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Self-determination and Motivated Engagement in Language Learning

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For some people, learning a new language is an exciting adventure into a fascinating linguistic realm and the ideal medium for exploring new cultures. For others, it feels pointless and boring, like a tedium to be endured. Most people likely lie between these extremes, perhaps occasionally experiencing one or the other pole, but mostly persisting with the learning process because it will help them achieve a goal that they desire. These different reasons, or motivational orientations, for language learning (LL) have important implications for people's understanding and emotional experience of LL, their effortful engagement in the process, and ultimately the kinds of outcomes that result. As long as multilingual competence is valued within a society, an important question to ask is how can we support the learner who finds LL to be intrinsically enjoyable; encourage the disheartened learner to find meaning and satisfaction in the process; and perhaps scaffold the majority of learners to

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a point where they feel that LL is a personally relevant activity in itself, and not just a means to a valued end?

   This chapter outlines how these questions could be answered using Self-Determination Theory (SDT; Deci & Ryan, 1985; Ryan & Deci, 2017) to frame an understanding of various orientations that people can take to learning and using new languages. We discuss the psychological foundation of these orientations and their implications for motivated engagement and for learning outcomes. We also discuss how interpersonal relationships with significant others, including teachers, family members, and members of the target language (TL) community, can support or undermine these orientations. To this end, we first review SDT as a general theory of motivation and its framing in LL research. We then review research trends over the past 20 years, which generally support the premises of SDT in studies from around the world and across different age groups. Finally, we discuss possibilities for future research to better understand the language motivation process and effective teaching strategies in language classrooms.

A Brief Review of Self-determination Theory

Grounded in existential, humanistic, and organismic psychologies, SDT maintains that humans have inherent psychological needs that must be satisfied in order to develop and flourish (Deci & Ryan, 1985; Ryan & Deci, 2017). From existentialism, SDT maintains that people strive for meaningful lives. Meaningfulness is self-determined; each person must decide what is personally relevant and act as agents of their own destiny. From humanism, SDT maintains that the self plays an important central organizing function for people's thoughts, feelings, and behaviours, and that the optimal life comes about when people are true to their authentic self. From an organismic perspective, SDT argues that human beings have an innate proclivity to curiously explore and master new situations in their environment, and integrate the information thereby acquired into their knowledge systems. Human development, then, occurs in a dialectical relationship with the social and physical worlds, and involves an ongoing process of assimilation of new information and accommodation of existing knowledge, such that over time and in optimal environments, the self becomes increasingly elaborated in a coordinated and cohesive manner. Under the right conditions, this dynamic, self-reflective process is associated with the emotional experience of eudaimonia, involving a sense of fulfilment, flourishing, and living "the good life"

(for a more complete discussion of the philosophical underpinnings of SDT in the context of LL, see Noels, 2009).

Fundamental Psychological Needs

Optimal human functioning, well-being, and self-actualization depend on the satisfaction of three psychological needs: competence, relatedness, and autonomy (Ryan & Deci, 2017). Competence refers to the need to feel efficacious in one's actions and effectively meet challenges. Within LL research, the perception of oneself as competent has been extensively studied as "self-confidence"; feelings of low perceived competence are consistently associated with feelings of anxiety (Clément, 1980; Sampasivam & Clément, 2014). Perceived competence develops when people strive to meet challenges that would extend their mastery but do not overwhelm them (i.e., "optimal challenges"). Relatedness refers to the need to feel connected to and cared for by other people who play significant roles in one's life. Drawing from attachment theory (Cassidy & Shaver, 2016; Simpson & Rholes, 2015), secure connections with others offer not only an important source of self-validation, but also the necessary social support and "scaffolding" (Lantolf, Thorne, & Poehner, 2015) to take risks and explore novel situations.

