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REVIEW ARTICLE

Goal Complexes: a New Approach to Studying the Coordination, Consequences, and Social Contexts of Pursuing Multiple Goals

Gregory Arief D. Liem[1] · **Corwin Senko**[2]

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Abstract

Our understanding of multiple goals has been advanced through the lines of research that focus on their pursuit of academic achievement goals and of academic and social goals. These prior efforts, however, are not free from conceptual and methodological limitations. To further advance the field, we put this paper together with two purposes in mind. First, we propose a goal complex model as a new approach to studying the coordination, consequences, and social contexts of pursuing multiple goals. In doing so, we highlight the role of academic goals as the means towards pursuing social goals as the end goals. Second, we proffer a model that explains sociocultural influences on the development of social and academic goals as well as goal complexes. To this end, we highlight the role of parents, teachers, and classmates/peers in promoting students' social and academic goals and in facilitating the formation of goal complexes through these key social agents' influences on the students' goal-related beliefs. Conceptual implications and methodological recommendations for future research on students' multiple goals are discussed. Together, the goal complex approach and the sociocultural model we present in this paper provide the field with directions for future research that seeks to better understand students' pursuit of multiple goals as they navigate complex sociocultural demands in their day-to-day tasks.

Keywords *Goal complex* · Achievement goal · Multiple goals · Goal coordination · Sociocultural

✉ Gregory Arief D. Liem
gregory.liem@nie.edu.sg

Corwin Senko
senkoc@newpaltz.edu

[1] Psychology and Child & Human Development, National Institute of Education, Nanyang Technological University, 1 Nanyang Walk, Singapore 637616, Singapore

[2] Psychology Department, State University of New York, New Paltz, NY 12561, USA

Aside from their role as a learner, students take on multiple social roles. They are a family member, a classmate, and a friend. Each of these roles comes with expectations. So, while students' core business at school is to develop academic competencies, it is reasonable to assume that parents and teachers in many societies expect them to develop such interpersonal qualities as being respectful, helpful, or cooperative. From a research perspective, it is vital to consider all of these social roles together. This requires understanding (1) the coordination of students' pursuit of academic and social goals, (2) the consequence of that pursuit, and (3) how key socialization agents influence students' academic and social goals. This article explores all three by proposing a goal complex approach as a new way to study multiple goals. It has three main sections. First, we review prior frameworks for studying students' multiple goals at school. This will include achievement goal theory and then other work examining students' suite of academic and social goals. Second, we review the goal complex model — a relatively new approach to achievement goal research — and highlight its potential for studying multiple goals. Third, we explain the role of parents, teachers, and peers in the development of goals and goal complexes. Throughout, we highlight gaps in the literature and discuss possible future directions.

Multiple Goal Research in Educational Psychology

The first step to exploring multiple goals must be to define the goal construct. Formally, a goal is a cognitive representation of desired or undesired future states that directs motivated behavior (Austin & Vancouver, 1996). These desired states (approach goals) guide behavior towards their attainment, whereas undesired states (avoidance goals) guide behavior away from them (Carver & Scheier, 1998; Elliot, 1999). Thus, goals serve as a standard against which the current state is compared, and the resulting discrepancy generates a force that gives rise to goal-directed actions (Bandura, 1986). Goals, therefore, function to mentally represent "what" it is that individuals are trying to achieve or avoid (i.e., the content of goal). They steer one's actions, guide emotions, and work with other cognitions (e.g., expectancy and value beliefs) to regulate one's efforts.

Of course, students pursue more than just one goal. They juggle many at the same time. Understanding students' pursuit of "multiple goals" and how it affects learning and well-being has long fascinated goal theorists (e.g., Boekaerts et al., 2006; Dowson & McInerney, 2003; Urdan & Maehr, 1995). Within educational psychology, that work has focused primarily on (1) multiple academic achievement goals, such as how pursuing mastery and performance goals affects students' learning processes and outcomes (e.g., Harackiewicz et al., 1998), or (2) the joint impact of academic and social goals at school, such as how goals for task mastery and peer acceptance together affect students' school experience (e.g., Wentzel, 1999). In both lines of research, student's goals can be compatible, unrelated, or conflicting. Accordingly, most studies examine how students' goals together affect their success and well-being. Below, we briefly review each area and then highlight similarities in how they conceptualize multiple goal pursuit.

Mastery and Performance Academic Goals

Early achievement goal theory, developed in the 1980s, contrasts two types of competence-oriented achievement goals (Dweck, 1986; Nicholls, 1984). Students pursuing mastery goals seek to *develop competence* and *master tasks*. This goal is rooted in a belief that ability is malleable, something to develop with effort, and that making mistakes is natural to learning. By contrast, students pursuing performance goals try to *demonstrate competence* and *outperform others*. This goal is grounded in a belief that ability is fixed, something to demonstrate, and that making errors signals inability. These two goals eventually were given avoidant-oriented siblings (Elliot & McGregor, 2001): a mastery-avoidant goal (striving to avoid declines in competence or failures to learn) and a performance-avoidant goal (striving to avoid appearing incompetent or being outperformed). The two original approach goals, however, remain the focal point of most research and will be so for this paper too. Therefore, when referring to mastery or performance goals, we mean the original "approach" forms; whenever referring to the two avoidance goals, we will use their full labels.

Each achievement goal, the theory assumed, should produce a distinct pattern of achievement processes and outcomes, sometimes called *goal orientations*. Mastery goals should produce much healthier overall patterns than performance goals, while the two avoidant goals should produce largely unhealthy patterns. The evidence generally supports this broad assumption. Early reviews (e.g., Moller & Elliot, 2006; Payne et al., 2007) showed that mastery goals are associated with healthy processes and outcomes like heightened effort, interest, and self-efficacy. Performance goals, by contrast, had less consistent findings. Sometimes, they gave rise to undesirable outcomes like anxiety and self-handicapping. Other times, they benefited achievement and effort. Most curious of all, some benefits were unique to performance goals. For example, several studies by Elliot, Harackiewicz, and their colleagues found that performance goals predict higher achievement than mastery goals, and that performance goals also boost task engagement and interest more than mastery goals for learners with high levels of dispositional need for achievement (see Harackiewicz et al., 1998). In light of those findings, plus evidence that mastery and performance goals typically correlate positively, Harackiewicz et al. (1998) proposed a *multiple-goal perspective.* It considers both goals to be potentially beneficial, together and in unique ways, that may make it worthwhile for some students to pursue both.

Academic and Social Goals

Achievement goal theory spotlights only the academic goals pursued by students. Yet, students pursue social goals at school too. They seek not just to learn and perform well but *also* to establish and maintain friendships, develop social identities, and forge a sense of belongingness (Dowson & McInerney, 2003; Urdan & Maehr, 1995; Wentzel, 1991, 1993). Early qualitative studies verify this (e.g., Lemos, 1996; Wentzel, 1989). Wentzel (1989), for example, identified four major groups of goals that US high-school students tried to achieve at school; in addition to mastery and

performance goals, they pursue social goals geared towards making friends and earning approval through helpfulness.

The subsequent research sought to understand how academic and social goals work together and impact school adjustment. For example, high-achieving students report more frequent pursuit of goals to learn new things, to achieve academically, and to behave responsibly, whereas low-achieving students report less frequent pursuit of these goals and more frequent pursuit of goals to have fun and to make and maintain friendships (Wentzel, 1989). Furthermore, academic and social goals independently predict various outcomes such as classroom effort (Wentzel, 1996) or study strategies (King et al., 2013).

