



# Dynamic or Static Goal Regulation: Implications of Weak and Strong Bonds Between Autonomous/Controlled Reasons and Aims for Achievement Goal Striving

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## Abstract

Achievement goals have been key concepts for describing what motivates individuals in educational contexts. While achievement goals have often merely been conceptualized in terms of aspired end-states (aims of goal striving), contemporary research has proposed a more holistic perspective synthesizing these aims alongside autonomous versus controlled reasons derived from Self-Determination Theory into so-called achievement goal complexes. How these aims and reasons align is a matter of further discussion. An overview of empirical studies on goal complexes as well as associations between achievement goals and overarching goal systems reveals that aims differ in whether they show strong communality (static goal regulation) or rather high situational fluctuation regarding underlying reasons (dynamic goal regulation). Particularly, mastery aims show primarily strong bounds with autonomous reasons, whereas performance aims are more ambiguously aligned with underlying reasons. This has implications for the development of an overarching theory as well as for educational practice aiming to foster certain goals and goal complexes. Potential avenues for future research such as further investigations into goal valence, a broader set of aims, the impact of culture, and goal development are discussed.

**Keywords** Achievement goals · Goal complexes · Life aspirations · Autonomous motivation · Controlled motivation · Self-Determination Theory

The idea that the quality of achievement goals adopted by learners matters for learning outcomes is a cornerstone of motivational research within educational psychology. During the last decade, research within this area has explored new frontiers going beyond the idea that mostly the aim of goal striving—defined as an aspired

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end-state—should be considered when investigating its effects on learning and educational attainment (in sensu Elliot, 2005). Rather, scholars have argued that achievement goals should be construed in terms of so-called *goal complexes* that encapsulate the respective aim but also the reasons as to why individuals strive for that goal (see Elliot & Thrash, 2001; Liem & Senko, 2022). *Self-Determination Theory* has a long history of defining goals in terms of their alignment with reasons either bound to inner needs or extrinsic rewards (Deci & Ryan, 2000; Vansteenkiste et al., 2006), which makes it a logical candidate when searching for a suitable framework to define reasons within achievement goal complexes (see Sommet & Elliot, 2017; Vansteenkiste et al., 2014a). However, it is yet unclear whether aims in terms of Achievement Goal Theory and reasons in terms of Self-Determination Theory can be regarded as sufficiently distinct constructs. If this was not the case, it could have strong theoretical implications regarding whether and how integrating goal perspectives derived from Achievement Goal Theory and Self-Determination Theory via goal complexes benefits the field. From a practical standpoint, the question of whether reasons and aims share strong, weak, or no bonds has implications regarding how certain goals can be fostered. If aims and reasons are independently construed, it becomes possible for educational practitioners to foster certain (adaptive) goals through a number of strategies, whereas the range of possibilities are more limited if both aspects of goal striving are more closely intertwined. The purpose of this research synthesis is to answer the questions of (a) whether aims of achievement goals and reasons derived from Self-Determination Theory are distinct (enough), (b) what consequences arise if they are (not), and (c) how research into the interplay of aims and reasons can advance further.

## The Advent of Aims and Reasons of Achievement Motivation

To understand the need to distinguish between the aims of achievement goals and underlying reasons, it is important to acknowledge the historic contributions of research into achievement goals. Early works on achievement motivation merely focused on the quantity of motivation expressed by individuals, meaning that achievement motivation was treated as a rather omnibus force linked to a broad set of cognitions and behavior (e.g., McClelland et al., 1953). In his prominent reflections on the conceptual history of the achievement goal construct, Andrew Elliot (2005) pointed out that this broad understanding of motivation was not fine-grained enough to provide a thorough understanding of how individuals channeled this effort. For instance, researchers observed that children differed in their reaction to failure in achievement tasks independently of their abilities (Dweck, 1975). While some children reacted with enhanced persistence, others experienced helplessness and withdrew from the task at hand. Such findings influenced researchers to take a closer look into the purpose of achievement motivation and eventually sparked the onset of research on aspired end-states within achievement situations (Dweck & Leggett, 1988; Elliot & Thrash, 2001), which would later be more prominently reflected under the term “achievement goals.”

## Aims as the Core of the Achievement Goal Construct

Originally, achievement goals were often conceptualized as broad constructs that are sometimes also labeled as *goal orientations* in the literature (Kaplan & Maehr, 2007). These goal orientations might be best described as complex mindsets that encapsulate beliefs about success and failure, which fuel personal perspectives on the attainment of competence as well as behavior in achievement-related tasks. Goal orientations are meant to include information on aims of achievement goal striving (e.g., master new skills) as well as the reason for acting on these aims (e.g., for competence development). While this approach to achievement goals continues to inspire research works to this day, it has come under criticism due to the ambiguity of the goal orientation construct, which intertwines goals with their antecedents and consequences (Murayama et al., 2012).

For stronger theoretical clarity, scholars have argued that achievement goals should be defined more narrowly by only considering the respective *aim*—that is, the aspired end-state—when conceptualizing the goal in question (Elliot & Murayama, 2008). For achievement goals, those aims are generally centered around striving for competence (Elliot, 2005; Hulleman et al., 2010). Here, different qualities of aims come to pass because individuals differ in how they construe the attainment of competence. In general, most achievement goal researchers would likely agree that there are at least two ways to construe competence attainment, which are often subsumed under the terms of *mastery* versus *performance goals* (Dweck & Leggett, 1988; Elliot, 2005; Murayama et al., 2012).

The aim of mastery goals is competence attainment in terms of intrapersonal comparisons, which means that individuals consider becoming better in a certain task or domain as a focal indicator for personal competence. In contrast, performance goals focus the individual on normative comparisons, which means that individuals consider outperforming others to be a central route to attaining competence. Mastery and performance goals are generally undisputed in their relevance as they are suitable for explaining individual differences within a multitude of outcome variables like performance (Van Yperen et al., 2015), achievement emotions (Huang, 2011), and academic cheating (Fritz et al., 2023).

Besides defining goals in terms of their respective aims, achievement goals have been further refined regarding whether a positive outcome is actively pursued (*approach goals*) or whether a negative outcome is meant to be averted (*avoidance goals*). This differentiation is sometimes subsumed under the term *goal valence* (see Murayama et al., 2011). Considering goal valence has helped to explain a magnitude of previously puzzling findings, such as when performance goals elicit the display of performance and when they hinder it (Elliot & Church, 1997; Elliot & McGregor, 2001).

The theoretical idea that achievement goals should be defined in terms of their aims has inspired several influential works. However, to this day, research that encapsulates reasons for goal striving into the achievement goal construct—most often in terms of goal orientations—is still thriving and inspiring theoretical progress (Senko, 2016). Moreover, several critics have argued that defining achievement goals only in terms of aims, while neglecting reasons, ignores the complexity of goal striving and leads to a limited understanding of reality (see Senko & Tropicano,

2016; Urdan & Mestas, 2006). As a solution to this, scholars have proposed (re-) integrating both research branches into a comprehensive achievement goal construct. The resulting amalgam of aims and underlying reasons has been labeled as *goal complexes* (Elliot & Thrash, 2001; Liem & Senko, 2022). Similar to goal orientations, goal complexes are meant to be more than just the sum of its parts (aka aims and reasons) and function in terms of a more complex Gestalt of goal striving. Dissimilar to goal orientations, this Gestalt is less ambiguous and binds together two sharply defined constructs. In other words, the disintegration of achievement goals was helpful for developing a more nuanced yet clearly defined goal construct (Vansteenkiste et al., 2014a). On a sidenote, such goal complexes differ from what has been labeled as a “multiple goals” approach, where a combination of different achievement goals form an overarching goal profile with supposed effects exceeding the impact of the components of this profile (Wormington & Linnenbrink-Garcia, 2017). While goal complexes consider energizing reasons, multiple goals focus on what happens if certain aims are pursued simultaneously.

Scholars have proposed several theories that might be helpful to define reasons behind goals such as classical achievement goal theory (competence demonstration versus development as reasons; Korn et al., 2019), social value theory (social utility and social desirability as reasons; Darnon et al., 2009), or sociocultural theories (reasons bound to varying socio-cultural systems; Liem & Elliot, 2018). One theory, however, that has likely inspired most research on goal complexes is Self-Determination Theory with researchers aiming to integrate controlled and autonomous reasons derived from this theory into achievement goal research (see particularly Vansteenkiste et al., 2014a).

### Self-Determination Theory Provides Reasons for Goal Striving

Self-Determination Theory is an influential macro-theory of human motivation and well-being (Ryan & Deci, 2017). In a nutshell, Self-Determination Theory has the core tenet that all humans strive for personal growth and self-actualization but that characteristic of the context as well as more dispositional affinities towards certain reward structures determine whether individuals act upon this aspiration (Deci & Ryan, 2000). Based on this idea, the theory differentiates between different qualities of motivation that can energize human behavior: Autonomous motivation reflects if individuals feel that they act out of own volition, out of interest, or in line with strong personal values. In contrast, controlled motivation reflects whether individuals feel pressured to act either due to external forces or to avoid negative feelings (Ryan & Deci, 2017).

The diverging regulating forces articulated in autonomous versus controlled motivation are well suited to provide a foundation for reflections on reasons that may energize achievement goal striving. Advocates of such a theoretical integration have argued that reasons in terms of Self-Determination Theory and aims in terms of Achievement Goal Theory align dynamically and that the multitude of possible combinations can be described as goal complexes (Gillet et al., 2015; Michou et al., 2014; Vansteenkiste et al., 2014a). This approach can be dubbed as *dynamic goal*

*regulation* (see also Vansteenkiste et al., 2014a) given that it focuses on the multifinality of goals (in line with Kruglanski et al., 2015) in the sense that any given aim can be energized through a number of divergent reasons.

