guilt and shame avoidance, may elicit a short term positive response, but eventually sustained levels of high introjected regulation may lead to negative consequences (Koestner et al., 1996) in the shape of lower self-esteem and self-efficacy.

In contrast to introjected regulation, within-person increases in identified regulation were associated with higher self-efficacy, and higher sustained identified regulation was related with higher self-esteem and efficacy. These findings are consistent with research concerning the adaptive outcomes associated with identified regulation (Edmunds et al., 2006; Losier & Koestner, 1999) and imply that relative within-person changes and individual differences in identified regulation are fundamental to self-esteem and efficacy. To our knowledge this is the first description of the different processes that may occur at these diverse levels, and has important repercussions for the development of self-esteem and self-efficacy. Aligned with organismic integration theory (Deci & Ryan, 2000), only fuller types of internalization seem to

have benefits for the self over a sustained period of time, and forestalled internalization processes may be detrimental for one's esteem and efficacy, despite some short term benefits. Importantly, our analysis which did not differentiate between these two processes indicates that potentially opposite effects may be hidden if researchers choose not to consider these divergent mechanisms.

Future directions and limitations

Our study identified the importance of differentiating between within- and between-person relationships within internalization processes; however, the study is not without its limitations. Although we provide evidence that the sample size in this study is acceptable for exploring fixed effects (Maas & Hox, 2005), a larger sample size would enable researchers to explore random effects that could establish whether the relationships observed in this study are heterogeneous across participants. Future attempts to replicate our results with larger samples may also enhance the generalizability and extend our findings. Second, we wanted to explore internalization processes in a cohort where self-esteem and self-efficacy have been shown to have important implications (e.g., more likely to gain employment; Eden & Aviram, 1993), however, it may be worth attempting to replicate these findings in different samples taking part in different activities. For example, the implications of introjected regulation in team environments where not letting others down can be a powerful influence, such as military or sport, may be very different for one's self-esteem and self-efficacy. Finally, our findings demonstrated that autonomy support may be associated with both types of internalization in some circumstances; therefore, it may be prudent to explore conditions in which autonomy support develops identified, rather than introjected motives.

Despite these limitations, the analysis of within- and between-person relationships among our study variables offers unique insight into the internalization of an activity and its potential impact upon self-esteem and self-efficacy. In general, results revealed the within-person changes in introjected motivation toward an educational program may have some short term benefits; however, over a sustained period of time introjection may be maladaptive for one's self-esteem and self-efficacy. In contrast, sustained autonomy support and identified regulation may have benefits for self-esteem and efficacy beliefs towards future coaching roles of socially disadvantaged unemployed adults.

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Footnote

¹ Self-determination theorists also propose different motivational regulations, including intrinsic (e.g., acting out of inherent interest or enjoyment) and external regulations (e.g., being driven by external contingencies, such as reward or punishment). We did not examine these regulations as the relationships among these motives, autonomy support and self-evaluations were not expected to demonstrate nuanced differences across within-person and between-person levels of analysis.

546 Table 1

547 *Range of Scales, Means, Standard Deviations, Cronbach's Alphas, Intraclass Correlation Coefficients (ICC), and Bivariate*
 548 *Correlations of all Study Variables*

Variable	Scale		$\alpha_{(\text{Median})}$	ICC	Bivariate Correlations				
	Range	Mean(SD)			(1)	(2)	(3)	(4)	(5)
1. Autonomy Support	1-4	3.26(.58)	.82	.67	—	.34*	.24	.40*	.39*
2. Identified Regulation	1-7	5.11(1.15)	.89	.65		—	.48**	.10	.36*
3. Introjected Regulation	1-7	4.17(1.29)	.77	.68			—	.17	.26
4. Self-Esteem	1-4	3.18(.47)	.79	.59				—	.60**
5. Self-Efficacy	1-5	4.04(.51)	.86	.50					—

549 *Note.. *. $p < .05$. ** $p < .01$*

550 Table 2

551 *Autonomy support as a predictor of identified and introjected motivational regulations*

Predictors & Intercept	Identified regulation		Introjected regulation	
	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>
Model not disaggregated	Model 1		Model 2	
Intercept	5.07	.14***	4.15	.17***
Autonomy Support	.40	.11***	.35	.12**
Level 1 error variance	.46	.04***	.54	.05***
Level 2 error variance	.70	.17***	1.05	.25***
-2 Log-likelihood	793.911		833.775	
Model disaggregated	Model 3		Model 4	
Intercept	5.08	.13***	4.16	.16***
<i>Within-person changes</i>				
Autonomy Support	.28	.12*	.27	.13*
<i>Between-person differences</i>				
Autonomy Support	.88	.29**	.68	.37
Level 1 error variance	.46	.04***	.53	.05***
Level 2 error variance	.57	.14***	.96	.23***
-2 Log-likelihood	785.432		830.458	

552 Note: * $p < .05$, ** $p < .01$, *** $p < .001$

Table 3

Motivational regulations as predictors of self-esteem and self-efficacy

Predictors & Intercept	Self-Esteem		Self-Efficacy	
	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>
Model not disaggregated	Model 5		Model 7	
Intercept	3.18	.06***	4.05	.05***
Identified regulation	.06	.03*	.11	.03**
Introjected regulation	.04	.03	.08	.03*
Level 1 error variance	.08	.01***	.13	.01***
Level 2 error variance	.12	.03***	.10	.03***
-2 Log-likelihood	217.910		329.012	
Model disaggregated	Model 6		Model 8	
Intercept	3.18	.05***	4.05	.05***
<i>Within-person changes</i>				
Identified regulation	.05	.03	.08	.03*
Introjected regulation	.06	.03*	.11	.03**
<i>Between-person differences</i>				
Identified regulation	.29	.10**	.36	.09***
Introjected regulation	-.28	.09**	-.31	.08***
Level 1 error variance	.08	.01***	.13	.01***
Level 2 error variance	.09	.02***	.06	.02***
-2 Log-likelihood	207.638		313.613	

Note: * $p < .05$, ** $p < .01$, *** $p < .001$