The third need, autonomy, lies at the heart of SDT. Ryan and Deci (2017) argue that perceived competence and perceived relatedness are insufficient for self-determined motivation and well-being; in addition, the agentic source of one's endeavours must be perceived to originate from the self. In other words, learners must feel that they are agents of their actions, and that the reason for their engagement in LL is because it is meaningful to them personally. When these three psychological needs are satisfied, people are self-motivated to engage in activities that help them to develop an integrated, well-functioning self, and healthy relationships with others.
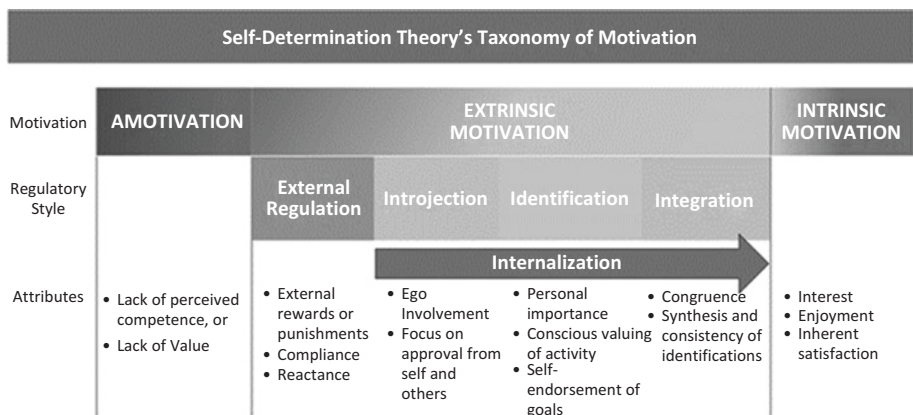
Motivational Orientations

The extent to which these three psychological needs are satisfied has implications for motivational orientations. Following the work of Gardner (1985, 2010, this volume), we define an orientation as a set of reasons for performing an activity that provides a frame of reference within which the learner interprets her LL experience and directs the learner's attention and effort. Deci and Ryan refer to these as forms of regulation, although they have occasionally

used the term "orientation" (e.g., Deci & Ryan, 2008). Although orientations can be categorized thematically in terms of activities that can be accomplished with the language (e.g., integrative and instrumental, Gardner, 1985; travel, friendship, knowledge, and instrumental, Clément & Kruidenier, 1983), SDT provides a taxonomy that is grounded on psychologically meaningful variations in the extent to which the regulation of a behaviour is self-determined or controlled by forces external to the self.

Accordingly, motivational orientations can be broadly differentiated into three forms: intrinsic and extrinsic motivation and amotivation (see Fig. 5.1). Some people approach LL with an inherent interest in it. For example, for some people, "playing" with language in different ways (e.g., reading fiction, creative writing, linguistic analysis, LL, etc.) is a source of deep satisfaction. Especially when engaged in optimally challenging situations, learners can become absorbed in the process, their self-consciousness disappears, and time seems to stand still, a state termed "flow" (Nakamura & Csikszentmihalyi, 2014; see also Piniel & Albert, this volume). This form of motivation is labelled "intrinsic motivation" because engaging in the activity seems to have inherent appeal to the person. It may even be the case that most humans are born with the intrinsic, curiosity-driven motivation to learn their native language(s) (Oudeyer, 2015).

Not all people, however, feel intrinsically motivated to engage with LL. Some feel nonetheless that the second language is integral to their sense of self and congruent with other aspects of identification. Using that language seems a natural form of self-expression. The feelings associated with this "inte-grated" orientation can be quite similar to feelings associated with intrinsic

Self-Determination Theory's Taxonomy of Motivation					
Motivation	AMOTIVATION	EXTRINSIC MOTIVATION			INTRINSIC MOTIVATION
Regulatory Style		External Regulation	Introjection	Identification	Integration
			Internalization		
Attributes	• Lack of perceived competence, or • Lack of Value	• External rewards or punishments • Compliance • Reactance	• Ego Involvement • Focus on approval from self and others	• Personal importance • Conscious valuing of activity • Self-endorsement of goals	• Congruence • Synthesis and consistency of identifications	• Interest • Enjoyment • Inherent satisfaction

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Fig. 5.1 Motivational orientations and the self-determination continuum

motivation, involving a sense of fulfilment and thriving. A somewhat less internalized, but still self-determined form of regulation, termed identified regulation, is observed when one does not value an activity per se, but sees that the activity can lead to an end that is personally meaningful. A common example is a person who aspires to a career in teaching, and because her/his pupils speak another language, she/he wishes to learn that language in order to communicate more effectively with the students, and thereby become a better teacher. This person has consciously identified a personally meaningful and valued reason for LL.