## **Dynamic Goal Regulation as Thesis: Goals as Composites of Reasons and Aims**

The core idea behind dynamic goal regulation is that goals with the same aim can supposedly serve different reasons and the same reason for goal striving might translate into the pursuit of different aims (Gillet et al., 2015; Michou et al., 2014; Vansteenkiste et al., 2014a). For example, this would mean that individuals can strive for mastery both because they find the learning content to be inspiring (autonomous reason) but also because they find learning to be necessary to make their parents proud (controlled reasons). Followers of this reasoning have generally resorted to analyzing the effect of the goal complex in terms of the amalgam that forms when reasons and aims are considered simultaneously as an overarching Gestalt. In doing so, scholars mostly ignore whether certain aims and reasons are naturally intertwined. In their seminal paper on the subject, Vansteenkiste and colleagues (2014a) even clarify that they deem it possible that certain goals tend to be regulated in a certain way *on average* (they specifically argue that approach goals may be more strongly autonomously regulated, whereas avoidance goals could be more strongly bound to controlled regulation). Yet, this is not deemed to be of further importance for investigations into goal complexes.

The supposed inconsequentiality of the tightness of natural bonds between aims and autonomous/controlled reasons has, however, not been subject to strong theoretical scrutiny. Here, I argue that it has very different implications whether reasons act (a) as fully dynamic goal-underlying dimensions that help to define distinct goals and are not tied to aims or (b) are at least weakly intertwined with aims and, as such, merely accentuates effects of the aim at hand or c) are so strongly intertwined with aims that the integration of reasons presents redundant information. Which of these scenarios applies to the reality of goal complexes is non-trivial as it concerns the very nature of the construct, while also having strong practical implications for whether different motivators (in terms of energizing reasons) are equally suitable to fuel different achievement goals.

### **On the Importance of Bonds Between Aims and Reasons**

The idea that aims and reasons share no or only a marginally meaningful natural bond directly translates into them dynamically forming goal complexes—which may then even be considered as distinct goal classes. This is what can probably be subsumed under the term “multifinality”—meaning that different reasons are equally likely to energize diverging aims of goal striving as well as that a certain aim can and will serve different reasons simultaneously (see Kruglanski et al., 2015). Under this condition, the integration of reasons into the achievement goal framework would

be as consequential as the introduction of approach/avoidance goal valence (which is generally considered to be merely weakly bonded to aims; see Janke et al., 2016; Murayama et al., 2011). This would explicitly call for using goal complexes rather than reasons and aims as the central unit of further investigations (as for instance suggested by Sommet & Elliot, 2017). From the perspective of educational practitioners, this would mean that there are a multitude of equally suitable pathways to motivate learners to adopt certain aims.

If aims and reasons were at least somewhat intertwined, theoretical considerations and practical inferences become more complex. Under this condition, the magnitude of the natural bond between aims and reasons might be of particular interest. If this bond between aims and reasons is rather weak, goal complexes might still be “distinct enough” to consider them separate entities. However, the stronger the association, the more likely it is that the aim itself carries information that is at least partly redundant to information carried by the reasons. This means that goal complexes become less distinct as the aim itself entails information on the energizing force. Given weak bonds, it remains plausible that under certain conditions, reasons may form goal complexes with aims that share natural bonds with diverging reasons. For instance, even if an autonomous reason is typically intertwined with a certain aim, a large magnitude of external pressure to pursue that aim may enforce a bond between controlled reasons and that aim. Under more practical considerations, the contribution of goal complexes becomes more limited if certain reasons are more likely to energize certain aims. This means that goal-centered interventions and educational practice would have to be centered on the (primarily) energizing reasons to reach optimal efficiency.

Finally, if certain aims and reasons share strong natural bonds, researchers may focus their efforts on nuanced distinctions between goal complexes that simply do not match reality or merely reflect upon a previously known goal class without adding any new knowledge. This is because the aim itself difficult to detach from the dominant reasons, and in consequence, individuals may only act upon this aim if the dominant reason is present. This does not rule out some degree of multifinality as other reasons might also connect to the aim—for instance, additional external pressure to follow ones’ autonomous strivings. Yet, these auxiliary reasons would not be sufficient to jumpstart the striving for the aim that is strongly rooted in another reason. Under this premise, considering aims to be equidistant to reasons would not advance goal theories further but rather delineate them to include an ever-expanding number of goals that are less and less likely to help explain the reality of achievement motivation. The question on whether theoretical expansion indeed reflects the psychological functioning has made researchers doubt whether students reliably differentiate between approach and avoidance goals or hold more than one goal at the same time (Bong et al., 2013; Lee & Bong, 2016; Urdan & Mestas, 2006). In the same vein, we have to at least consider that individuals may not construe a number of goal complexes in their daily life, which emerge through certain techniques of questioning.

If aims and reasons were so closely intertwined that certain reasons provide clear roads to particular aims in the reality of educational contexts, this would mean that any educational practice will fail to motivate students to adopt certain goals using motivators

outside of the reason that is bound to striving for that aim. In this scenario, if educators came under the impression that aims are equidistant to reasons, they may enact ineffective educational practices that are not suitable to foster aspired achievement goals in their students. This could even lead them to foster goals that educators do not deem beneficial for their classroom. For example, teachers may think that using rewards for learning can foster students' mastery goals, which could be an effective practice if mastery goals were indeed equally likely to emerge from autonomous and controlled motivation. If, however, mastery goals were more strongly bound to autonomous reasons, such a practice could undermine autonomous reasons for goal striving in the sense of an overjustification effect and as a result effectively reduce mastery goal striving.

In sum, it should have become clear that the natural bonds between aims of achievement goals and underlying reasons warrant additional attention. Given both the theoretical and practical implications, it is crucial to understand whether goal complexes reflect (a) completely distinct goal classes, (b) a synergistic yet still dynamic interplay of intertwined goal components, or (c) partly artificial constructs that do not reflect the reality of goal striving. Particularly, the last idea corresponds well with a more static idea on bonds between achievement goals and overarching motivational systems that also has some tradition within the discourse on achievement goals.

### **Static Goal Regulation as Anti-Thesis: Goals as Agents for Overarching Aspirations**

Scholars of achievement goals have long argued that the adoption of a certain goal depends at least partly on its chronic availability due to overarching motivational systems. In this regard, Paul Pintrich (2000) specifically voiced the idea that more general goals "trickle down" in their influence and serve as driving forces for more specific achievement goals. In other words, he proposed that narrow goals (e.g., achievement goals) are instrumental for broader goals (e.g., life aspirations). For instance, an individual may aim for good grades in a test (immediate goal) to attain necessary credentials indicating ones' capabilities (intermediate goals), which are instrumental for the striving for societal admiration (life aspiration).

The idea that overarching goal systems fuel/regulate lower tier (achievement) goals strongly echoes the rationale that aims of achievement goals are adopted due to underlying reasons. The most accentuated difference between the preposition of overarching goal systems and contemporary research on dynamic goal regulation lies in the conceptualization of the energizing force: Reasons within research on goal complexes are typically regarded on the same abstraction level as aims. In other words, individuals strive for aims in a certain situation due to energizing reasons that are equally present in that situation. In contrast, overarching goal systems are chronically available yet less situated than the goal influenced by those motivational forces (Boekaerts et al., 2006; Pintrich, 2000). With these differences between the theoretical frameworks in mind, there is still something that can be learnt regarding to-be-expected bonds between aims and reasons from research on goal hierarchies.



More specifically, contemporary researchers have investigated the trickle-down-effect of life aspirations to achievement goals further by also making use of the framework of Self-Determination Theory (Becker et al., 2019; Janke & Dickhäuser, 2019a), which differentiates life aspirations in terms of underlying reasons (Kasser & Ryan, 1996). These researchers at least somewhat oppose the idea of multifinality of achievement goals. Rather, the ties between goals are meant to follow clear and rather static patterns of instrumentality with achievement goals being situated agents of overarching life aspirations. In the following passages, this idea is subsumed under the term *static goal regulation*.

### **Intrinsic Life Aspirations Fuel Mastery Goal Striving**

*Intrinsic life aspirations* can be deemed as the autonomous goal system within life aspirations. Traditional conceptualizations define intrinsic life aspirations as striving to align one's life with inner needs and the desire for personal growth (Kasser & Ryan, 1996; Ryan & Deci, 2017). Intrinsic life aspirations are consequently often measured with items assessing striving for self-actualization, longing for deep relationships with significant others, and willingness to contribute to one's community (Kasser & Ryan, 1996). These original conceptualizations align most strongly with personal growth as the very core of autonomous motivational regulation as well as with the need for relatedness. Recently, intrinsic life aspirations have been further amended to reflect the basic psychological needs for autonomy and competence more strongly by adding the striving for self-expression and—most interestingly—the striving for mastery (Martela et al., 2019). Notably, a mastery life aspiration is broader and more abstract than a mastery (achievement) goal. In contrast to focusing on excelling in a certain achievement environment, mastery life aspirations refer to striving to identify challenging domains and develop a broad set of skills. Still, the consideration of mastery as an expression of autonomous functioning ties the equally named achievement goal to an overarching autonomous regulation of motivation.

Furthermore, researchers have argued that mastery goals are key to a persistent striving for personal growth (Becker et al., 2019; Janke & Dickhäuser, 2019a), especially if those goals are conceptualized as learning goals (i.e., striving to develop competencies). This reasoning echoes the idea that personal growth as an overarching life aspiration is bound to the ability of the individual to continue to advance one's capabilities in different areas of life. In some of these areas, personal growth manifests in the development of skills, knowledge, and expertise or—in other words—as personal learning, which provides another theoretical bridge between overarching intrinsic goal systems and mastery goals.