It is important to note that the educational psychology literature recognizes two key approaches to social goal conceptualization. One approach (e.g., Ford, 1992; Wentzel, 1989) takes a "goal content" perspective, which describes social goals as broad socially valued interpersonal qualities that students are expected to pursue. This includes *prosocial* (e.g., helping, sharing, cooperating) and *social responsibility* (e.g., complying with rules and norms, fulfilling expectations and duties) goals. The other approach focuses exclusively on social goals as they inspire academic effort (e.g., Dowson & McInerney, 2004; Urdan & Maehr, 1995). This, for example, includes *social solidarity* (I study hard to bring honor to my family), *social approval* (I study hard to get my teacher's praise), *social concern* (I study hard to help friends with schoolwork), or *social status* (I study hard to belong to the popular group at school) goals. In spite of this conceptual distinction, the social goals in either approach are functionally similar when linked with academic goals, which is the focus of this paper. We use the term "end goal" to represent social goals that students seek to attain by way of pursuing academic goals.

Current Goal Coordination Models

For both lines of multiple goal research, one open challenge is to figure out how exactly students pursue multiple goals. How do they coordinate their pursuit of mastery and performance goals (Senko et al., 2011), and how do they coordinate either of those goals with their various social goals (Boekaerts et al., 2006)? Two general approaches have been used to answer this question. We label them the concomitant and antecedent approaches.

Concomitant Approach

The *concomitant* approach has been the predominant one in both streams of multiple goal research summarized above. It construes a student's goals as concurrent and operating in parallel. The goals can overlap, conflict, or be unrelated, but, in all cases, they are *functionally* independent of one another. Accordingly, this approach entails directly comparing those goals' effects on outcomes, such as achievement, well-being, and so on. This usually takes the form of testing main effects in a regression analysis, though it can also entail testing their interaction effects.

Consider achievement goal research first. Virtually, every achievement goal study has adopted this concomitant approach, often with the simple aim of seeing which outcomes each goal predicts. The approach also features heavily in work more expressly devoted to understanding multiple achievement goals. Barron and Harackiewicz, (2001) influential paper proposed three main ways that mastery and performance goals could work together effectively: (a) *additive effects*, where mastery and performance goals produce separate effects on the same outcome; (b) *interactive effects*, where the greatest benefit on a particular outcome requires a particular combination of mastery and performance goals (e.g., high pursuit of both); and (c) *specialized effects*, where mastery and performance goals have separate effects on different outcomes (e.g., mastery goals aid task interest, while performance goals aid academic achievement). Each of them uses the concomitant approach, treating the two goals as separate and parallel motivations. Barron and Harackiewicz's model has inspired many studies, with evidence for all three types of effects (e.g., Harackiewicz et al., 2008; Liem, 2016).

The concomitant approach also dominates the research on academic and social goals. Most studies test these goals' effects on the same outcome, typically as main effects (i.e., "additive effects"; Barron & Harackiewicz, 2001). For example, Miller et al., (1996) found that mastery goals and a desire to please teachers both support high school students' self-regulation efforts. King and McInerney, (2019) found that mastery goals and desires to help one's family each impact engagement. Other times, these goals combine to jointly impact the same outcome (i.e., "interactive effects"). For example, Wentzel, (1993) found that achievement goals predict high GPAs only if students also pursue a social responsibility goal. Likewise, Levontin and Bardi, (2018) found that mastery goals promote persistence and task performance when students also desire to maintain cooperation among classmates.

On other occasions, these goals' effects are tested on different outcomes (i.e., "specialized effects"). This aligns with Wentzel, (1999) complementary model proposing that academic goals predict task-related behaviors (e.g., persistence, deep learning), while social goals predict interpersonal behaviors (e.g., cooperativeness, help seeking). From this view, the two types of goals have largely separate jurisdictions. For the most part, such studies have only tested the paths from the goal to its anticipated outcomes. For example, Wolters, (2004) found that task goals promote task engagement (e.g., effort, cognitive strategies), while Wentzel, (1994) found that social goals predict social engagement (e.g., cooperativeness, sharing of knowledge) that facilitates learning. A fuller test of this proposal, though, requires simultaneously testing both paths (e.g., an academic goal's effects on both task-related behaviors and interpersonal behaviors). Liem, (2016) did so and, supporting the complementary model, found that academic goals mainly predict academic outcomes (effort, achievement) and social goals mainly predict social outcomes (peer relationship satisfaction, loneliness).

Antecedent Approach

The second conceptual model, the *antecedent* approach, takes a different tact. It construes one goal as a precursor to the other goal(s). Consider again the case of

multiple achievement goals. It is possible that mastery and performance goals would be easier to coordinate if students link the two over time (Senko et al., 2011). For example, competitive athletes may construe mastery goals (i.e., to improve one's skill) as an essential first step toward a more distal performance goal (Van Yperen, 2022; cf. Zimmerman & Kitsantas, 1999). Conversely, performance goals could also serve eventual mastery goals. In elite team sports (e.g., Wang & Straub, 2012), for example, athletes often compete (cf. adopt performance goals) during training — not just to prepare for matchday competitions but also to develop their skills (cf. adopt mastery goals). The same is true of children entering local spelling bees or math contests. The "competitive cauldron," their parents hope, will foster long-term growth in those core academic skills. In each example, the mastery and performance goals are sequentially linked and functionally supportive, the attainment of one current achievement goal serving to attain the more distal achievement goal. The later goal can be considered the ultimate *end* goal, and the first goal as the *means* to attain it. Unfortunately, this antecedent model is under-studied in achievement goal research, with only one clear test of it to our knowledge (Van Yperen, 2022). All other studies instead use the concomitant model, often while also looking at *other* antecedents to these two goals, such as features of the students' traits (e.g., Elliot & Church, 1997) or the classroom's climate (e.g., Lau & Nie, 2008).

Several studies have explored the antecedent approach when looking at students' academic and social goals at school (cf. hierarchical model of academic and social goals; Wentzel, 1999). Most of them test whether students pursue academic goals in order to attain social goals. In other words, students' social goals cultivate the adoption of their academic goals (i.e., a "social goal → academic goal" sequence).[1] Dowson and McInerney, (2003) found evidence of this in their qualitative study, exemplified in the following statement from an interviewed student: "*I want to show my teachers that I'm a good student*, *so I try hard in class and want to do better in my exam*" (p. 102). For this student, the desire to gain her teacher's recognition ("*I want to show my teachers that I'm a good student*") is the (social) reason for her task engagement and academic goal ("*I try hard in class and want to do better in my exam*"). The academic goal is the *means* to attaining the social *end goal*, in other words. Quantitative studies have also used the antecedent approach by treating one goal as a predictor of another in regression analyses. Anderman and Anderman, (1999), for example, found that U.S. 6th graders' social responsibility goals ("*I try to do what my teachers ask me to do*") predict growth in their task goal orientation, whereas social relationship ("*I would like to get to know my school friends well*") and social status ("*It's important to me to belong to the popular group at school*") goals predict growth in ability goal orientation (i.e., a "social goal → academic goal" sequence).

Interestingly, much of the evidence for the "social goal → academic goal" sequence emerges from studies with collectivist students, for whom studying is as much a social obligation as a personal endeavor (Li, 2003). For example, Indonesian

[1] This paper uses arrows to link two goals. In each case, the goal on the arrow's left is the higher-order goal that elicits the lower-order goal on the arrow's right (cf. Wentzel, 1999).

high-school students with stronger socially oriented achievement motivation (i.e., to attain close others' standards) are more likely to adopt mastery and performance goals (Liem et al., 2012). Similarly, Asian and Latin adolescents in the USA report more positive attitudes toward family obligation than do their European counterparts, and these differences are systematically associated with their academic motivation (Fuligni et al., 1999).

Of course, the goal sequence can in principle also go the other direction: social goals can be pursued in service of academic goals (i.e., an "academic goal → social goal" sequence). A student, for example, may strive to cooperate with classmates in order to develop academic skills from them, or she might strive to curry the teacher's favor in order to later earn greater academic success. This type of configuration has not yet received much research attention, however, and we suspect that it is much less frequent than the "social goal → academic goal" configuration.