These relatively self-determined orientations can be contrasted with more controlled forms, including introjected and external regulation. People who engage in LL with an introjected orientation have internalized regulation to the extent that they feel a personal obligation to learn the language due to self-imposed and/or normatively imposed expectations. Regulation is "controlled" in the sense that one's act is regulated by ego-relevant reasons, such as self-aggrandizement for performing well or shame for not doing so. The focus is on avoiding negative emotion or enhancing one's ego, rather than freely choosing the activity because it is personally meaningful.

The most controlled form of regulation is fully external regulation: other people and/or the social circumstances require the learner to engage in language study, whether or not the learner finds it meaningful or enjoyable. The agent that causes the behaviour, then, is perceived to be external to the learner, and learners may feel angry, frustrated, and/or resentful that they have to comply with what is demanded of them.

These four forms of regulation, or orientations, are distinct from intrinsic motivation, and fall under the umbrella term of extrinsic motivation. That is, the reason that a person engages in the activity is due to some contingency that falls outside of interest in the activity itself. These contingencies can be more or less personally meaningful, and hence one's engagement can be more or less self-determined. Although they are argued to fall on a self-determination continuum, they also can be broadly categorized: Integrated and identified regulation are self-determined or autonomous orientations, whereas introjected and external regulation are examples of controlled orientations.

Sometimes, people see no purpose of any kind for studying another language. If they had any choice in the matter, they would not enroll in a language course. Nonetheless, sometimes these people find themselves registered in a language course due to circumstances beyond their control (e.g., program requirements). Such an amotivated person is likely to experience a sense of helplessness and unhappiness about the necessity of doing the activity without any personally endorsed rationale, and may feel incompetent in the

activity, and/or that their efforts are futile (Legault, Green-Demers, & Pelletier, 2006). They are likely to disengage within the classroom, avoid language activity outside the classroom, and withdraw from formal education as soon as it is feasible.

Modeling the Motivation Process

Since SDT was introduced into the LL field, it has been argued that the self-dynamics concerning motivational orientations and the satisfaction of the fundamental needs of autonomy, competence, and relatedness are closely connected to the intensity of engagement in learning and with important educational outcomes, including learning and academic achievement and non-linguistic outcomes such as contact with the TL community and new identities (Noels, 2001a; Noels, Clément, & Pelletier, 1999, 2001; Noels, Pelletier, Clément, & Vallerand, 2000).

These self-dynamics (i.e., need satisfaction and motivational orientations), their antecedents (e.g., support from the interpersonal relationships) and outcomes (e.g., engagement, achievement) are modeled in Fig. 5.2 (Noels, 2001b, 2009, 2015; Noels, Chaffee, Lou, & Dincer, 2016; Noels, Vargas Lascano, &
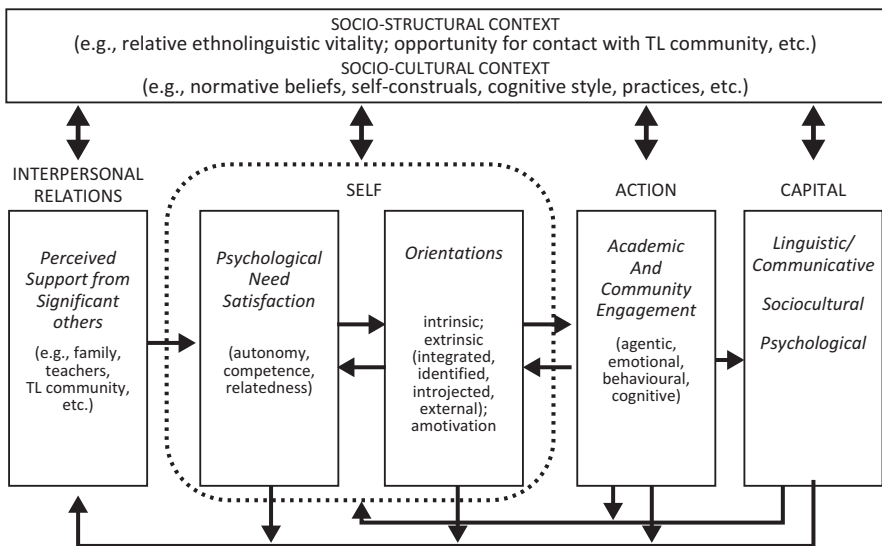