### **Extrinsic Life Aspirations Fuel Performance Goal Striving**

*Extrinsic life aspirations* are centered around reward systems that are enforced by external forces (Kasser & Ryan, 1996; Ryan & Deci, 2017). These reward systems can be material possessions and wealth but also fame (Kasser & Ryan, 1996). Most recently, scholars complemented these goals with the striving for power and



social adherence (Martela et al., 2019). Overall, most extrinsic life aspirations have in common that they focus on personal admiration through others. In this regard, admiration can either be a means in itself or the means through which materialistic goods can be attained, as for instance fame and power are often instrumental to the accumulation of wealth. Striving for admiration of one's capabilities is also a core facet of performance goal striving (Hulleman et al., 2010). Besides this direct analogy, demonstrating capabilities in achievement situations is key for further success, admiration, and wealth—at least in meritocratic societies. Taken together, this makes an argument for performance goals being tightly anchored in goal systems supposedly bound to controlled motivation (i.e., Janke & Dickhäuser, 2019a).

At this point, it is important to note that the idea that intrinsic aspirations are fueled by autonomous motivation and extrinsic aspirations are automatically synonymous to controlled forms of motivational regulation is not undisputed. Particularly for materialism as prototypical extrinsic aspiration, it has been debated whether the striving for money can also be rooted in autonomous motivation (e.g., money assisting in the pursuit of personal freedom; Srivastava et al., 2001). This idea more strongly aligns with the postulate that a certain aim can be rooted in a multitude of reasons that can be simultaneously active. Yet, empirical research shows that extrinsic life aspirations facilitate effects that are to-be-expected for controlled forms of motivation (here: negative associations with well-being) even when considering the degree to which these goals are bound to autonomous versus controlled motivation (Sheldon et al., 2004). This further supports the reasoning that life aspirations are entwined with controlled or respectively autonomous motivational regulation. However, research using the goal complex approach indicates that fusing extrinsic aspirations and extrinsic reasons can further accentuate to-be-expected effects (Sheldon et al., 2018). As such, it is plausible that the bond between autonomous/controlled motivation and intrinsic/extrinsic aspirations can be considered as strong (indicated by distinct effects) but imperfect (indicated by further impact of underlying reasons).

### **Compatibility and Incompatibility of Dynamic and Static Goal Regulation**

While the idea of static goal regulation has been derived from a different theoretical (and empirical) tradition than dynamic goal regulation, its premises still challenge the idea that aims are equidistant to underlying autonomous versus controlled motivational systems. This is why dynamic and static goal regulation at first may seem incompatible as they focus on different premises concerning the flexible or inflexible alignment of aims and reasons. Yet, there has been some advocacy for the idea that both perspectives on goal striving can co-exist. In this regard, advocates of a dynamic interplay between aims and reasons clearly acknowledge the possibility that certain aims are more strongly bound to certain reasons. The most seminal paper on the topic even directly addresses existing works on associations between life aspirations and achievement goals and postulates that these associations are not only compatible with the idea of dynamic bounds but rather complement this research approach (Vansteenkiste et al., 2014a). This acknowledges that both perspectives supposedly harmonized two predated ideas which are the reduction of goal content to the underlying

reasons that have been proposed by theorists within Self-Determination Theory (particularly prominently issued for mastery goals and autonomous reasons by Deci & Ryan, 2000) as well as the idea that dissecting aims from reasons may be beneficial to understand goal effects better (as issued in response by Elliot & Thrash, 2001).

While the idea of coexisting research strains may seem suitable to harmonize the debate on the interplay between aims and reasons as it connects two major goal frameworks, it somewhat ignores the potential problems that emerge if achievement goals are naturally infused with either autonomous or controlled motivation. If this was the case, some postulated goal complexes may in fact not reflect the psychological reality of human goal striving. It would also have some serious practical implications, with some motivators (i.e., reasons) being unsuitable to energize certain aims in the field. As such, particularly strict scenarios for static goal regulation can be seen as anti-thesis to a dynamic interplay of aims and reasons.

Further investigations into the strength of associations between aims and autonomous versus controlled reasons are, thus, necessary to advance our understanding about the ecological validity and practical relevance of goal complexes. In this regard, it is perfectly plausible that aims are not made equal when it comes to the strength of their bonds with certain reasons/overarching goals. Exploring differential patterns enriches the ideas of goals as dynamic and/or static systems and should benefit a true integration of both ideas, instead of merely acknowledging both ideas as coexisting research strains.

## Collecting Empirical Evidence on Bonds Between Aims and Reasons

As there has been a substantial number of studies investigating goal regulation, investigations into the alignment of aims and reasons can build on empirical data. Here, I aim to review data both from studies conducted by scholars interested in goal complexes as well as from studies conducted by scholars interested in the associations between achievement goals and life aspirations. Empirical findings from both research strains allow for a deeper understanding of the subject matter.

On the one hand, investigating the associations between aims and reasons within investigations on goal complexes is a very direct approach to communality between those motivational forces. Yet, for the sake of fusing the two constructs together into goal complexes, aims and reasons are often presented by means of sequential questioning, which may artificially create associations: Items on reasons behind goal striving often include a direct reference to the aim, which leads to the problem that weak aims also translate into weak reasons (Sommet & Elliot, 2017). The few studies that use a more general approach to assessing aims and reasons still apply items that at least suggest that achievement goal striving might be associated with the assessed reasons, which can also lead to demand characteristics. As such, research on goal complexes may somewhat overestimate bonds between aims and reasons.

On the other hand, research into associations between achievement goals and life aspirations does not provide the respective survey logic to individuals as both constructs are presented somewhat in isolation. This allows to assess communalities

that are not as strongly bound to specifics in the methodology. However, observed communalities between life aspirations and achievement goals only allow for inferences on the underlying systems of motivational regulation or in other words energizing reasons, because individuals are typically not answering questions whether they strive for achievement goals because of underlying life aspirations.

Taken together, both research strains provide different lenses, which will result in somewhat different findings and interpretations. Bringing both perspectives together may provide a larger picture than it would be possible if one only focused on the empirical findings that can be derived from either approach.

## Findings from Research on Goal Complexes

To allow for deeper reflections on the associations between reasons and aims with goal complex research, I conducted a scoping review of the literature. I aimed to identify articles that were (1) empirical studies (2) published in journals that used peer review for quality control, which (3) focused on performance and/or mastery aims as well as (4) autonomous and controlled reasons. Furthermore, the reported results within the paper (5) had to allow for the investigation of associations between reasons and aims. I used a four-step process to identify articles, which were then evaluated based on the five aforementioned criteria: I first backtracked focal literature cited in the field-defining review by Vansteenkiste and colleagues (2014a). Then I identified relevant works citing this review using Google Scholar as well as through the AI-assisted mapping tool “connected papers” (<https://www.connectedpapers.com/>). Additionally, I screened through all entries of a Google Scholar search using the search term [“achievement goal\*” AND “goal complex\*” AND autonomous AND controlled]. Finally, I cross-checked the results with a contemporary review of the literature on goal complexes by Sommet and colleagues (2021).

Interestingly, investigations into the association between aims and reasons are rather scarce in research on goal complexes. This is intriguing given that studies into the interplay of reasons and aims often use goal assessments that would allow for deeper investigations. As already pointed out, such studies mostly use sequential questioning to assess goal complexes by first asking participants about their aims in terms of Achievement Goal Theory and then about how strongly the respective aim is energized by autonomous versus controlled reasons (see Michou et al., 2014; Vansteenkiste et al., 2010a). On paper, this assessment technique would make it rather simple to investigate associations between aims and reasons further. Researchers would only have to compare the strength of different reasons for different aims.

In practice, such investigations are more difficult as the majority of empirical studies only investigate the impact of reasons within a single class of aims making direct comparisons between aims impossible (Benita et al., 2014; Gillet et al., 2014; Li et al., 2022; Michou et al., 2016; Sommet & Elliot, 2017; Vansteenkiste et al., 2010a, b). While these studies only allow for comparisons of different reasons within one aim, comparisons between studies contribute to a more nuanced perspective. In general, the existing studies are split into investigations of mastery and performance aims, which are typically operationalized as approach goals.

A closer look at the observed associations and mean values for reasons depicted in Tables 1 and 2 leads to three central observations: First, autonomous reasons emerge as more prominent than controlled reasons for goal striving regardless of whether the authors investigated mastery (approach) or performance (approach) aims. This observation speaks to the question of whether different reasons are equally likely to energize goal striving. In general, this empirical finding makes it seem plausible that autonomous reasons are more likely to energize achievement goals than controlled reasons.

Second, the empirical findings suggest very substantial associations between autonomous reasons and the investigated aim (for both mastery and performance aims). I used the metafor package in R to further quantify the range of associations between aims and reasons. All following meta-analyses applied random-effect models due to rather high heterogeneity between studies. The data files and analysis script for the meta-analyses are available under <https://osf.io/r5uew/>. Overall, the mean association between any kind of aims and autonomous reasons was  $r=0.54$  (95% CI [0.48, 0.59],  $Q(14)=86.89$ ,  $p<0.001$ ,  $I^2=84.85\%$ ) in the 15 studies with 3723 participants that investigated the strength of reasons following questions about the strength of the respective aim. Notably, the association even seemed to be higher for performance aims with  $r=0.59$  (95% CI [0.54, 0.64],  $k=10$ ,  $n=2213$ ,  $Q(9)=31.87$ ,  $p<0.001$ ,  $I^2=74.27\%$ ) compared to mastery aims with  $r=0.43$  (95% CI [0.36, 0.51],  $k=5$ ,  $n=1510$ ,  $Q(4)=14.92$ ,  $p=0.005$ ,  $I^2=70.00\%$ ).