Evaluation of Each Approach

Each of these approaches is sensible. Each also provides more insight than studies that examine just one goal. But that insight is still limited, because these approaches can offer only a partial view of how multiple goals work together. The concomitant approach treats multiple goals (e.g., social and academic goals) as wholly independent, as if they are separate entities entirely. The aim of such studies is often simply to see when the two goals complement or oppose each other (additive effects or interactive effects), or to identify each goal's territory (specialized effects). That approach is descriptive in nature: it chronicles when and where multiple goals have effects. It cannot, however, explain how the goals fit together. How do students perceive the connections between goals? How do they coordinate the goals? Answering that requires a model and methodology that somehow links the goals instead of treating them as independent.

The antecedent approach fares better than the concomitant approach on this front. To its credit, it does emphasize how multiples goals are *related*. Yet that relationship is somewhat simplistic, confined to one goal (e.g., a social goal) giving rise to another (e.g., a performance goal). This is limiting in two respects. First, it provides only a correlation between the two goals (typically assessed in a regression analysis that treats one goal as a predictor of another). A correlation tells us only that the two goals are related, not *why* they are related or *how* students perceive that relationship. Ideally, any good model of multiple goals would identify the function of their relationship with one another, for example, by specifying that one goal (e.g., a social approval goal) is *indeed* the end goal or the reason behind the adoption of the other (e.g., a mastery goal). In this example, the student construes the mastery goal explicitly as a "means" to attain the social approval goal. That is impossible to capture with the concomitant and antecedent approaches, because each measures the two goals separately without directly assessing how students perceive their relation. Second, this model undervalues the antecedent goal, whose primary role is to trigger the second goal, which then takes the reins and drives student experience. At that point, the antecedent goal often fades into the background in researchers' theoretical models. We think this conceptual and analytic approach may overlook other

potentially important roles played by the antecedent goal. In sum, both concomitant and antecedent approaches focus mostly on the immediate and separate effects that each goal has. Neither attempts to capture the actual dynamics involved in pursuing multiple goals. Capturing those dynamics remains one of the essential tasks of multiple goals research. Thus, we need a conceptual and methodological approach that allows a pair of goals to be yoked as a unit to predict outcomes. To this end, we turn to a goal complex approach.

Goal Complexes: a New Approach to Studying Multiple Goals

The goal complex model might be a better approach to capturing how multiple goals fit together. This model arises from achievement goal theory, which we will briefly revisit to provide context. Originally, achievement goal theory viewed achievement goals as broad purposes or "reasons" that students have for engaging in an achievement task (Dweck, 1986; Nicholls, 1984), whether to learn and develop competence (mastery goal) or to demonstrate competence (performance goal). Many early studies, however, operationalized goals as an *omnibus* construct that comprised the reasons component alongside (a) the standards for determining success (i.e., improving for mastery goals, outperforming others for performance goals) and sometimes (b) other learning-related experiences (e.g., attribution, theories of ability, emotions), all of which, it was assumed, cluster together into broad nomological nets called "goal orientations." This practice created inconsistent goal definitions between studies (Elliot & Thrash, 2001), and therefore inconsistent findings as well (Hulleman et al., 2010).

Elliot, (2005; Elliot & Thrash, 2001) therefore called for a revision to the achievement goal construct. Hewing to the broader field of psychology's definition of the goal construct (Austin & Vancouver, 1996), he defined achievement goals as a cognitive representation of competence-focused *aims* (or *standards*) that individuals strive to attain or to avoid failing to attain. In other words, what distinguishes mastery and performance goals is how they determine success and failure. A mastery goal entails striving to do a task correctly (i.e., an *absolute* standard) or improving on one's own prior efforts (i.e., an *intrapersonal* standard), while a performance goal entails striving to outperform others (i.e., an *interpersonal* standard).[2] Notice how this revision departs from the earlier versions of the theory, which had defined goals based on the broad "reason" for engaging in an activity. The performance goal's operationalization, for example, shifted from a desire to demonstrate ability (the *reason* for wanting to succeed) to a desire to outperform others (the goal *standard* used to judge success).

[2] It is important to note that, since the field's inception, achievement goal research has varied in how it defines a performance goal. Some studies define it as striving to appear talented, while others as striving to outperform peers, with the two types producing different effects. For more on this issue, see Hulleman et al. (2010) and Senko (2016)

Of course, the reason for engaging in a task still matters. Thus, Elliot (Elliot & Thrash, 2001) conceptualized reasons (the *why*) as an antecedent that gives rise to the energization of behavior, whereas achievement goals are conceptualized as standards or aims (the *what*) that provide more specific and concrete direction to the energized behavior. The two have unique and complementary roles in motivation, together *instigating* and *directing* behaviors to an end state (Reeve, 2018; Schunk et al., 2014).

Recognizing this, Elliot and his colleagues (Elliot & Thrash, 2001; Sommet et al., 2021; Thrash & Elliot, 2001) eventually advocated that researchers take both elements into account. To that end, they proposed a "goal complex" model that marries the reason and standard as a unit — a gestalt union that is more than the sum of its parts (Sommet & Elliot, 2017). An achievement goal complex takes the following structural form: "I am pursuing [academic achievement goal] BECAUSE [reason]" (Liem & Elliot, 2018; Sommet et al., 2021; see Wentzel, 1993, for an example in the social goals literature). Thus, in the goal complex model, reasons are "the psychological starting point for action" (Elliot & Thrash, 2001, pp. 143–144) and may include such constructs as motives, concerns, desires, interests, or wishes, whether rooted in dispositions or situational forces (Liem & Elliot, 2018; Sommet et al., 2021; Thrash & Elliot, 2001). As we argued earlier and elsewhere in this paper (see Goal Complex System below), even one goal can act as the reason (or *why*) for pursuing another goal. For example, a student could pursue an academic achievement goal (e.g., a performance goal) in order to help attain a social goal (e.g., a family approval goal). Her social goal gives rise to the performance goal, which functions as a "means" for attaining her "end goal" of family approval.

This model marks a substantial development for achievement goal theory. It implies that the same goal can be adopted for different reasons. Indeed, Urdan and Mestas, (2006) discovered that US high-school students pursue performance goals for both personal reasons (e.g., feelings of pride, desire for challenge) and social reasons (e.g., to make parents proud, look smart to classmates), with the former espoused more frequently than the latter. Likewise, in theory, mastery goals could be pursued in service of various reasons including, but not limited to, developing capability (see e.g., Benita et al., 2014; Dompnier et al., 2009; Hodis et al., 2016).

What is more, each unique goal complex could potentially produce unique experiences for students. Even the same goal, then, could produce different effects depending on the reasons fueling its pursuit. To test this, most goal complex studies use survey items that present the goal first, followed by various plausible reasons for its pursuit, much like in the earlier example. This method explicitly yokes the goal and reasons, highlighting their functional relationship (see e.g., Senko & Tropiano, 2016; Sommet & Elliot, 2017). Analyses then compare the different goal complexes' links with outcomes (e.g., achievement) or antecedents (e.g., student traits). As a whole, these studies confirm that the same goal (e.g., performance goal) produces different effects depending on its underlying reasons for being pursued (for reviews, see Sommet et al., 2021, and Vansteenkiste et al., 2014). This method, we will argue later, also allows a novel way to test multiple goal pursuit.