Fig. 5.2 Schematic illustration of social contexts, interpersonal relations, self-dynamics, actions and capitals in the language learning motivational process (adapted from Noels, 2001b; Noels et al., 2016)

Saumure, 2019). This model corresponds closely to the Self-System Motivational Model of Development (SSMMD), which elaborates how the self-system, as described by SDT, is related to the social context, engagement, and various outcomes in the general educational context (Connell & Wellborn, 1991; Skinner, Furrer, Marchand, & Kindermann, 2008). The model is also consistent with the process described in several LL motivational models, particularly Gardner's (1985, 2010) socio-educational model (SEM). In the SEM, the social context, defined in terms of interpersonal relations (e.g., teachers, parents), predicts psychological dynamics (e.g., attitudes towards the teacher and the TL community, orientations), which in turn have implications for motivation (e.g., intensity, desire, positive attitudes). In turn, motivation predicts linguistic (often assessed through academic grades or standardized tests) and nonlinguistic outcomes (e.g., contact with the TL community).

Accordingly, the model in Fig. 5.2 indicates that the manner in which significant others, including family members, the language teacher, the TL community, and others, communicate with the learner is more or less likely to support the satisfaction of learners' psychological needs and, correspondingly, their motivational orientation to LL. These self-dynamics have implications for the manner and intensity with which learners engage in the learning process. This intensity of effort in turn, predicts a variety of outcomes, including linguistic proficiency and communicative competence, and non-linguistic outcomes, such as sociocultural knowledge, contact with the TL group, and psychological well-being.

Engagement, capital, and the social ecology aspects of the model require elaboration. Conceptualizations of engagement have been as varied in LL research as in the general educational psychology literature. In Fig. 5.2, engagement is presented as the action component of motivation. According to Skinner, Kindermann, Connell, and Wellborn (2009), this conceptualization of engagement as action that reflects the learner's motivation toward mastering a task or material unifies motivational theories relevant in the field of educational psychology. This conceptualization, perhaps the most widely used in educational research (Fredricks, Blumenfeld, & Paris, 2004; Reschly & Christenson, 2012) recognizes engagement as a multidimensional construct. Cognitive engagement refers to students' self-regulated learning strategies such as task planning and rehearsing (Zimmerman & Pons, 1986). Affective engagement refers to the experience of positive emotions (e.g., enjoyment, curiosity) and few negative emotions (e.g., anxiety, boredom) during learning activities. Behavioural engagement, which refers to increased attention, effort, and persistence, and other actions that can be observed, is closely related to

what is described as motivational intensity in the Socio-Educational Model (Gardner, 2010). Expanding Skinner's framework, Reeve (2012) added the fourth dimension of agentic engagement to capture the students' constructive contribution into the instruction. Agentically engaged students actively contribute to the learning process reacting to teachers' instruction (Reeve, 2012). Taken together, these four components of engagement portray what actively involved students would think, do, feel, and how they take an active role during the learning process.

The model proposes that engagement is the most proximal predictor of three types of capital that are often the desired outcomes of language learning. Following Gardner (1985), a distinction can be made between linguistic/communicative (e.g., as indexed by grades in academic courses, standardized examinations, etc.) and nonlinguistic outcomes (e.g., the willingness to communicate with speakers of the TL outside the classroom, positive interethnic relations, and identity development). In addition, a third set of psychological well-being outcomes can be drawn from SDT, including personal growth, thriving and well-being (Ryan & Deci, 2017). We frame these outcomes as "capital", because they are not the "end-points" for LL, but rather are enduring capacities and resources that learners can draw upon to fulfill needs, achieve goals, self-regulate, and develop new learning opportunities (Luthans, Avolio, Avey, & Norman, 2007; Noels et al., 2016).