It has to be said though that the applied method (anchoring measurement of reasons on the inquiries about the strength of the aims) in itself creates an interdependence between the measure of aims and reasons as individuals may consider the strength of the respective aim when thinking about reasons for goal striving. More specifically, participants may be less likely to report any reasons if they do not strive for a certain aim in the first place. Fortunately, this conundrum was addressed by Sommet and Elliot (2017), who asked for generalized reasons for personal goal striving rather than anchoring the respective items to the items that measured aims. The mean association between autonomous reasons and mastery aims found in their three studies with 1295 participants reached  $r=0.60$  (95% CI [0.54, 0.66],  $Q(2)=6.08$ ,  $p=0.048$ ,  $I^2=67.61\%$ ). As such, this association exceeded the mean correlation observed for mastery aims in other studies. If we consider the findings of Sommet and Elliot (2017) as a reliable estimator—both due to the strong methodology and the fact that their measures were characterized by rather high internal consistency (Cronbachs  $\alpha \geq 0.80$ )—this would lead to the conclusion that mastery aims and autonomous reasons share roughly 36 percent of common variance.

Third, a closer look at controlled reasons further indicates that mastery and performance aims are not equally entwined with extrinsic motivators. The mean association between mastery aims and controlled reasons reaches  $r=0.17$  (95% CI [0.08, 0.27],  $k=5$ ,  $n=1510$ ,  $Q(4)=14.03$ ,  $p=0.007$ ,  $I^2=72.02\%$ ) compared to  $r=0.35$  (95% CI [0.27, 0.43],  $k=10$ ,  $n=2213$ ,  $Q(9)=44.00$ ,  $p<0.001$ ,  $I^2=80.03\%$ ) for performance aims. This initial comparison is once again based on studies that entangle the measurement of reasons and aims. Fortunately, Sommet and Elliot (2017) also conducted a single study that allows to inspect associations between reasons and performance as well as mastery aims (study 4 of the respective paper, see Table 3).

**Table 1** Associations between reasons and aims derived from studies that only investigated mastery as a single aim

Study	Sample	<i>r</i> between aim and autonomous reasons	<i>r</i> between aim and controlled reasons	<i>M</i> for autonomous reasons	<i>SD</i> for autonomous reasons	<i>M</i> for controlled reasons	<i>SD</i> for controlled reasons	Association between reasons
<b>Reasons bound to specific goal</b>								
Benita et al. (2022) Study 1	<i>n</i> = 171 secondary school students	<i>r</i> = .42**	<i>r</i> = .03	<i>M</i> = 3.67 <sup>a</sup> <i>SD</i> = 0.70	<i>M</i> = 2.88 <sup>a</sup> <i>SD</i> = 0.85			<i>r</i> = .26**
Benita et al. (2022) Study 2	<i>n</i> = 452 secondary school students	<i>r</i> = .54**	<i>r</i> = .18**	<i>M</i> = 3.72 <sup>a</sup> <i>SD</i> = 0.71	<i>M</i> = 3.00 <sup>a</sup> <i>SD</i> = 0.83			<i>r</i> = .31**
Gillet et al. (2017)	<i>n</i> = 330 university students	<i>r</i> = .45***	<i>r</i> = .32***	<i>M</i> = 3.58 <sup>a</sup> <i>SD</i> = 0.79	<i>M</i> = 3.21 <sup>a</sup> <i>SD</i> = 0.93			<i>r</i> = .33**
Michou, et al. (2016) Study 1	<i>n</i> = 226 university students	<i>r</i> = .41**	<i>r</i> = .20**	<i>M</i> = 3.90 <sup>a</sup> <i>SD</i> = 0.74	<i>M</i> = 3.17 <sup>a</sup> <i>SD</i> = 1.08			<i>r</i> = .51**
Michou, et al. (2016) Study 2	<i>n</i> = 331 university students	<i>r</i> = .32**	<i>r</i> = .10	<i>M</i> = 3.58 <sup>a</sup> <i>SD</i> = 0.79	<i>M</i> = 3.21 <sup>a</sup> <i>SD</i> = 0.93			<i>r</i> = .51**
<b>Reasons related to general goal striving</b>								
Sommet and Elliot (2017) Study 1	<i>n</i> = 460 participants acquired with MTurk	<i>r</i> = .60***	<i>r</i> = .28***	<i>M</i> = 5.33 <sup>b</sup> <i>SD</i> = 1.38	<i>M</i> = 4.85 <sup>b</sup> <i>SD</i> = 1.14			<i>r</i> = .26***
Sommet and Elliot (2017) Study 2	<i>n</i> = 406 participants acquired with MTurk	<i>r</i> = .65***	<i>r</i> = .32***	<i>M</i> = 5.51 <sup>b</sup> <i>SD</i> = 1.21	<i>M</i> = 4.96 <sup>b</sup> <i>SD</i> = 1.19			<i>r</i> = .28***
Sommet and Elliot (2017) Study 3	<i>n</i> = 429 participants acquired with MTurk	<i>r</i> = .54**	<i>r</i> = .30***	<i>M</i> = 5.02 <sup>b</sup> <i>SD</i> = 1.56	<i>M</i> = 4.67 <sup>b</sup> <i>SD</i> = 1.24			<i>r</i> = .18***

Significance levels in the original publication: \* *p* < .05, \*\* *p* < .01, \*\*\* *p* < .001

<sup>a</sup> 5-pointed Likert scaling

<sup>b</sup> 7-pointed Likert scaling

**Table 2** Associations between reasons and aims derived from studies that only investigated performance as a single aim

Study	Sample	<i>r</i> between aim and autonomous reasons	<i>r</i> between aim and controlled reasons	<i>M</i> for autonomous reasons <i>SD</i>	<i>M</i> for controlled reasons <i>SD</i>	Association between reasons
Gillet, et al. (2014) Study 1	<i>n</i> = 424 university students	<i>r</i> = .64*	<i>r</i> = .31*	<i>M</i> = 4.14 <sup>b</sup> <i>SD</i> = 1.81	<i>M</i> = 2.67 <sup>b</sup> <i>SD</i> = 1.44	<i>r</i> = .39***
Gillet, et al. (2014) Study 2	<i>n</i> = 123 police officer trainees	<i>r</i> = .61*	<i>r</i> = .38*	<i>M</i> = 4.57 <sup>b</sup> <i>SD</i> = 1.73	<i>M</i> = 2.38 <sup>b</sup> <i>SD</i> = 1.37	<i>r</i> = .34***
Li et al. (2022)	<i>n</i> = 283 college students	<i>r</i> = .55***	<i>r</i> = .38***	<i>M</i> = 3.73 <sup>c</sup> <i>SD</i> = 1.31	<i>M</i> = 2.55 <sup>c</sup> <i>SD</i> = 1.10	<i>r</i> = .56***
Senko and Tropiano (2016) Study 1	<i>n</i> = 168 university students	<i>r</i> = .39**	<i>r</i> = .30**	<i>M</i> = 3.78 <sup>a</sup> <i>SD</i> = 0.71	<i>M</i> = 2.96 <sup>a</sup> <i>SD</i> = 1.16	<i>r</i> = .25**
Senko and Tropiano (2016) Study 2	<i>n</i> = 160 university students	<i>r</i> = .50**	<i>r</i> = .32**	<i>M</i> = 3.92 <sup>a</sup> <i>SD</i> = 0.71	<i>M</i> = 3.20 <sup>a</sup> <i>SD</i> = 1.20	<i>r</i> = .37**
Sommet, et al. (2019) Study 1	<i>n</i> = 166 university students	<i>r</i> = .59***	<i>r</i> = .39***	<i>M</i> = 4.72 <sup>b</sup> <i>SD</i> = 1.65	<i>M</i> = 3.37 <sup>b</sup> <i>SD</i> = 1.61	<i>r</i> = .14
Vansteenkiste et al., (2010a) Study 1	<i>n</i> = 304 soccer players	<i>r</i> = .56**	<i>r</i> = .30**	<i>M</i> = 4.12 <sup>a</sup> <i>SD</i> = 0.65	<i>M</i> = 2.96 <sup>a</sup> <i>SD</i> = 0.83	<i>r</i> = .40**
Vansteenkiste et al., (2010a) Study 2	<i>n</i> = 245 soccer players	<i>r</i> = .59**	<i>r</i> = .05	<i>M</i> = 4.06 <sup>a</sup> <i>SD</i> = 0.65	<i>M</i> = 2.94 <sup>a</sup> <i>SD</i> = 0.88	<i>r</i> = .19**
Vansteenkiste et al., (2010b) Study 1	<i>n</i> = 150 secondary school students	<i>r</i> = .73***	<i>r</i> = .49***	<i>M</i> = 2.42 <sup>a</sup> <i>SD</i> = 0.96	<i>M</i> = 2.04 <sup>a</sup> <i>SD</i> = 0.87	<i>r</i> = .41***
Vansteenkiste et al., (2010b) Study 2	<i>n</i> = 190 secondary school students	<i>r</i> = .67**	<i>r</i> = .54**	<i>M</i> = 2.68 <sup>a</sup> <i>SD</i> = 0.83	<i>M</i> = 2.37 <sup>a</sup> <i>SD</i> = 0.75	<i>r</i> = .58***

Significance levels in the original publication: \**p* < .05, \*\**p* < .01, \*\*\**p* < .001<sup>a</sup> 5-pointed Likert scaling<sup>b</sup> 7-pointed Likert scaling<sup>c</sup> 6-pointed Likert scaling

Same as for the other studies reported in the paper, the authors measured generalized reasons for goal striving rather than anchoring the inquiry about reasons in the measure of aims. The study illustrates tight associations between mastery aims and autonomous reasons ( $r=0.62$ ,  $p<0.001$ ) and a rather weak association with controlled reasons ( $r=0.19$ ,  $p<0.05$ ). In contrast, performance goals were almost equally strong tied to autonomous reasons ( $r=0.30$ ,  $p<0.001$ ) as to controlled reasons ( $r=0.39$ ,  $p<0.001$ ).