Early Contributions of the Goal Complex Approach

Most goal complex studies have used self-determination theory (SDT) to conceptualize the reasons for achievement goal pursuit (Vansteenkiste et al., 2014). SDT distinguishes autonomous reasons for goal pursuit (e.g., to enjoy the experience) from controlled reasons (e.g., to earn rewards or make others proud). Approximately 20 studies have compared achievement goals pursued for these two reasons (for reviews, see Sommet et al., 2021; Vansteenkiste et al., 2014). They have shown predominantly healthy effects of goals pursued for autonomous reasons. These goal complexes, whether involving a mastery or a performance goal, were associated with such outcomes as higher cognitive and meta-cognitive processing, academic satisfaction, course interest, persistence, and self-efficacy, but lower anxiety, help avoidance, and cheating. Controlled goal complexes, in contrast, exerted either neutral or harmful effects on these outcomes (e.g., Michou et al., 2014; Senko & Tropiano, 2016; Sommet & Elliot, 2017). The adaptive pattern of autonomous goal complexes seems to be linked to a higher level of satisfaction of basic psychological needs that individuals experience when pursuing a goal for autonomous (*vs.* controlled) reasons (Ryan & Deci, 2017).

These goal complex findings have already proven quite beneficial for achievement goal theory, lending clarity to several peculiar patterns of findings, such as when performance goals are most beneficial or when performance goals can be pursued with mastery goals (for a review, see Senko, 2016). Essentially, two goal complexes are more likely to converge if sharing an element — either the goal standard or the reason. Senko and Tropiano, (2016) provided initial evidence for this assumption. In their study, performance-avoidance goals and performance-approach goals correlated much more strongly when the latter was pursued for controlled reasons — probably because those controlled reasons also usually guide the performance-avoidance goal (cf. Carver & Scheier, 1998). In contrast, mastery goals correlated much more positively with autonomous performance goals than controlling ones. Given that mastery goals, too, are probably most often pursued for autonomous reasons (Deci & Ryan, 2000; Senko, 2016), then it is likely that performance and mastery goals are more compatible — and easier to coordinate — when sharing a similar underlying goal pursuit reason. The more convergent the goal pursuit reasons for different goals, the more likely those goals are to be compatible.

Comparing the Goal Complex Model to the Concomitant and Antecedent Approaches

Earlier, we categorized multiple goal studies as using either a concomitant (i.e., multiple goals viewed as independent and concurrent) or antecedent (i.e., one goal giving rise to the other) approach. Neither provides insight into how the multiple goals work together: the concomitant approach does not address how people coordinate the goals, and the antecedent approach assumes that one goal serves only to energize another goal. The goal complex model improves on both approaches. To illustrate how, consider research efforts to study social goals and academic goals

at school. The goal complex model merges the social goals and achievement goals into a *unified* construct (e.g., Wentzel, 1993). By doing so, it promotes the role of the social goals in *both* activating an achievement goal *and* in shaping the learner's experience and outcomes while pursuing the goal. For example, suppose a student strives to master school tasks because she wants to eventually support her parents financially. This family obligation (i.e., social solidarity goal, Urdan & Maehr, 1995) does more than trigger her goal of learning well. It also works with the mastery goal to shape her learning experience in ways that might be different than if she pursued the mastery goal to win rewards from her family. This dynamic, we believe, more fully captures how social and academic motivation are likely to work together.

The goal complex approach also overcomes an ambiguity that limits the other two approaches. As Urdan and Maehr, (1995) noted, several social goals (i.e., approval, status, belonging) can either *raise* or *dampen* students' achievement motivation, depending on the audience a student has in mind. For example, striving to win peers' approval will increase academic motivation only if the peers value academic achievement or learning. If they instead frown upon achievement, considering it "uncool," then striving to win their approval will reduce academic motivation. The concomitant and antecedent approaches do not account for this well: the social approval goal would conflict with a performance goal (in the concomitant approach) or reduce performance goal pursuit (in the antecedent model) if the peer group decries academics, but it would support and facilitate the performance goal if the peer group values academics.

The goal complex approach removes that ambiguity by establishing, as a starting point, that the student actually does pursue the academic goal. Only then does the student provide reasons for pursuing the goal. That is part of the methodology, in fact. Online surveys use display logic rules to ensure that that the reason measure is shown only if participants first endorsed the focal goal to some degree. Similarly, paper surveys' instructions might tell respondents, "*Let us assume that you agreed with [an academic goal], even if only a little bit. What reason(s) motivate you to pursue this [academic goal]?*" (see Senko & Tropiano, 2016; Vansteenkiste et al., 2014). Those reasons are psychologically and methodologically yoked to genuine goal pursuit: "I am pursuing [an academic goal] *BECAUSE* [I seek to attain a social goal]." Accordingly, in the goal complex approach, the social approval goal (or other social goals, of course) is considered only for how much it *facilitates* the achievement goal's pursuit. If the student does not pursue the achievement goal, according to the goal complex approach, the reason for eschewing that goal is immaterial. Without a goal being pursued, there can be no goal complex.

Goal Complex System

The goal complex model forges clearer and stronger ties between multiple goals, whether separate achievement goals or assorted academic and social goals. How, though, do students *coordinate* those goals? Prior work on the goal complex model has not explored this issue. We do so here by incorporating a goal systems framework, a cognitive approach to motivation that focuses on "the mental representations

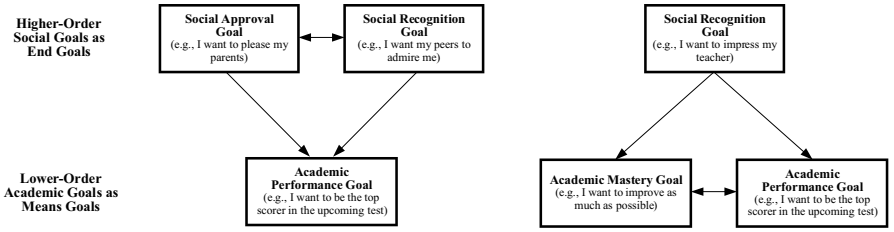

Fig. 1 *Graphical representations of the hierarchical relations of social and academic goals.* **a** The lower-order academic goal as a "means" for attaining the two higher-order social "end" goals. **b** The two lower-order academic goals as "means" for attaining the same higher-order social "end" goal. *Note:* the one-headed arrows pointing from social goals to academic goals represent the direction of influence (i.e., social goals *elicit* the adoption of academic goals), whereas the two-headed arrows represent possible connections between lateral goals

of motivational networks composed of interconnected goals and means" (Kruglanski et al., 2002, p. 333; Boekaerts et al., 2006; Kung & Scholer, 2020; see also Carver & Scheier, 1998; DeShon & Gillespie, 2005 for related models).

According to the goal systems model (Kruglanski et al., 2002), people mentally represent their goals as a network, with the goals connecting to one another *vertically* and *laterally*. Vertical connections are hierarchical: a *lower-order* goal (e.g., try to score 3 goals) is pursued in service of a *higher-order* goal (e.g., try to impress sports scouts). In such pairings, the lower-order goal is more concrete, serving as a "means" for attaining the higher-order "end" goal. To illustrate, suppose student A tries to become the top performer in the class *in order to* please her parents (a social approval goal) and be admired by her peers (a social recognition goal). Her academic performance goal is in service of attaining the two higher-order social goals. As this example illustrates, the hierarchical configuration overlays the goal complex model clearly: the two higher-order social goals are the *end goals* that activate and energize the student to become the top performer in her class (i.e., adopt an academic performance goal). In this regard, the academic goal and each of the two social goals are not just related; they are united into two separate units (i.e., goal complexes).

Figure 1a provides a graphical representation of a simple two-level hierarchy of goals of student A in our example (see e.g., Boekaerts et al., 2006; Carver & Scheier, 1998; DeShon & Gillespie, 2005 for more complex, multilevel hierarchies of goal relations). This hierarchy, of course, is "in the minds of the student," a matter of construal rather than explicit connection (Wentzel, 1999, p. 81). Additionally, the vertical goal connections can be experienced on various timelines. Our hypothetical student, for instance, might construe her academic goal and social recognition goal as simultaneous (i.e., attaining the academic goal allows immediate recognition) or separated over time (i.e., attaining the academic goal will allow future recognition).