The motivational dynamics outlined in this model are situated in particular socio-structural and socio-cultural contexts, which interact with all aspects of the process (Noels, 2001b; Noels et al., 2016). The socio-structural system refers to the stratification of social groups (e.g., class, ethnicity, gender) within a society, and the patterned relations among those groups, which are often reflected in important societal institutions (e.g., education, government). The importance of this aspect is highlighted in Gardner's (1985) notion of an integrative orientation, and more fully articulated in other LL models that incorporate language groups' relative "ethnolinguistic vitality" as an explanatory variable for language learning and bilingualism (e.g., Clément, 1980; Giles & Byrne, 1982; Landry, Allard, & Deveau, 2013). Regarding bilingualism, Lambert (1974) observed that the language learning experiences can be dramatically different for members of higher and lower vitality ethnolinguistic groups. Specifically, the addition of another language and culture would have little impact on the heritage language and culture for people from relatively high vitality (i.e., majority) groups, but would undermine that of people from relatively low vitality (i.e., minority) groups. In their research program involving Francophones and Anglophones in Canada, Landry et al. (2013) highlight how the socio-structural dynamics between ethnolinguistic

groups that impact LL are counterbalanced by the individual's level of self-determination.

Another contextual facet that can infuse motivational dynamics is a group's cultural dynamics (Guay, 2016). Culture refers to the "shared" or intersubjective systems of meaning that are co-constructed by interlocutors (and hence mutually comprehensible) and become the conventions and mores that are more or less distributed through social networks among members of a social group (see Noels, Chaffee, Michalyk, and McEown (2014) for an extended discussion of culture and language learning). For instance, important cultural differences have been identified with regards to how the self is construed (Markus & Kitayama, 1991) and the relative importance of different values (Hofstede, 2001). Given the importance of the self and values for motivation from a SDT perspective, these differences could be important for motivation. For instance, a more inter-dependent than independent self-construal might moderate the nature and impact of autonomy on motivated engagement (Noels et al., 2014). Cultural values could also influence the extent to which obligations are perceived as controlling; German heritage learners endorsed introjected regulation less than did Chinese heritage learners (Comanaru & Noels, 2009; Noels, 2005), possibly because the cultural value of complying with the normative expectations of others is weaker among Germans than Chinese. Cultural meaning systems are not static, but to the extent that they achieve a relatively stable "dynamic equilibrium" and do not extensively overlap with comparable systems, cross-cultural comparisons can provide a strong test of the validity of SDT's humanist tenets that autonomy, competence and relatedness are universal psychological needs.

Review of SDT-Informed Research on LL

Programmatic research on self-determination theory and LL motivation began around the early 1990s, but scholars had earlier discussed the relevance of intrinsic and extrinsic motivation for understanding LL motivation. For instance, Gardner (1985; see also Gardner & Lambert, 1972) commented on the relation between these motivational orientations and the integrative-instrumental orientations that informed research on the socio-educational model. Both the integrative and instrumental orientations are appropriately classified as forms of extrinsic motivation, since neither refers to an inherent interest in language. Subsequent research confirms that the instrumental orientation is strongly correlated with external regulation, and the integrative orientation is positively correlated with more self-determined forms of extrinsic motivation, as well as intrinsic motivation (Noels, 2001b, 2005).

Since the 1990s, over 300 SDT-relevant studies on LL have been published, with more than half published within the last five years (see McEown, Noels, & Chaffee, 2014, for a detailed review of SDT research and its relation to other LL theoretical paradigms). A review of this research (see the table posted on Open Science Framework: https://osf.io or contact the authors) shows that many of these studies involve quantitative, cross-sectional data collected through questionnaire surveys, although a fair number incorporate qualitative data, usually collected through interviews or open-ended questionnaire prompts. From early on, scholars utilized basic descriptive statistics, correlations, and means analyses to examine orientations and their relations with other motivational and language variables (e.g., Noels et al., 1999, 2001), as well as exploratory and confirmatory factor analyses (e.g., Noels et al., 2000). With increasing regularity, researchers employed advanced multivariate techniques, including complex multiple regression analyses, path analyses, and structural equation modeling (Lou & Noels, 2018; Pae, 2008; Zhang, Lin, Zhang, & Choi, 2017). Most recently, longitudinal designs have allowed more rigorous tests of relations over time, including complex reciprocal relations between variables and transactional relations between people (e.g., Noels, Vargas Lascano et al., 2019; Oga-Baldwin, Nakata, Parker, & Ryan, 2017). As well, person-centred approaches, such as cluster or latent profile analyses, provide an alternative approach to identify "motivational profiles" (e.g., Oga-Baldwin & Fryer, 2018). As yet, few experimental or intervention studies exist that more definitively test causal relations, and thereby point to useful applications for effecting motivational change in the learning context.