This observation is echoed in the empirical findings of the very few additional studies that addressed performance (approach) aims and mastery (approach) aims simultaneously (all respective studies are depicted in Table 3). A scoping meta-analytic inspection over the five studies with 1832 participants once again shows tighter associations between mastery aims and autonomous reasons ( $r=0.57$ , 95% CI [0.41, 0.73],  $Q(4)=67.98$ ,  $p<0.001$ ,  $I^2=96.59\%$ ) then with controlled reasons ( $r=0.18$ , 95% CI [0.03, 0.32],  $Q(4)=31.78$ ,  $p<0.001$ ,  $I^2=89.88\%$ ). For performance aims, these associations were more equidistant (autonomous reasons:  $r=0.43$ , 95% CI [0.16, 0.69],  $Q(4)=125.19$ ,  $p<0.001$ ,  $I^2=98.50\%$ ; controlled reasons:  $r=0.34$ , 95% CI [0.12, 0.56],  $Q(4)=51.79$ ,  $p<0.001$ ,  $I^2=96.70\%$ ).

Notably, the association between performance aims and autonomous reasons is descriptively lower than the observed association between mastery aims and autonomous reasons when both aims are investigated in the same data set. This stands in contrast to the associations observed in studies that investigate either aim in isolation, which poses the question whether the observed higher association for performance aims in these studies could be partly due to study specifics. Yet it is likely too early to draw any final conclusions on this matter. Here, I particularly want to state that meta-analytic inspections of the aforementioned five studies show high heterogeneity in the effect sizes, which likely mirrors that the aggregated studies differ very strongly in their methodology. As such, the results from these few studies should be interpreted cautiously against the backdrop of the previously depicted findings.

## Findings from Research on Achievement Goals and Life Aspirations

I followed a similar rationale to identify studies investigating connections between life aspirations and achievement goals as I did for identifying relevant research on goal complexes. This time I backtracked focal literature cited in the respective literature review within the article by Janke and Dickhäuser (2019b), followed by screening through all entries of a Google Scholar search using the search term [(“life aspiration\*” OR “life goal\*”) AND “achievement goal\*” AND (“mastery” or “performance”) AND (“extrinsic” or “intrinsic”)]. I only included articles reflecting empirical studies published in peer-reviewed journals that allowed for further inspection of associations between life aspirations with performance and mastery goals.

The findings of the identified studies solidify the notion that mastery goals (here mostly operationalized as learning goals) are tied to overarching autonomous qualities of goal regulation (see Table 4). A meta-analytic inspection of the studies that



**Table 3** Associations between reasons and aims derived from studies that investigated performance and mastery aims simultaneously

Study	Sample	Investigated aim	Association with autonomous reasons	Association with controlled reasons	Delta	Association between reasons
<b>Measure for reasons (partly) detached from aims</b>						
Michou, et al. (2014)	<i>n</i> = 606 middle and high school students	Mastery approach	<i>r</i> = .57**	<i>r</i> = .20**	$\Delta r = .37$	<i>r</i> = .37**
		Performance approach	<i>r</i> = .51**	<i>r</i> = .47**	$\Delta r = .04$	
Sommet and Elliot (2017) Study 4	<i>n</i> = 457 university students	Mastery approach	<i>r</i> = .62***	<i>r</i> = .19*	$\Delta r = .42$	<i>r</i> = .10*
		Performance approach	<i>r</i> = .30***	<i>r</i> = .39***	$\Delta r = -.09$	
Vansteenkiste et al., (2014b)	<i>n</i> = 67 competitive volleyball players	Mastery approach	<i>r</i> = .23**	<i>r</i> = -.01, <i>ns</i>	$\Delta r = .24$	<i>r</i> = .17**
		Performance approach	<i>r</i> = -.07	<i>r</i> = -.11*	$\Delta r = -.04$	
<b>Measure for reasons bound to aims</b>						
Gaudreau and Braaten (2016) <sup>a</sup>	<i>n</i> = 515 undergraduate students	Mastery approach	<i>r</i> = .53***	<i>r</i> = .03	$\Delta r = .50$	<i>r</i> = .23***
		Performance approach	<i>r</i> = .55***	<i>r</i> = .26***	$\Delta r = .29$	<i>r</i> = -.09
Sommet, et al. (2019) Study 2	<i>n</i> = 187 university students	Mastery approach	<i>r</i> = .80***	<i>r</i> = .43***	$\Delta r = .37$	<i>r</i> = .49***
		Performance approach	<i>r</i> = .78***	<i>r</i> = .60***	$\Delta r = .18$	<i>r</i> = .58***

Significance levels in the original publication: \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

<sup>a</sup> In contrast to all other cited studies on goal complexes, Gaudreau and Braaten (2016) did not use a derivative of the Achievement Goal Questionnaire (in sensu Elliot & McGregor, 2001) to measure aims but rather an adaption of the School Achievement Goal Scale (SAGS; Verner-Filion & Gaudreau, 2010)

indicated zero-order correlations—using only the first measurement point in the case of the study conducted by Mouratidis et al. (2013) to avoid assigning too much weight on dependent correlations—yielded a moderate association between intrinsic life aspirations and mastery approach goals ( $r=0.40$ , 95% CI [0.23, 0.56],  $k=7$ ,  $n=2756$ ,  $Q(6)=225.79$ ,  $p<0.001$ ,  $I^2=96.45\%$ ) and no statistically significant association between extrinsic life aspirations and mastery approach goals ( $r=-0.02$ , 95% CI [-0.15, 0.11],  $k=7$ ,  $n=2756$ ,  $Q(6)=63.84$ ,  $p<0.001$ ,  $I^2=91.65\%$ ). In contrast, extrinsic aspirations were consistently positively linked to performance approach goals ( $r=0.31$ , 95% CI [0.15, 0.47],  $k=6$ ,  $n=2437$ ,  $Q(5)=83.53$ ,  $p<0.001$ ,  $I^2=94.73\%$ ), whereas associations between intrinsic aspirations and performance approach goals were on average not of relevance ( $r=0.13$ , 95% CI [-0.02, 0.29],  $k=6$ ,  $n=2437$ ,  $Q(5)=51.31$ ,  $p<0.001$ ,  $I^2=93.74\%$ ). The general result pattern of the additional five studies (Janke & Dickhäuser, 2019a; Janke et al., 2019) that did not report zero-order correlations but beta-weights from multiple regression models mirror these findings.

Furthermore, a few scholars assessed associations with singular life aspirations (instead of on composites) resulting generally in intrinsic life aspirations being more likely to be associated with mastery goals and vice versa for extrinsic life aspirations and performance goals (Chantara et al., 2014; Lee et al., 2010). Rather than focusing on simple associations, some researchers focused instead on the impact of the dominance of a certain kind of life aspiration. In this vein, researchers found that a general dominance of materialistic aspirations over intrinsic aspirations diminished students' mastery goals (Janke & Dickhäuser, 2019b; Ku et al., 2012, 2014).

## Remarks on Communalities and Differences Between both Lines of Research

Taken together, the existing research support the assumption that mastery goals and intrinsic life aspirations share underlying bonds, whereas performance goals are tied to extrinsic life aspirations. If interpreted under the assumption that this communality reflects goal hierarchies bound to autonomous versus controlled regulation of goal striving, this pattern aligns well with the finding that mastery aims were more dominantly associated with autonomous reasons for goal striving in research on goal complexes. Yet, findings on performance goals somewhat diverge from empirical findings observed in studies aiming to investigate goal complexes, where performance goals were rather equally associated with autonomous and controlled reasons.

It is important to note that both research strains differ in a number of ways that could explain the diverging empirical findings: For instance, research into associations between life aspirations and achievement goals almost exclusively confronts participants with measures that assess multiple goals at once. As this is not as common in research on goal complexes, where different aims are often investigated in isolation, the cognitive construal of the assessed goals might differ between the two research strains. The findings of the few studies that did investigate multiple goals at once within goal

**Table 4** Associations between achievement goals and life aspirations

Study	Sample	Investigated aim	Association with intrinsic life aspirations	Association with extrinsic life aspirations	Delta	Association between life aspirations
Becker, et al. (2019) <sup>a</sup>	$n = 663$ secondary school students	Mastery approach	$r = .11^{**}$	$r = -.02$	$\Delta r = .13$	$r = -.13^{**}$
		Performance approach	$r = .02$	$r = .09^{**}$	$\Delta r = -.11$	
Janke and Dickhäuser (2018) <sup>a</sup>	$n = 113$ scientists	Performance avoidance	$r = .06$	$r = .09^{**}$	$\Delta r = .03$	
		Mastery approach	$r = .33^{**}$	$r = -.19^*$	$\Delta r = .52$	$r = -.12$
		Performance approach	$r = .01$	$r = .45^{**}$	$\Delta r = -.44$	
		Performance avoidance	$r = .05$	$r = .32^{**}$	$\Delta r = -.27$	
Janke and Dickhäuser (2019a) <sup>a</sup>	$n = 313$ university students	Mastery approach	$\beta = 0.35^{**}$	$\beta = -0.07$	$\Delta\beta = 0.42$	$r = .04$
		Performance approach	$\beta = 0.07$	$\beta = 0.50^{**}$	$\Delta\beta = -0.57$	
		Performance avoidance	$\beta = -0.06$	$\beta = 0.41^{**}$	$\Delta\beta = -0.46$	
		Mastery approach	$\beta = 0.42^{**}$	$\beta = 0.02$	$\Delta\beta = 0.40$	$r = .13^*$
Janke and Dickhäuser (2019a) <sup>b</sup>	$n = 294$ teachers	Performance approach	$\beta = -0.05$	$\beta = 0.48^{**}$	$\Delta\beta = -0.53$	
		Performance avoidance	$\beta = -0.06$	$\beta = 0.32^{**}$	$\Delta\beta = -0.38$	
Janke and Dickhäuser (2019a) <sup>a</sup>	$n = 209$ amateur soccer players	Mastery approach	$\beta = 0.48^{**}$	$\beta = 0.03$	$\Delta\beta = 0.51$	$r = .09$
		Performance approach	$\beta = 0.22^{**}$	$\beta = 0.46^{**}$	$\Delta\beta = -0.24$	
		Performance avoidance	$\beta = 0.06$	$\beta = 0.44^{**}$	$\Delta\beta = -0.38$	
Janke and Dickhäuser (2019a) <sup>a</sup>	$n = 197$ university students	Mastery approach	$\beta = 0.21^{**}$	-		$r$
		Performance approach	-	$\beta = 0.08$		
Study 4		Performance avoidance	-	$\beta = 0.11$		