Lateral goals, by contrast, are mentally represented as similar in concreteness, with each serving either the same higher-order goal (or even separate higher-order goals). Suppose another student, student B, strives to improve as much as possible (i.e., adopt a mastery goal) and to earn the best marks in the class (i.e., adopt

a performance goal), and he pursues both academic goals in order to impress his teacher. As Fig. 1b illustrates, both academic achievement goals are "lateral" goals that are in service of the same higher-order social goal (e.g., social recognition from the teacher). The number of academic goals that are in service of a social goal may vary (i.e., the *equifinality* set of the goal network), and so may the number of social goals that elicit a given academic goal (i.e., the *multifinality* set of the goal network) (Kruglanski et al., 2002). As elaborated below, equifinality and multifinality in goal complexes will be an important future research area to understand multiple goal coordination and consequences.

Last, some goals may have stronger connections than others, largely based on how frequently and successfully they have been paired previously. Thus, a mastery goal and performance goal will have a stronger connection for some students than others. Likewise, any combination of academic and social goals — e.g., a performance goal and social approval goal — will be more strongly linked for some students than others (this will be elaborated in Development of Goal Complexes below). From the goal systems perspectives (Kruglanski et al., 2002), the smaller the number of means goals connected to a given end goal (i.e., the smaller the equifinality set), or the smaller the number of end goals connected to a given means goal (i.e., the smaller the multifinality set), the stronger the association strength between a means goal and an end goal (i.e., the stronger a goal complex formed).

In sum, the goal systems framework (Kruglanski et al., 2002) and other cognate models (e.g., Carver & Scheier, 1998; DeShon & Gillespie, 2005) provide theoretical support for the goal complex construct as a pairing of two goals that are vertically connected in the goal network. Specifically, building upon earlier work (e.g., Urdan & Maehr, 1995; Wentzel, 1999), we construe academic goals (e.g., mastery, performance) as the lower-order goals that serve as a means for attaining the higher-order goals, including social ones (e.g., social approval, social recognition). In other words, students sometimes pursue a lower-order academic goal *in order to* help them attain a higher-order social goal (i.e., a "social goal → academic goal" sequence). As we mentioned earlier, although the reverse (i.e., an "academic goal → social goal" sequence) is certainly possible, it is less common and is not the focus of the current paper.

Open Questions for Goal Complex Research

The goal complex model is still relatively young. There are many open questions, including several inspired by the incorporation of a goal systems framework. We describe them here in hopes that some may generate new research efforts.

Coordinating Goals

A goal systems' framework implies that the key to effective coordination of multiple goals is to overlay elements within the system. This can be done in various ways. The most obvious is to arrange the goals hierarchically — for example, with one goal serving the more distal or higher-order goal — so that one's attainment facilitates

the other's (Kung & Scholer, 2020). Alternatively, if the goals must remain laterally connected, they can become coordinated by sharing either the higher-order reason(s) that energizes the goals or the lower-order mean(s) used to attain the goals.

To illustrate, consider a student's pursuit of lateral mastery and performance goals. They should, in principle, be easier to mentally overlay and coordinate if energized by the same broad reason for engagement (e.g., personal pride) than if energized by disparate reasons (e.g., desire of challenge for one goal, bringing honor to family for the other goal). The more convergent the goal pursuit reasons for different goals, the more likely those goals are to be experienced as compatible. As mentioned earlier, Senko and Tropiano, (2016) provided initial evidence for this assumption. They found that the two goals correlated more strongly when sharing underlying goal pursuit reasons. New studies are needed to test the idea more directly — for example, with experimental methods that induce goal pursuit reasons (cf. Benita et al., 2014). Similarly, taking a bottom-up view of the goal hierarchy, mastery and performance goals should be easier to coordinate when each can be attained with the same study strategy (e.g., Bodmann et al., 2008). In such cases, where a lower-order strategy facilitates multiple higher-order goals (i.e., *multifinality*; Kruglanski et al., 2016), people feel more committed to the strategy and find goal attainment more likely. Obviously, these basic principles should apply just as well to the coordination of academic and social goals.

In sum, these three core principles — facilitation through hierarchical structuring, shared goal pursuit reasons, and shared goal pursuit means — each entail forging overlap between goals in some form. With all three approaches, those forged links should grow stronger after repeated usage, eventually so that pursuing one goal will automatically activate the other goal too. New studies could test these ideas directly. For example, it might be fruitful to compare the three approaches for how students perceive the multiple goals' compatibility or progress.

Goal Pursuit Reason Properties

So far, we have described relatively simple goal complex systems, our examples limited to students balancing two goals or two higher-order reasons. Of course, students could possibly have more higher-order "end" goals as reasons to pursue a single "means" goal or pursue more "means" goals for a single higher-order "end" goal. This reality raises an interesting question: Does students' experience when pursuing a goal (e.g., mastery goal) depend on the number of reasons for pursuing the goal? Based on the principle of *multifinality*, a goal that serves multiple higher-order goal reasons should garner greater commitment than if it serves only one higher-order goal reason (Kruglanski et al., 2016). This implies that, with reasons (or end goals), more is better. But the goal complex findings summarized earlier suggest that some reasons may be healthier than others, resulting in stronger commitment to the goal (cf. "self-concordance"; Sheldon & Elliot, 1999). This possibility needs direct testing, but there is suggestive evidence already. For example, Shah and Kruglanski, (2000) found an activity pursued for a single, personally valued reason is enjoyed more than if pursued for multiple reasons. Their finding mirrors past research on the potential risks of promising rewards for doing interesting activities (Deci & Ryan,

1985). Likewise, people are more likely to attain their personal life goals if their reasons for pursuing them are more aligned with their values and thus more autonomous (Sheldon & Elliot, 1999). So, although more reasons can be better in general, the type of reason matters too. Presumably then, personally meaningful reasons might provide greater commitment (and goal attainment) than other reasons, regardless of the number of reasons guiding one's goal pursuit.

Motivation can be approach-oriented (e.g., to learn) or avoidant-oriented (e.g., to avoid failing to learn). That fact is well-established for achievement goals. It also, however, should apply to the higher-order reasons (including social goals) served by the achievement goals. Does the valence of the higher-order reason matter? For example, do people sometimes pursue a mastery goal for avoidant reasons (e.g., to avoid personal shame or embarrassment), or a performance-avoidant goal for approach reasons (e.g., pride)? If so, how does that impact their experience or commitment? While anything is possible, we suspect that such mismatches are rare when students have choice over their goals. Matches are generally the norm for people's personal goal hierarchies, and they also seem to make goal pursuit more effective (e.g., Higgins, 2005; Tamir & Diener, 2008). For example, Hennecke et al., (2019) found that people perceive a lower-order goal as more useful when its valence matched the higher-order goal's valence. This implies that students will usually select an achievement goal that matches the higher-order goal reason's valence, and also that they will commit to the goal more strongly in those cases. Curiously, then, a performance-avoidance goal (i.e., striving to avoid being outperformed) might be pursued more effectively, and with greater commitment, if energized by avoidance-oriented reasons (e.g., wanting to avoid shame) than approach-oriented reasons (e.g., wanting to feel proud). Indeed, recent studies by Świątkowski and Dompnier, (2020, 2021) provide initial evidence for this "match" effect with goal complexes. While, as stated earlier, this paper considers social and academic goals as higher-order and lower-order goals, respectively, the reverse is possible and should also be considered in the future research.

Development of Goal Complexes

For this final section, we explore how goal complexes develop in the first place. To that end, we expand on sociocultural models of student motivation (e.g., Eccles & Wigfield, 2020; Liem & Elliot, 2018; Maehr, 1977; Wentzel, 2021). Figure 2 summarizes these sociocultural processes. Aligning with Bronfenbrenner, (1994) ecological model (see also Liem & Elliot, 2018), we propose that goal complexes trace to the broader culture (i.e., the macrosystem), which exerts its influence through the social and academic goals promoted by parents, teachers, and classmates/peers (i.e., the microsystem). The A path in Fig. 2 represents cultural influences on those key social agents' expectations and values.