The learning contexts within which most SDT research have been conducted is reflective of current trends in SLA motivational research more generally (Boo, Dörnyei, & Ryan, 2015; McEown, Noels, & Chaffee, 2014; on contexts see also Yim, Clément, & MacIntyre, this volume). Most research centers on adult, post-secondary students in English as a foreign language (EFL) contexts, primarily in Japan (~34%) and other East and Southeast Asian countries. Findings from these studies can be categorized into four types: (1) studies focused on the psychometric properties of measurement instruments, (2) studies focused on the relation between orientations and engagement, (3) studies focused on the outcomes of motivational processes, and (4) studies focused on the aspects of the context that impact motivational processes.

Regarding the measurement of SDT constructs, some scholars have utilized instruments developed by SDT researchers for other domains (see http://selfdeterminationtheory.org/questionnaires/), but several have developed instruments specific to the LL domain. For instance, the Language Learning

Orientation Scale (LLOS; Noels et al., 2000) assesses motivational orientations following SDT, and other researchers have adapted this scale or its subscales to their population of interest (e.g., Ardasheva, Tong, & Tretter, 2012; Lou & Noels, 2018). It is important that the psychometric properties of adapted instruments be thoroughly examined to ensure that the constructs are validly assessed and comparable across the groups under investigation. To date, there is little assessment of the psychometric equivalence of instruments involving cross-cultural comparisons; comparisons between EFL, ESL, and other modern languages; younger vs. older learners; and so on.

Despite this psychometric limitation, empirical findings generally support the hypothesized associations among need satisfaction and orientations as posited by SDT. Specifically, research consistently shows that greater perceived autonomy, competence, and relatedness is positively associated with more self-determined and intrinsic motivation, and negatively associated with amotivation (Agawa & Takeuchi, 2016; Noels, 2001a; Oga-Baldwin et al., 2017). Because they are relatively controlled orientations, it is reasonable to hypothesize that external and introjected regulation would be negatively related to the satisfaction of psychological needs, especially autonomy. Sometimes research supports this expectation (e.g., Noels et al., 2001), but sometimes it shows a nonsignificant or weak relation between these sets of variables (e.g., Carreira, 2012; Noels, 2001b; Noels et al., 2000). It may be that statistical power is often too weak (possibly due to small sample sizes) to detect statistically significant correlations.

As well, self-determined and intrinsic motivation correlate with diverse indices of engagement. Perhaps the most widely used index is Gardner's (1985, 2010) motivational intensity, which assesses the intensity of effort invested in learning the language, including the amount of work done, persistence, and consistency in focus (e.g., Comanaru & Noels, 2009; McEown, Noels, & Saumure, 2014; Noels, 2001a); this instrument captures both behavioural and cognitive aspects of engagement. Another commonly used index is persistence and/or the intention to study the language in the future (e.g., Noels, 2001a; Pratt, Agnello, & Santos, 2009). Some investigators have assessed the relative active or passive nature of engagement (Stipek & Gralinski, 1996; see Noels, 2005), or the extent of energy, absorption, and dedication (Chaffee, Noels, & McEown, 2014; Salmela-Aro & Upadaya, 2012). Others have designed instruments specific to their research purposes (e.g., Oga-Baldwin & Nakata, 2017). Some published research incorporates affective, behavioural and cognitive aspects as outlined by Skinner and her colleagues (Oga-Baldwin & Nakata, 2017; Skinner et al., 2008), but to date little

research has assessed agentic engagement as described by Reeve (2012; but see Dincer, Yesilyurt, Noels, & Vargas Lascano, 2019).

Considerable research shows that the dynamics of the self and engagement predict different kinds of outcome/capital as hypothesized by SDT. For instance, motivational orientations and engagement are linked to linguistic and communicative capital, as indexed by course grades and standardized test scores (e.g., Butler & Le, 2018; Pae, 2008). They are also associated with indices of positive psychological capital, including low anxiety and greater linguistic confidence (e.g., Lou & Noels, 2018). More internalized orientations are associated with sociocultural capital, such as intercultural contact, new ethnolinguistic identities; (e.g., Comanaru & Noels, 2009; Goldberg & Noels, 2006). Some studies show that the relation between motivational orientations and outcome/capital is mediated by engagement (e.g., Zhang et al., 2017), consistent with the premise that effortful action is necessary to achieve particular outcomes (i.e., it's not enough to imagine or desire an outcome, one has to actively work toward it; cf. Gardner, 1985). In sum, students who feel satisfied with their psychological needs are more self-determined and engaged in LL, and as a result, are likely to achieve academically, linguistically, psychologically, and socio-culturally.