Table 4 (continued)

Study	Sample	Investigated aim	Association with intrinsic life aspirations	Association with extrinsic life aspirations	Delta	Association between life aspirations
Janke and Dickhäuser (2019b) <sup>a</sup>	n = 327 university students	Mastery approach	$r = .42^{**}$	$r = -.21^{**}$	$\Delta r = .63$	$r = -.09$
		Performance approach	$r = -.02$	$r = .48^{**}$	$\Delta r = -.50$	
		Performance avoidance	$r = -.05$	$r = .35^{**}$	$\Delta r = -.40$	
Janke et al. (2019) <sup>b</sup>	n = 502 teachers	Mastery approach	$\beta = .50^{***}$	$\beta = -.20^{***}$	$\Delta\beta = 0.70$	
		Performance approach	$\beta = -.23^{***}$	$\beta = .59^{***}$	$\Delta\beta = -0.82$	
		Performance avoidance	$\beta = -.19^{***}$	$\beta = .40^{***}$	$\Delta\beta = -0.59$	
Koh and Wang (2015) <sup>c</sup>	n = 101 athletes	Mastery approach	$r = .81^{**}$	$r = -.10$	$\Delta r = .91$	$r = -.04$
		Mastery avoidance	$r = .35^{**}$	$r = -.34^{**}$	$\Delta r = .69$	
		Performance approach	$r = .53^{**}$	$r = .03$	$\Delta r = .50$	
Mouratidis et al. (2013) <sup>c,e</sup>	n = 923 middle and high school students	Performance avoidance	$r = -.10$	$r = .20^*$	$\Delta r = -.30$	
		Mastery approach	$r = [.25^{***}, .32^{**}]$	$r = [.05; .10^*]$	$\Delta r = [.20^{**}, .24^{**}]$	$r = [.13^{**}, .25^{**}]$
		Performance approach	$r = [-.10^*, .00]$	$r = [.25^{**}, .38^{**}]$	$\Delta r = [-.38^{**}, -.35^*]$	
Suizzo et al. (2023) <sup>d</sup>	n = 319 sixth-grade middle school students	Mastery approach	$r = .40^{**}$	$r = .21^{**}$	$\Delta r = .19$	$r = .67^{**}$
Wang et al. (2011) <sup>e</sup>	n = 374 athletes	Mastery approach	$r = .47^{**}$	$r = .23^{**}$	$\Delta r = .24$	$r = .38^{**}$
		Mastery avoidance	$r = .21^{**}$	$r = .19^{**}$	$\Delta r = .02$	
		Performance approach	$r = .20^{**}$	$r = .50^{**}$	$\Delta r = -.30$	
		Performance avoidance	$r = .18^{**}$	$r = .48^{**}$	$\Delta r = -.30$	

Measures for Achievement Goals: <sup>a</sup>SELLMO Scales (Spinath et al., 2022), <sup>b</sup>Teacher Goal Orientation Scales by Nitsche et al. (2011), <sup>c</sup>Derivation of the Achievement Goal Questionnaire (in sensu Elliot & McGregor, 2001), <sup>d</sup>Patterns of Adaptive Learning Scale (PALS; Midgley et al., 2000), <sup>e</sup>Mouratidis et al. (2013) measured life aspirations and achievement goals at several time points within the same sample. The table includes the lower and upper limit of the observed cross-sectional associations. <sup>†</sup>No information on this association is provided in the paper. Significance levels in the original publication: \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

complex research somewhat speak against this notion as the result pattern was quite similar. Yet, there is too little evidence at this point to fully reject this idea.

Research into goal complexes also almost exclusively relied on items derived from the Achievement Goal Questionnaire (either a revised version by Elliot & Murayama, 2008, or a 3×2 version by Elliot et al., 2011). This questionnaire is very meticulous in operationalizing achievement goals purely through the aspired aims. In contrast, research works on the association between life aspirations and achievement goals often applied questionnaires that assess achievement goals more strongly in terms of goal orientations (such as the scales by Spinath et al., 2002 and Nitsche et al., 2011), which may entail traces of autonomous or controlled regulation within the respective items. If research on associations between life aspirations and achievement goals only applied these scales, this would explain why such studies led to a more distinct association pattern than investigations into goal complexes. Fortunately, there are exceptions that bridge this methodological divide as at least one research team also applied the Achievement Goal Questionnaire when investigating their associations with life aspirations (Mouratidis et al., 2013). The respective findings strongly mirror those that were derived from research that used “goal orientation measures” with mastery goals being dominantly tied to intrinsic life aspirations and performance goals being dominantly tied to extrinsic life aspirations. As such, it seems unlikely that the more distinct pattern within research on associations between achievement goals and life aspirations is a mere function of the operationalization of achievement goals.

This finally begs the question whether there is any pattern speaking to the possibility that links between intrinsic life aspirations and performance goals could come to pass. A closer look at the different studies shows that this is indeed the case: Three empirical studies showed this assumed positive association (Janke & Dickhäuser, 2019a, study 3; Koh and Wang, 2015; Wang et al., 2011). The studies have in common that they were carried out within samples of athletes and are contrasted by nil associations within every sample that investigated more classical educational contexts. This suggests that under certain conditions (e.g., performance mainly contributing to feelings of competence rather than material gains), performance goals may also be instrumental for goal systems tied to autonomous functioning. As a sidenote, the associations between mastery goals and life aspirations did not diverge in athletic contexts but were rather comparable to the association pattern obtained in educational contexts.

## Synthesis: Searching for Common Ground

After taking a closer look at the result patterns derived from two different theoretical approaches that follow quite different avenues in investigating ties between achievement goals and potentially energizing motivational forces, it seems possible to come to a shared interpretation. When evaluating the ideas of dynamic versus static goal regulation against the backdrop of the empirical findings, it seems that neither of these ideas fully captures the whole picture of the entwinement between aims of achievement goals and underlying autonomous versus controlled systems of motivational regulation.

A first central notion is that particularly mastery goals are not equidistant to autonomous versus controlled regulation of motivation. In this regard, goal complex research

shows closer ties to autonomous reasons, and research into communalities with life aspirations also suggests significant associations with overarching motives anchored in autonomous motivation. This might mean that mastery goals share a natural bond with autonomous motivation. Notably, this observation does not stand in opposition to the core idea of dynamic goal regulation that goal complexes facilitate effects going beyond the isolated effects of aims and reasons. There is enough empirical evidence showing that goal complexes can explain variance on criteria beyond the impact of the singular components (see particularly Sommet & Elliot, 2017) to reject what Elliot and Sommet (2023) called a “billiard ball” approach to goal striving. Underlying this billiard metaphor is the idea that the impact of an aim on outcome variables (the billiard ball in this metaphor) is the same regardless of the force that energized it. While this may not be true, the metaphor somewhat neglects that not all forces are made equal in energizing the aforementioned “billiard ball.” For instance, a snooker cue is an ideal tool to fire the ball across the table, whereas a table tennis racket is less than ideal. As such, the ball is more likely to carry the energy of the cue than of the racket. To leave the metaphor, this means for mastery goals that they are possibly more likely to be energized through autonomous than through controlled motivation.

This natural bond between aims and energizing forces is less visible in performance goals. Research into goal complexes indicates that performance aims are equally strongly associated with autonomous as with controlled reasons, which speaks to the equidistance of performance aims to both kinds of reasons. At first glance, research into associations between life aspirations and achievement goals seems to provide stronger evidence for direct ties between performance goals and controlled goal regulation. However, when considering the scarce evidence outside of educational contexts, the pattern of findings becomes more complex and nuanced. As previously pointed out, studies in samples of (amateur) athletes showed that performance goals in certain domains can also be linked to intrinsic life aspirations (Janke & Dickhäuser, 2019a; Koh & Wang, 2015; Wang et al., 2011). This is possibly the case under conditions when (successfully) competing with others is a central aspect of personal growth in that domain. In other words, at least for performance goals, rigid goal hierarchies that postulate exclusive links of goals to energizing factors (i.e., reasons or higher-tier goals) might be an over-simplification of a somewhat dynamic relationship. As such, performance goals seem to be more akin to multifinality (as proposed by Kruglanski et al., 2015)—meaning that performance goals can act as agent for different underlying motivational forces given the right context.