To illustrate, let us consider collectivism-individualism. This cultural dimension helps explain why certain goals are promoted more than others. Individuals may be rewarded for pursuing *interdependent* goals (e.g., pursuing social harmony and socially shared goals) in some cultures, but *independent* goals (e.g., pursuing

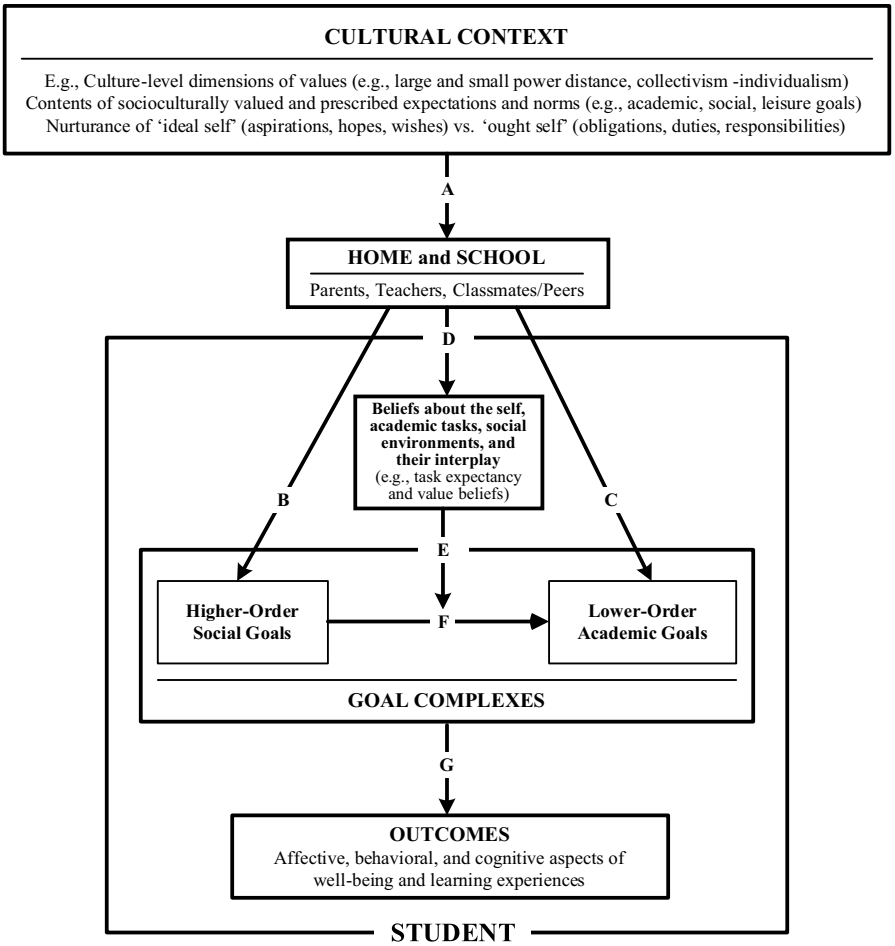

Fig. 2 *Sociocultural influences on goal complexes. Note:* the F path represents the link between two key elements of a goal complex — higher-order social goals give rise to the adoption of lower-order academic goals as the "means" towards pursuing the higher-order social "end" goals

individuality and personal goals) in others (Markus & Kitayama, 2003). These differences, along with cultural variation in the hierarchicality of social relationships (power distance), determine the degree to which students internalize sociocultural expectations and values (Chirkov et al., 2003) and whether they use them more as *personal* or *social obligations* to regulate their behaviors (Wentzel, 2021). Of course, culture may also influence the degree to which other motivational propensities are adopted and guide a student's goal pursuit. Among these key culturally rooted propensities are individuals' orientation towards pursuing one's own interests or the interests of others (self-enhancement *vs.* self-transcendence values; Schwartz et al., 2012); focus on growth and realizing one's aspirations or on security and fulfilling one's responsibilities (promotion *vs*. prevention regulatory focus; Higgins,

1997); and general inclination to get energized and directed towards positive or negative objects, events, and possibilities (approach *vs.* avoidance motivation; Hamamura & Heine, 2008).

How Social Goals Develop

Earlier, we encouraged researchers to adopt the goal complex approach and conceptualize social goals (as the end goals) that act as the underlying reasons for pursuing academic goals (as the means of accomplishing the social end goals). But where do those social goals themselves come from? Multiple theories (Dweck, 2017; Ford & Smith, 2020; Thrash & Elliot, 2001; Wentzel, 1999) concur that individuals' social goals are rooted in their more generalized needs for affiliation, interpersonal attachments, and social belongingness. That is, as the rudimentary sense of direction derived from these social needs is not precise enough to steer behavior toward specific ends, individuals set social goals (e.g., social approval or social belonging goals). These social goals are formed over time through an individual's continuous interactions with his/her social environments and are likely to manifest in a generalized form (e.g., social approval or belonging goals in relation to others in general) or a more specific form with different audiences (e.g., a social approval goal from a particular teacher or a social belonging goal in relation to a certain group of friends).

As the B path in Fig. 2 shows, social agents influence students' social goal formation and adoption. Let us consider prosocial and social responsibility goals. It is reasonable to assume that adults both at home and in school expect children early in their lives to develop and display socially appropriate interpersonal qualities. In this regard, direct teaching, behavioral modeling, and clear and consistent communication of expectations by parents or teachers should provide straightforward information about what prosocial and social responsibility goals to adopt (Bandura, 1986; Wentzel, 2018, 2021). Indeed, Wentzel et al., (2012) showed that adolescent students' *perceptions* of their parents' expectations (about socially appropriate behaviors) predict whether the students adopt prosocial and social responsibility goals.

Students also communicate to each other their own expectations and values concerning which social behaviors are acceptable. For example, in Wentzel et al., (2012) study, students' perceptions of their peers' social behavior expectations held larger sway than did perceptions of their parents' expectations — a sensible finding considering the salience of peer influence during adolescence. Furthermore, a recent study pointed to the *social contagion* effect: the more students in a class who have prosocial and social responsibility goals, the greater odds that any other student in the class will too (King & Mendoza, 2021). In sum, students' perceptions about what adults and peers expect them to do interpersonally should directly influence their pursuit of prosocial and social responsibility goals.

To advance our knowledge about social goal development, a promising direction of future research would be to focus on students' beliefs concerning the social goals that others expect them to pursue, and the extent to which they internalize these goals. This can be done, for example, by studying the interplay between the different agents of socialization (e.g., parents, teachers, classmates) and the specific

expectations they promote (e.g., my parents expect me to bring honor to my family) in giving rise to students' adoption of the corresponding social goals (e.g., social solidarity goal: I would like to bring honor to my family). Furthermore, considering factors that may influence goal internationalization processes (e.g., social efficacy, relationship quality, message consistency and clarity) promises a fuller account of the development of students' social goals.

How Academic Goals Develop

Social agents influence students' academic goal adoption too, as represented in the C path in Fig. 2. As with social goals, communication of expectations by parents or teachers should provide clear messages about what academic goals to adopt. Of course, peers can also influence students' academic goals, either *complementary* or *antithetical* to those espoused by adults, depending on the peers' values and attitudes toward academic achievement and education more generally.