Given the positive consequences of motivated engagement, an important question is how learners' motivation can be supported by others, within and outside the classroom. Several studies show that when students perceive their teachers as supporting their autonomy, competence, and/or relatedness, they are more self-determined in their orientation and more engaged (Dincer & Yesilyurt, 2017; Noels, 2001a; Noels et al., 1999; Oga-Baldwin & Nakata, 2017; Wu, 2003; see also Fukada, Falout, Fukada, & Murphey, this volume). One study found that in the face of low autonomy support from the teacher, students who positively reappraised this challenging situation were better able to maintain intrinsic motivation, engagement, and positive psychological capital (Chaffee et al., 2014). Some studies have also examined peer, parental, and sibling support (Noels, Stephan, & Saumure, 2007; Tanaka, 2017; Vatankhah & Tanbakooei, 2014). Curiously, although languages are presumably learned to facilitate intercultural communication, scant research addresses whether and how interpersonal interactions with members of the TL community support motivation (but see Noels et al., 2007; Noels, Adrian-Taylor, Saumure, & Katz, 2019).

There is a growing body of SDT-informed research concerning the impact of socio-structural and socio-cultural dynamics on LL motivational processes. Some studies have compared groups to understand how socio-structural positioning vis-à-vis the TL impacts motivation. They generally show that, beyond mean level differences in certain variables within the model, the proposed

relations among psychological needs, orientations, engagement, and outcomes are consistent across groups (e.g., heritage and non-heritage learners: Comanaru & Noels, 2009; Noels, 2005; Rueda & Chen, 2005; English major vs non-English major students: Ngo, Spooner-Lane, & Mergler, 2017; students in language intensive vs. core language programs, Goldberg & Noels, 2006). Perhaps the most extensive examination of how ethnolinguistic vitality affects LL and bilingualism is Landry and his colleagues' studies of Francophone learners of English across regions of differing ethnolinguistic vitality (Landry, Allard, & Deveau, 2007; Landry et al., 2013). Few studies have examined how socio-cultural systems influence motivational processes using cross-cultural comparisons or other designs (but see Noels et al., 2014). Now that the pendulum appears to be swinging back to reconsider LL motivation as a process situated in broader socio-structural and socio-cultural contexts (cf., Ushioda & Dörnyei, 2017), hopefully researchers might again include socio-structural and socio-cultural analyses in their examinations of LL motivation.

Future Directions for Research and Pedagogy

As highlighted in the research review, several gaps in our understanding of LL motivation could be informed by SDT. It would be useful to take stock of the existing research via meta-analytical studies to synthesize findings and evaluate the strength of associations among motivational aspects. Because much of the existing research utilizes basic statistical analyses to examine variations and relations in a piecemeal manner, more complex multivariate procedures, including structural equation modeling, would usefully model the associations between SDT-relevant variables as a whole system. Longitudinal and experimental studies could better illuminate the hypothesized direct, indirect, reciprocal, and other more complex associations among components of the model (e.g., need satisfaction predicts orientations, which predict engagement, which predicts outcomes/capital; Noels, Vargas Lascano et al., 2019). Adding to these quantitative techniques, qualitative methods could provide more deeply articulated understandings of the experience of self-determination (or not) in language learning (cf. Comanaru & Noels, 2009; Dincer et al., 2019).

Another fruitful direction concerns how interactions with other people can support or undermine learners' motivation. Several studies have investigated how teachers' communication style is related to learners' self-determination, but this research could be expanded to look at support from classmates, family members, and particularly members of the TL community (Noels, Adrian-Taylor et al., 2019). In addition to understanding who matters for motivational

support, conversation analysis and other analyses of student-teacher interactions could elucidate how significant others communicate in ways that support or undermine learner autonomy. The dynamics between the learner and the TL community members would require consideration of how intergroup processes, based on the power dynamics and relative ethnolinguistic vitality of the language groups in contact, influence on both motivational processes within the learner and interpersonal dynamics in the learning context. Several social psychological (e.g., Clément, 1980; Gardner, 1985; Giles & Byrne, 1982) and socio-cultural models (e.g., Norton, 2013) already offer insights that could guide future research on socio-structural factors and LL motivation.