The main takeaway from the discourse is that any rigid understanding of goal regulation is shortsighted when striving for a deep understanding of the forces that energize achievement goals. While some aims and reasons form strong bounds due to high instrumentality (autonomous reasons and mastery aims), others may be weaker intertwined and, thus, more dynamic in their interplay (reasons for performance aims). The strength of the natural bonds between energizing motivational forces and aims is both helpful to understand their unique and shared variance as well as the likelihood for a certain goal complex to emerge naturally in a given achievement situation.

## Implications

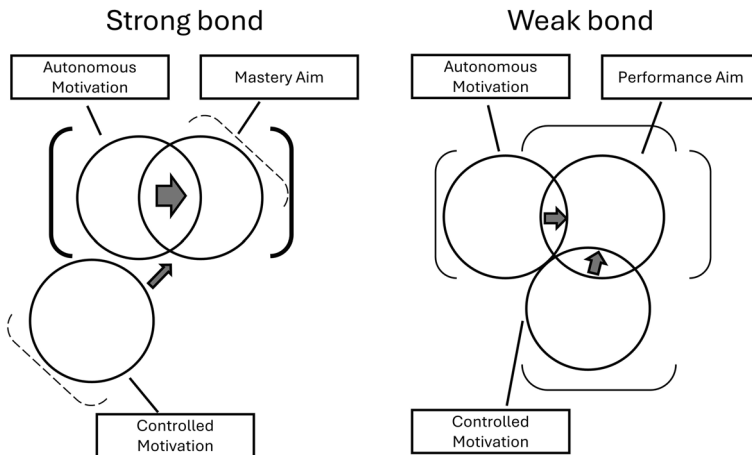
At first glance, it might seem that the provided examination of the literature on research into dynamic versus static goal regulation only reaffirms the idea that both ideas are not mutually exclusive but rather synergistic as already issued in the seminal paper by Vansteenkiste and colleagues (2014a). This, however, might be regarded as a surface level understanding of the provided reasoning. Rather than just assuming that dynamic and static relationships between aims and reasons can co-exist, the provided ideas and reviewed findings shed further light on potential boundaries that the strength and flexibility of bonds between reasons and aims have for hierarchical and dynamic goal models. This is both important to theoretical advancement in the area of educational psychology as well as to educational practitioners.

### Theoretical Implications: A Theory of Weak and Strong Bonds

Research into goal complexes often (at least implicitly) treats reasons as strongly distinct and independent from aims, which in turn would justify further differentiating achievement goal classes. Such a differentiation has been made very visible by Vansteenkiste and colleagues (2014a) who directly integrated autonomous and controlled reasons into the 3 aims  $\times$  2 valences model of achievement goals (in sensu Elliot et al., 2011). This resulted in a table that specifies  $3 \times 2 \times 2$  and as such in a total of twelve instead of the original six different achievement goals. This reasoning eventually leads to a vast expansion of theoretical constructs within Achievement Goal Research. However, the ambitious theoretical expansion falls somewhat short in describing the reality of achievement goals as some aims (particularly mastery aims) are naturally entwined with certain reasons, which stands in stark contrast to the other two dimensions, which can be considered orthogonal (Elliot & McGregor, 2001; Elliot et al., 2011; Janke et al., 2016; Murayama et al., 2011). While further investigations into the factorial structure of aims and reasons would certainly lead to a more definitive picture, the observed systematical bonds between aims and reasons should be treated as critical warning sign regarding their distinctiveness.

The presumed bonds between aims and reasons are likely not as strong for each pairing of reasons and aims as suggested by research into reasons behind performance approach goals. Nevertheless, a simplified  $3 \times 2 \times 2$  model of achievement goals does not carry information on which aims are strongly tied to a certain mode of motivational regulation and which aims are more equidistant to different goal-energizing reasons. Rather than aiming for symmetry, the objective of further theoretical integration of autonomous versus controlled reasons into the theoretical framework of achievement goal research should be to flesh out a model that encapsulates those weak and strong bonds. Such a theory is likely to be more suitable than the existing frameworks to (a) describe the complexity of interdependence and instrumentality between aims and reasons, (b) explain which goal complexes are more likely to emerge in educational contexts, and (c) provide further insights into which aims are truly dynamic in their interplay with energizing reasons. Figure 1 is an initial visualization of premises of such a theory for mastery and performance goals based





**Fig. 1** Conceptual visualization of weak and strong bonds between aims and energizing reasons for goal striving

within the research synthesized in this paper. The width of the arrows signifies the strength of the motivational force that is typically exerted on the respective aim by autonomous versus controlled reasons. The thickness of the brackets signifies the natural strength of the respective bond and as such the additional motivational force that is necessary to keep them stable (weaker given a stronger natural bond).

It is notably that the idea of differing bonds between aims and reasons is not entirely new and has particularly been entertained by researchers within the Self-Determination framework who indeed suggested stronger bonds for mastery goals (see again Deci & Ryan, 2000). Yet this reasoning has not been put meticulously to the test. The research of the past two decades now provides a strong foundation for a theory of weak and strong bonds between aims and reasons.

To further the understanding on weak and strong bonds between aims and reasons, we need additional investigations into associations between both aspects of goal striving. Particularly longitudinal and developmental research may be helpful to foster our knowledge on how and when static bonds between certain aims and reasons come to pass. This research avenue should not devalue further research into dynamic goal complexes. Rather, it is meant to underpin such research as findings on weak versus strong bonds provide the necessary foundation on when and where the interplay between aims and reasons has consequences for educational practice.

### **Practical Implications: Weak and Strong Bonds Translate into Educational Practice**

The presented research synthesis has clear implications for educational practice as it illustrates potential pathways and limitations for supporting different classes of achievement goals. Just as for theoretical implications, it is important to know when there are diverging pathways to certain aims and when a particular pathway (i.e., goal-energizing reason) is more likely to foster an aspired aim in learners.

As demonstrated, the latter seems to be the case for mastery goals with techniques that aim to foster the autonomous pursuit of goals likely being more impactful than techniques that apply controlling pressure to make learners adopt mastery goals. Acknowledging that mastery goals are strongly bound to autonomous reasons makes it clearer what mastery-goal-inducing techniques may entail.

Particularly, Self-Determination Theory posits that the development of autonomous motivation depends on whether individuals perceive their environment as supporting the basic psychological needs for autonomy, competence, and relatedness (Ryan & Deci, 2017). The centrality of those needs for enhancing mastery goals has also been captured by early frameworks describing mastery-goal supportive teaching such as the TARGET model (Ames, 1992; Lüftenegger et al., 2014). This model exemplifies six aspects of teaching that are meant to facilitate mastery goals: providing interesting *tasks*, giving learners *authority* over their learning process, *recognizing* students' progress, learning in supportive *groups*, providing students with meaningful *evaluations* of their skill level, and granting sufficient *time* to master the task at hand. Recently, these strategies have been further collapsed into the so-called CEAS dimensions, which are the provision of interesting *content*, competence-oriented *evaluation*, *autonomy*, and a supportive *social* environment (Benning et al., 2019; Janke et al., 2022).

A close look at both TARGET and CEAS shows that support for the needs of autonomy (authority/autonomy), competence (recognition/evaluation), and relatedness (grouping/social) makes up the core of mastery-goal-supportive teaching techniques. This makes it possible to generalize mastery-oriented interventions to a wide array of populations, which is backed by studies showing that need satisfaction is directly tied to mastery goals of students (Duchesne et al., 2017; Janke, 2022; Janke et al., 2022; Theis et al., 2020), teachers (Ciani et al., 2011; Janke et al., 2015), and higher education instructors. (Daumiller et al., 2022; Janke & Dickhäuser, 2018). Overall, the collected findings further support the idea that autonomous motivation lies at the very heart of mastery goal striving and that techniques supporting autonomous motivation provide suitable pathways to energize mastery goals.

While there is, thus, a danger that practitioners over-generalize the idea of dynamic goal regulation, there is also the risk that they over-generalize the idea of strong bonds between aims and reasons to performance goals. This would likely lead them to assume that the best way to foster performance goals lies in techniques that focus on controlled regulation of motivation, including applying pressure to learners. Yet, the presented evidence in this review suggests that performance goals are more dynamic in their bounds to different reasons for goal striving than mastery goals. Moreover, research into goal complexes indicates that autonomously motivated performance goals show more beneficial associations with outcomes such as depth of processing (Sommet & Elliot, 2017) and self-efficacy (Senko & Tropiano, 2016) than performance goals motivated by controlled reasons. This means that if practitioners are interested in fostering performance goals, they might consider doing so by addressing autonomous rather than controlled reasons for these goals given that both pathways are suitable ways to energize performance aims but autonomous reasons can be deemed to lead to more beneficial goal complexes.

## Future Directions in Research on Reasons and Aims

The presented research synthesis is hardly the endpoint of the discussion about an overarching motivational perspective on achievement goals. Rather, research into goal complexes must be embedded in a broader theoretical framework aiming to explain how different motivational constructs intersect within (achievement) goal striving (see also Elliot & Sommet, 2023). For instance, expectancy-value theory of achievement motivation (Wigfield & Eccles, 2000) would suggest that the goal complexes described in this article merely reflect the interplay of different values, while not taking into account the perceived likelihood for goal attainment (i.e., expectancies). As such, researchers may want to take a closer look at how expectancies regarding goal attainment affect the formation of goal complexes as well as their impact on outcomes (see particularly Conley, 2012; Senko & Hulleman, 2013). Adding to that, social value theory may conclude that an undifferentiated aggregation of controlled reasons is too simplistic and that a more differentiated view should dissect this reason further in terms of striving for desirability versus utility (Darnon et al., 2009).