In general, students' own achievement goals (e.g., mastery goal) match the achievement goals promoted by their teachers (Bardach et al., 2020) or parents (e.g., Gonida et al., 2007), especially if students perceive that their peers share the same achievement goal too (e.g., Hemi et al., 2021). Other times, these links are moderated or mediated by students' individual differences. For examples, Sommet et al., (2017) showed that teachers' performance goals correspond to increases in their students' performance-approach goals when the students have high perceived competence, but increases in performance-avoidance goals when the students have low perceived competence. A mediational process was evidenced in Elliot and Thrash, (2004) study showing that fathers' and mothers' fear of failure directly predicts their children's own fear of failure which, in turn, predicts the children's adoption of performance-approach and performance-avoidance goals. That is, parents' fear of failure leads them to display concerns about their child's mistakes, instilling in the child a sense of shame over mistakes and a strong desire to avoid mistakes at all costs and, in turn, giving rise to the child's performance goals. Thus, while students tend to adopt goals emphasized by others, various other factors — both intrapersonal and interpersonal — should be taken into consideration too.

As mentioned earlier, one such interpersonal factor to consider is the audience for one's goal pursuit. Ziegler et al., (2008) provide a lovely example. Their study measured German high school students' performance goals, in particular the "appearance" type of performance goal that emphasizes a desire to demonstrate talent to onlookers (for more on types of performance goals, see Hulleman et al., 2010; Senko, 2016). They asked students to complete the performance goal measure ("*I want [audience] to notice how good I am*") three times, each with a different audience in mind (parents, teacher, or classmates). The students endorsed this goal much more strongly when thinking of their parents than their teachers or, especially, their classmates. However, the goal also produced much more harmful effects (e.g., low efficacy, low task value, and high anxiety) when pursued with parents in mind than when pursued with teachers or classmates in mind. In fact, the goal had generally neutral or beneficial effects when pursued for classmates. To our knowledge, their

study is the first to examine the role of different social agents in testing achievement goal effects. Clearly, this area requires further research attention.

The impact that these various social agents have on goal complexes is also likely to vary across cultures. For example, pursuing a performance goal to please parents may be more common in some cultures than others, and also potentially more harmful. Indeed, studies in collectivist cultures have shown a "double-edged sword" effect of students' relationships with parents and teachers on goal adoption (Jiang et al., 2015; Liem et al., 2012). Jiang et al. (2015), for example, showed that Korean students' desire to conform to their parents tends to increase not only their closeness to the parents but also their sense of guilt toward, and conflict with, the parents. The sense of guilt, in turn, predicts the adoption of mastery, performance-approach, and performance-avoidance goals, but the sense of conflict predicts only the two performance goals. This shows that parental affiliation can be a mixed blessing to some students, perhaps more so for students in collectivist cultures than those in individualist cultures.

Notes on Goal Development

The preceding sections have described the processes through which parents, teachers, and classmates or peers may influence students' adoption of social and academic goals. In this sub-section, we highlight characteristics that facilitate the internalization of those goals. Of particular relevance to our discussion herein is Wentzel, (2018, 2021) competence-in-context model that stresses both *interpersonal* and *intrapersonal* factors affecting students' decision-making process in adopting socially valued goals.

In terms of the interpersonal factors, students are more likely to adopt others' goals if they value their relationships with those other people (Wentzel, 2021). That is more likely the case if the relationship satisfies the students' basic psychological needs, for example, by providing emotional support and safety, instrumental help and competence affirmation, as well as clear, consistent, and developmentally appropriate structure and guidance. A warm and nurturing social context should foster the shift of students' goal pursuit regulation from external and controlling (e.g., for rewards, punishments, desires to please others) to autonomous and volitional (e.g., for personal relevance and satisfaction) (Ryan & Stiller, 1991). A fuller account of students' goal adoption processes and effects, as such, should take into account the students' perceived quality of the relationships that they have with key social agents.

In terms of the intrapersonal characteristics, it is important to note that the internalization of goals is not a passive process. Students do not simply carbon-copy important others' goals. Rather, students play an active role in constructing messages from others (including expectations, values, and goals). They interpret, filter, and adjust those messages based on their own prior knowledge, before eventually making the goals their own. Accordingly, students' expectancy and value beliefs (elaborated below), as well as their beliefs concerning social obligation (what it is that students think they should do to meet their duties to their parents/teachers), can also be expected to play a large role in goal development (Wentzel, 2018). In short,

we see goal internalization as a process of *transformation* rather than *transmission* (Lawrence & Valsiner, 1993).

We also suspect that this transformation/transmission process is culture-bound and a matter of degree rather than "either/or." Qu et al., (2014), for example, found that teenagers more strongly internalized their mothers' goals in China than in the USA. Specifically, the Chinese teenagers in the study more strongly agreed about the importance of goals valued by their mothers, and they also gave more autonomous (e.g., personal value, interest) than controlled (e.g., attainment of regards, avoidance of guilt) reasons for accepting their mothers' goals. Qu et al. attributed these results to cultural differences: the stronger orientations toward interdependence, filial piety, and conformity in Chinese children make them see the family as a single unit and fulfilling their responsibilities to parents as social obligations, and as such adopt their mother's goals more autonomously. By contrast, the stronger orientations toward independence, individuality, and autonomy may focus US children on pursuing their own interests and goals — especially during adolescence — and see adopting their mother's goals as less autonomous. As this example illustrates, it is sensible for future research to clarify if the impact of social obligation as a goal pursuit reason differs developmentally and cross-culturally.

How Goal Complexes Develop

As explained earlier, socialization agents, channeling broader cultural expectations and values, can influence each element of the goal complex: the social "end" goal and the academic "means" goal itself. As illustrated in the D and E paths in Fig. 2, they can also influence the pairing of those two elements into a goal complex — the F path — through the various beliefs that students build as they link social and academic goals (Dweck, 2017; Markus, 1977). These beliefs represent cognitive schemas about the self, the academic task, the social environment, and all of their interplays that individuals develop through social interactions and performance experiences, as well as their considerations of environmental affordances and situational constraints. These beliefs subsequently serve as future guides (or "working models") for the individuals to select goals (Dweck, 2017) and, by implication, link one goal to another, including higher-order to lower-order goals.

To illustrate the development of beliefs that connect one goal to another — or a goal complex — let us consider Andy, whose score on a Science test topped the class. When the result was publicly announced to the class, the teacher praised him and his classmates showed admiration. At home, his parents expressed their pride in Andy's achievement. As illustrated in the D path, the recurrence of a similar episode, including experiencing the less enthusiastic social responses when he did not score as well, gradually forms his beliefs that, "*Fulfilling my role as a child*, *pleasing my teacher*, *and gaining my classmates*' *approval can be done by scoring well in schoolwork*." (cf. Dowson and McInerney, 2003 finding reviewed earlier). As the E path suggests, these beliefs serve to facilitate the degree to which Andy's social and academic goals are connected by providing mental guides that he can pursue his social goals by attaining an academic goal (i.e., the F path). That is, the beliefs

that pursuing one goal facilitates the attainment of other goals help establish the links between Andy's social responsibility, approval, and recognition goals on the one hand, and his academic performance goal on the other (i.e., his goal complexes). The teacher's announcement that there will be another similar Science test activates Andy's stored goal-related beliefs that steer him to select and pursue a certain academic goal, which he construes as a means towards attaining his social goals in relation to one or more of his important others (parents, teacher, and classmates).

Thus, the beliefs about the self, the academic task, the social environment, and their inter-relationships could moderate — strengthen or weaken — the social and academic goals' links. In Andy's case, for example, the degree of consistency and clarity in his parents' expression of pride and his classmates' admiration of his school success may affect Andy's own sense of the certainty and clarity of his beliefs that another school achievement will earn a favorable response. The certainty and clarity of the beliefs about how the world operates influence the strength of the connections between Andy's social and academic goals (i.e., his goal complexes). We further suspect that, beyond the number of end goals that serve as the reasons behind pursuit of a means goal, the strength of the pairing of two goals that comprise a goal complex (the F path) may also impact on how predictive this goal complex in giving rise to its outcomes (the G path). This is certainly an area that requires future research attention.