A very important advancement in LL motivation research is the shift to using a developmental lens to understand temporal aspects of motivation, as exemplified by research that adopts a complex dynamic systems perspective (Dörnyei, MacIntyre, & Henry, 2015). Given that motivational processes are dynamic, changing in more or less complex ways, more or less quickly across different time scales, theory and research needs to more explicitly adopt this perspective in examining SDT-relevant constructs. It would be important to study, for instance, how changes in need satisfaction, orientations, and engagement parallel each other and potentially affect each other's trajectories (e.g., Noels, Vargas Lascano et al., 2019); how changes in teacher support is linked to students' need satisfaction; and how a language becomes internalized into a learner's sense of self (or becomes differentiated from the self). Empirically understanding the systematic trends of LL motivational processes requires multiple observations across time and sophisticated analytic techniques to test how changes are interrelated at different levels of analysis. Such methods might also elucidate the timeline necessary for interventions to have the desired impact, and feedback loops among variables in the motivational process.

SDT offers important insights into LL motivation, but existing LL motivation scholarship could also inform and extend SDT. For instance, research shows that the integrative orientation is relatively distinct from intrinsic and extrinsic orientations and predicts different outcomes. SDT does not consider how idealized- or imagined-self images are related to motivation as articulated by notions of the ideal L2 self (Dörnyei & Ushioda, 2010) and imagined communities and identities (Norton, 2013). Language mindsets may be important precursors to self-determination (particularly the development of sense of competence) and different forms of achievement goal orientations (e.g., performance vs. mastery goals, and promotion vs. prevention-focused goals; Lou & Noels, 2016). Clarifying the relation between SDT's concept of autonomy and the concept of LL self-regulation would likely set a solid foundation for teaching interventions to encourage greater learner autonomy (Lee, 2017; Lou, Chaffee, Vargas Lascano, Dincer, & Noels, 2018). Understanding

how different forms of capital (communicative, positive psychological, and social capital) help learners internalize LL can also provide insights for the burgeoning research concerning the positive psychology of LL (MacIntyre, Gregersen, & Mercer, 2016).

Considerable research shows the usefulness of SDT in education generally, but more research is needed on language education specifically. The existing research findings are promising. For example, based on the autonomy-supportive instructional behaviors described by Reeve and Jang (2006), Kaur, Hashim, and Noman (2015) designed a detailed unit plan for sixth-grade English language teachers in Thailand to use in their classes. These teachers were trained to incorporate autonomy-supportive teaching behaviors into their own teaching. The results of the seven-week intervention program showed that teachers could be trained to teach in an autonomy-supportive manner and thereby promote students' interest, effort, relatedness and integrated regulation (see also Hiromori, 2006). Others point to computer-assisted language learning and social media as useful teaching tools for promoting self-determination (e.g., Akbari, Pilot, & Simons, 2015; Alm, 2006), as well as non-traditional forms of assessment (Zoghi & Malmeer, 2013). Given the extensive literature that shows the effectiveness of autonomy-support in other educational domains, we anticipate that many effective SDT-informed interventions could be designed for language education.

Conclusion

Maintaining language learners' intrinsic motivation and encouraging them to find meaning and satisfaction in the LL process is at the heart of educators' efforts to motivationally support their students. In this chapter we outlined how Self-Determination Theory can be a comprehensive, coherent theoretical framework for understanding how psychological needs, motivational orientations, and engagement are involved in the development of learners' linguistic, socio-cultural, and psychological capital (see also Noels, Lou et al., 2019). A review of LL research grounded on SDT in the past 20 years indicates that, although the basic premises of SDT are empirically substantiated, there is much more work to be done. In particular, the situated nature of LL motivation in socio-structural and socio-cultural contexts has been less well investigated. More research is necessary on self-determined motivation as a complex, dynamic process that is temporally and contextually situated. We concluded this chapter by identifying avenues for future research that will advance not only theory about language motivation processes, but also effective teaching in language classrooms.

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