Taken together, this means that the theoretical lens imposed on goal complexes strongly shapes their meaning as well as potentially their mechanics. While it is beyond the scope of this article to address all these potential avenues, I want to elaborate a bit further on how even the literature within one seemingly consistent goal complex framework is characterized by several open questions. The presented research has by now mostly tackled the question of how autonomous versus controlled reasons interact with a very limited number of aims (mostly performance approach and mastery approach) under specific conditions and at specific points in time. Consequently, the picture painted by this research is quite narrow in its scope. Widening the perspective by exploring further aims of achievement goals, elaborating on the role of context as well as providing a stronger developmental outlook should guide further research on the subject matter.

### Largely Neglected: Approach and Avoidance Motivation

The biggest elephant in the room when it comes to past research on reasons and aims is the interplay of reasons with approach versus avoidance motivation. Interestingly, research into goal complexes incorporated avoidance aspects of reasons when operationalizing controlled reasons (feeling ashamed if one did not pursue a certain goal, c.f., Vansteenkiste et al., 2010a). However, this is not paralleled in the operationalization of autonomous reasons (e.g., pursuing achievement goals to not miss out on personal enjoyment). Additionally, the effects of reasons bound to avoidance motivation have largely not been analyzed apart from the impact of approach reasons. In contrast, controlled reasons for goal striving are mostly understood and conceptualized as an amalgam of approach and avoidance motivation. Recently, a pioneer study by Senko and colleagues (2023) addressed this research gap by providing evidence suggesting that controlled reasons behind performance approach goals are only associated with negative affective and motivational states if they are construed in terms of avoidance (i.e., avoiding shame or punishment) but not if they were construed in terms of approach

motivation (i.e., attaining rewards). This finding highlights the need for further research into this direction. In the same vein, research on static goal regulation also mostly disregards the importance of avoidance motivation as the respective studies strongly draw from prior research on life aspirations, which have mostly been operationalized in terms of approach motivation (see Janke & Dickhäuser, 2019a).

This theoretical neglect of avoidance motivation in reasons for goal striving is partly paralleled in the choice of investigated aims of goal striving. Only very few research works on goal complexes investigated performance avoidance (Vansteenkiste et al., 2014b) or mastery avoidance aims (Gillet et al., 2017; Michou et al., 2014; Vansteenkiste et al., 2014b). The vast plethora of research was conducted for achievement goals with an approach goal valence. In contrast, research on static goal regulations mostly includes associations of life aspirations with performance avoidance goals (see Table 4). At first glance, correlation coefficients for performance approach and performance avoidance goals seem comparable. A systematic investigation into associations with life aspirations characterized by avoidance motivation (e.g., avoid becoming poor, avoid becoming lonely) might, however, still yield further insights into the importance of goal valence. Taken together, further investigations may want to answer the question of whether (a) goal valence moderates associations between aims and energizing reasons and (b) what effects goal valence has on the impact of goal complexes.

### **Differentiating Aims Further: Personal Standpoints and Evaluation Standards**

Past research has often used “mastery goals” and “performance goals” as umbrella terms for a broad family of goals characterized by several aims. This has led to diverging patterns of empirical findings regarding both antecedents and consequences of achievement goal striving, which are strongly bound to the way in which goals were operationalized (Hulleman et al., 2010). To mitigate this problem, researchers now aim to clarify more strongly what they mean when assessing mastery or performance goals. A contemporary avenue is to differentiate goals that reflect personal standpoints (i.e., lay theories) on how individuals construe competence from goals that focus on the standard (i.e., information used for comparison) that is used to evaluate own competencies (Korn et al., 2019). Typical personal standpoints are a focus on the development (learning goals) versus demonstration of competence (appearance goals), whereas standards would be the comparison of one’s performance with an objective criterion bound to the task (task goals) or the performance of a reference group (normative goals; see also Daumiller et al., 2019).

Researchers have argued that goals reflecting standpoints are generally stronger and more clearly tied to autonomous versus controlled reasons (Senko & Tropicano, 2016). This is quite plausible, given that the development of competence strongly entails the notion of personal growth, whereas the demonstration of competence anchors individual goal striving towards the praise of others, which is an external reward system. Thus, it is unsurprising that arguments provided for static goal regulation often tend to rely on defining achievement goals in terms of personal standpoints towards competency rather than in terms of evaluation standards as the latter

are supposedly more ambiguous in their respective ties to reasons (cf. Senko & Troiano, 2016). This also means that it would be highly plausible that aims and reasons of goals are less intertwined if aims are defined in terms of evaluation standpoints rather than in terms of personal standpoints.

While research into achievement goal complexes as well as associations with life aspirations somewhat draws from reflections on the definition of achievement goal aims, the operationalization of achievement goals in empirical studies on the subject matter is often not justified against this theoretical background. Comparing associations between differently construed mastery or performance aims in the same data set might further our understanding of how strongly and particularly under which conditions associations between aims and reasons/overarching goal systems come to pass.

### **The Role of Context and Time for the Emergence of Goal Complexes**

Most of the research discussed in this article was conducted in classical educational contexts and even more specifically in higher education contexts. A small number of quite interesting studies have also been conducted within the context of physical activities but mostly with professional athletes whose achievement motivation is directly tied to their occupation (Vansteenkiste et al., 2010a, 2014b). If it were true that performance goal striving was particularly dynamically associated with reasons within leisure-time physical activities (cf. Janke & Dickhäuser, 2019a), it would be relevant to acquire more data from amateur athletes. Further studies within such contexts may advance our understanding regarding which bonds between aims and reasons are specific to education and which are more general. This need for additional research on potential contextual moderators is underscored by the high level of effect size heterogeneity between studies that revealed itself in the meta-analytic investigations conducted in this article.

Future research may also want to expand the scope of investigated areas more strongly into primary and vocational education. This could also tackle the issue that most studies have merely covered the developmental phases of adolescence and emerging adulthood. It is yet unclear how weak and strong bonds between aims and reasons come to pass from a more developmental perspective. Here, existing research has shown that the goal systems of younger children are potentially less complex than goal representations within adults (Bong et al., 2013). This directly corresponds to the question of when and how individuals develop an idea of reasons behind their goal striving and consequently when goal complexes emerge. To address this research gap, existing research not only needs to be supplemented with additional studies into different life phases but likely also with more complex research designs such as longitudinal studies.

Another aspect of context that has come under scrutiny concerning the interpretation of empirical studies on the impact of achievement motivation is the degree to which racial and cultural bias shape our ideas about the generalizability of research and subsequent theoretical musings (see particularly Usher, 2018). Such criticism cannot be ruled out for the research presented here: This research has often drawn from US or western-European contexts (large proportions of the cited works are drawn from Belgium, Germany, and the USA) and has not put much emphasis on the impact of culture, ethnicity,

or race (for instance as a potential moderator). In this regard, contemporary research, for instance, shows that controlled reasons are more detrimental for outcome variables in independent than in interdependent cultures (Senko et al., 2023; in this case, USA compared to Thailand). When it comes to associations between reasons and aims, the study by Benita and colleagues (2022) can be used to draw first inferences as it investigated goal complexes in low-SES Peruvian high-school students. At a first glance, it is interesting to see that this research also provided evidence for strong bonds between mastery aims and autonomous reasons. Yet this is but one study, and more research into the question of how culture, ethnicity, and race impact bonds between aims and reasons of achievement goal striving is certainly needed.

### **How “Real” Are Goal Complexes: The Need for Ecological Validity**

On a more fundamental level, one may note that reflections on goal complexes are shaped in terms of quantitative-deductive reasoning. This means that a strict set of theories (here: Self-Determination Theory) informs the development of quantitative measures, which are then used to provide empirical data on the tested theories. At first glance, this procedure seems highly beneficial as it ensures a clear bridge between the theoretical idea and the research design/measurement. There is, however, at least some danger that such a procedure provides data that merely reflect individuals’ reaction to the chosen measure than the actual reality (of goal striving). Researchers have, in the past, indeed found that achievement goals measured in survey research are often not articulated when individuals are asked to describe their goal striving in their own words (Bong et al., 2013; Lee & Bong, 2016; Urdan & Mestas, 2006). Such findings should at least be treated as a cautionary hint at the potential limitations of the ecological validity of existing goal measures.

Supplementing the existing research with research that uses open-ended questions on the interplay between reasons and aims for goal striving could be helpful to come to a deeper understanding regarding the ecological validity of the existing quantitative research. Fortunately, initial research in this direction is already emerging: In a pioneer study, Michou and colleagues (2023) showed that secondary school students report specific combinations of aims and reasons when openly reflecting on “why they aim to do well in math.” Around 55 percent of students reporting mastery aims also reported autonomous reasons compared to 4 percent indicating controlled reasons (another 6 percent indicated controlled and autonomous reasons). This underlines the idea that a mastery-autonomous goal complex is more likely to emerge than a mastery-controlled goal complex in educational reality.

### **Conclusion**

The ideas that autonomous and controlled reasons energize aims in achievement goal striving as well as that these reasons interact with aims in terms of goal complexes bridge the divide between goal conceptualizations in terms of Achievement Goal

Theory and Self-Determination Theory. The main takeaway of this review is that neither full distinctiveness nor perfect overlap characterizes the intricate interplay of these aims and reasons. The relationship between aims and reasons seems to be characterized by patterns of communality as well as fluctuation. Thus, it is particularly important to investigate where, when, and under which conditions aims and reasons form strong or weak bonds. Gaining a deeper understanding on the matter is necessary to develop a thorough theory that is suitable to explain the intricate interplay of both factors, which can be of use to educational practitioners aiming to foster certain beneficial goals or goal complexes. The presented synthesis is another steppingstone towards such a theory and will hopefully inspire further works that close noteworthy research gaps regarding the role of further aims and reasons, context, and developmental phases.

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## Declarations

**Conflict of Interest** The author declares no competing interests.

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