Expectancy and Value Beliefs

Aligned with the core of classic (e.g., Atkinson, 1957) and contemporary (e.g., Eccles & Wigfield, 2020) motivation theories, we also consider a subset of beliefs that specifically concern students' expectancy for success and their valuation of goal attainment. Situated expectancy-value theory (Eccles & Wigfield, 2020), for example, posits that students' academic expectancies (or perceived academic competence) and academic task values (i.e., subjective valuation of academic task) are developed through achievement-relevant experiences and continuous socialization by parents, teachers, and peers. Like the beliefs about how attaining an academic goal can be in the service of pursuing social goals, students' beliefs about their academic competence and task are likely to moderate the social-academic goal relations too.

In Andy's case, for example, the fact that he performed well on the Science test and the ensuing social feedback that he received from his parents, teacher, and classmates boost his confidence and make him proud of himself, knowing that his hard work paid off handsomely on the important test (and subject) and that he was able to meet his parents' expectations (the D path). His adoption of academic performance goals — by implication, the formation of his goal complexes as well — are likely to be determined not only by the degree to which he believes that outperforming classmates will yield desired social consequences (i.e., his goals-related beliefs) but also by the extent to which he is confident in attaining the academic goals and he finds Science important (Senko & Hulleman, 2013). He is more likely to adopt performance-approach goals when he feels competent in Science and finds it instrumental for his future career, but performance-avoidance goals when he feels less competent in the subject and finds it less instrumental. Thus, besides his goals-related

beliefs, Andy's academic goal selection is also a consequence of how favorably he feels about his competence in Science and how important he perceives the subject. Indeed, considering academic expectancy and value beliefs as potential moderators of the strength of the relationships between social and academic goals is supported by Elliot and Thrash, (2001) assertion that expectancy and value beliefs are predictors of academic goals and its corresponding research evidence (e.g., Liem et al., 2008; Plante et al., 2013). They provide a theoretical-empirical basis to conceptualize and examine the moderation by assessing the effects on academic goals of these beliefs' interactions with social goals.

As Fig. 2 further shows, we view cultural influences as systematic nurturance of not only goals but also of the goals-related beliefs. In doing so, culture exerts its influences through socialization agents, especially parents and teachers, who respond in unique ways to attainment of certain goals and recommend certain ways of pursuing these goals. Culture also influences students' perceptions of competence and appreciations of tasks through the opportunities and constraints that it provides and the socialization of general and specific (e.g., gender- or ethnic-based) expectations and goals. Thus, individual differences in students' academic and social motivation, and their coordinated relations, across cultures may be a result of the systematic development of goals-related beliefs that are continuously constructed and calibrated as students pursue social and academic goals, meet with responses from the socializers when succeeding or failing at these pursuits, and observe others in the culture (cf. Dweck, 2017).

Exploring the moderating role of goal-related beliefs as well as academic expectancy and value beliefs presents us with an interesting direction for future research: To what extent is the strength of the moderating role of goals-related beliefs affected by the characteristics of the social goals (e.g., social affiliation *vs.* social concern), the academic goals (e.g., mastery *vs.* performance), the target social agents (e.g., parents *vs.* peers), or student backgrounds (e.g., sex, age, culture)? This is certainly a key research question that future research may systematically unpack and address. In this regard, statistical advances that allow examination of moderation processes would benefit these future efforts. Of particular importance, the versality and applied benefits of structural equation modeling techniques in assessing the moderation involving continuous variables (e.g., by creating latent variable interaction terms) or categorical variables (e.g., by conducting multigroup invariance tests) afford analytic strategies that promise more precise findings (Hayes, 2022) which, in turn, advance our understanding of goal complex formation and effects.

Outcomes of Goal Complexes

Aligned with sociocultural perspectives on social and academic motivation and competence (e.g., Eccles & Wigfield, 2020; Liem & Elliot, 2018; Maehr, 1977; Wentzel, 2021), there is a compelling need to take a cultural approach to understanding goal complex outcomes or consequences. This is represented in the G path in Fig. 2. Although certain academic (e.g., knowledge/skill acquisition, inquisitiveness, persistence) and social (e.g., moral character, conformity to rules/norms, social

inclusiveness) qualities are the contents of academic and social goals that most education systems share and seek to develop in students, what constitutes "appropriate" outcomes and ways of attaining them may be socioculturally grounded and, hence, different across social and cultural contexts.

A sociocultural analysis may help clarify past findings on achievement goal effects. For example, over the years, numerous studies have found sociocultural or contextual differences in the effects that goals have on outcomes (Liem & Elliot, 2018). Typically, when those differences are found, they are assumed to reflect differences in intrapersonal constructs such as confidence (e.g., boys *vs.* girls in gender-stereotypes domains) or related constructs like perceived threat (e.g., ethnic differences in goal effects linked to contextual threat created by the classroom climate). The goal complex model offers an intriguing alternative prospect: perhaps when academic goals (e.g., performance, mastery) produce different effects between cultural groups or contexts, it is due to underlying differences in the reasons that students adopt to pursue the academic goals (e.g., Senko & Tropiano, 2016; for a fuller discussion, see Liem & Elliot, 2018). This possibility deserves direct testing in future studies.

Similarly, the goal complex model has implications for how we interpret why goal effects might depend on the broader audience for one's efforts. For example, recall Ziegler et al.'s (2008) finding that German high school students strove more to impress parents than teachers or classmates. Those students also experienced less positive outcomes when striving to impress parents (e.g., low efficacy, low task value, and high anxiety) than when striving to impress teachers or classmates. Viewed through a goal complex lens, it could be that those different social agents (parents, teachers, classmates) arouse different goal pursuit reasons (e.g., social approval, social solidarity), in which case the findings may capture unique goal complexes being pursued for the different social agents. We need new studies to examine how goal pursuit reasons vary by socialization agents and, as a result, impact goal complex outcomes and multiple goal coordination effectiveness.

Cross-cultural and cross-contextual research on goal complexes, however, is still very rare. To our knowledge, Senko et al., (2021) conducted the only study of this nature. These researchers found that US and Thai students shared similarities in the adaptiveness of autonomously pursued performance-approach goals. However, although the effects of controlling reasons for goal pursuit were consistently harmful across outcomes for the US students, they were not always so for the Thai students (e.g., controlling reasons exerted significant negative effects on academic interest, persistence, and self-efficacy in the US sample, but did not in the Thai sample). Furthermore, the effects of social reasons to pursue performance goals (e.g., making others proud, avoid social punishments like rejection) were predictive of more outcome correlates (e.g., effort regulation, interest), in the expected positive or negative directions, in the Thai sample than the US sample. Clearly, future research needs to examine the prevalence and effects of a wider range of goal complexes across cultures and test the model in Fig. 2. In sum, Fig. 2 shows that culture influences development of students' social and academic goals as well as goal complexes and their effects on outcomes through the internalization of values and goals that key social agents socialize in the students' daily lives, especially at home and in school.

Conclusion

Coordinating the pursuits of multiple goals is a reality of student life. Although extant theoretical models (e.g., Wentzel, 1999) have undoubtedly advanced our understanding on how academic and social goals relate to each other and, collectively, give rise to competence consequences in the two domains, empirical tests of these models were not without conceptual and methodological shortcomings. Inspired by an emerging line of academic achievement goal research, we propose a goal complex approach as a way to study learners' pursuit of academic and social goals. The two types fit well within a goal systems approach that considers the strength and function of these goals' relationships with each other. Guided by goal development models, we also proffer a sociocultural model on goal complex development. In doing so, we specifically highlight the role of parents, teachers, and classmates or peers in the development of social and academic goals, and of the formation of goal complexes (the links between social and academic goals) through these socializers' influences on goals-related beliefs. Together, the goal complex approach promises theoretical and empirical advancements to our understanding of the coordination, consequences, and social contexts of pursuing multiple goals.

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