Why Do Students Use Strategies That Hurt Their Chances of Academic Success? A Meta-Analysis of Antecedents of Academic Self-Handicapping

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Self-handicapping is a maladaptive strategy that students employ to protect their self-image when they fear or anticipate academic failure. Instead of increasing their effort, students may harm their chances of success by procrastinating, strategically withdrawing effort, or engaging in destructive behaviors like drug abuse, so that potential failure can be attributed to these handicaps rather than to stable personal characteristics (e.g., low intelligence). A large body of research has focused on potential antecedents of students' self-handicapping, but the literature is fragmented and the evidence is often mixed. Thus, we know little about which factors have the highest potential to trigger habitual self-handicapping and to explain interindividual differences in such behaviors. This meta-analysis is the first to synthesize available evidence across a broad range of potential antecedents of academic self-handicapping reported in 159 studies and 194 independent samples ($N = 81{,}630$). The strongest associations with habitual self-handicapping were found for the personality traits conscientiousness ($r = -.40$) and neuroticism ($r = .38$) as well as stable trait-like factors such as general self-esteem ($r = -.34$) and fear of failure ($r = .39$). Rather malleable factors, such as personal achievement goals (rs = $-.19$ to $.27$), showed comparatively smaller effects. Self-handicapping assessment (scale and reliability) significantly moderated most of the investigated associations, thereby implying higher internal validities for some measures compared with others. The reported findings provide important insights into mechanisms of and possible starting points for interventions against self-handicapping in the academic domain.

Educational Impact and Implications Statement
What factors might lead students to strategically and purposefully harm their chances of academic success—that is, to engage in academic self-handicapping? We present the first empirical synthesis of available evidence on such factors. Stable personality characteristics such as low levels of conscientiousness, lack of emotional stability, and the habitual fear of failure emerged as the most powerful predictors of self-handicapping. Students' academic motivation—the desire to learn and improve academically—functions as a protective factor. Learning environments that foster students' academic motivation and alleviate concerns about academic failure are thus needed to reduce students' self-handicapping tendencies.

Keywords: achievement goals, meta-analysis, self-esteem, self-handicapping

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Academic self-handicapping describes a maladaptive strategy that students use as a means of protecting their self-esteem in the face of anticipated academic failure (Berglas & Jones, 1978). Examples of academic self-handicapping include procrastination, effort withdrawal, substance abuse, and the setting of unattainable goals (Urdan & Midgley, 2001). When students engage in such strategies, they construct a handicap—for example, lack of study time, lack of effort, or low level of engagement—that can serve as an excuse in the event of academic failure. Although such handicaps are harmful to students' chances of success in achievement situations, they reduce the probability that potential academic failure would be attributed to internal and mostly stable causes, such as students' lack of intelligence or aptitude, and thus unfold their self-protective effect. A large body of research over the past

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decade has documented far-reaching adverse effects of habitual[1] self-handicapping on students' educational success and psychological well-being (e.g., Martin et al., 2001; Urdan et al., 1998; Zuckerman et al., 1998). In a recent meta-analysis, a moderate negative association between self-handicapping and students' academic achievement was reported ($r = -.23$; Schwinger et al., 2014).

Despite such prolific evidence on its harmful effects, available research on the antecedents of students' self-handicapping is fragmented and often inconsistent. Numerous factors have been identified as possible antecedents of habitual academic self-handicapping, including *self-related beliefs* (e.g., self-esteem; Schwinger & Stiensmeier-Pelster, 2012), *emotional-motivational variables* (e.g., achievement goals; Midgley & Urdan, 1995), and *personality traits* (e.g., neuroticism and conscientiousness; Bobo et al., 2013; Ross et al., 2002). Several reviews on self-handicapping have also been published, focusing on selected aspects of students' academic self-handicapping such as gender differences (Hirt & McCrea, 2009). What is missing to date, however, is a comprehensive review of a broad taxonomy of possible antecedents and moderators of self-handicapping in educational contexts. A systematic review of potential antecedents is needed to identify which factors are most likely to put students at risk of academic self-handicapping. Furthermore, ranking the potential risk factors for self-handicapping can inform the development and design of effective interventions. Accordingly, we conducted a meta-analysis to examine the strength of the associations between a broad range of hypothesized and commonly studied antecedents[2] of students' academic self-handicapping and were mindful of differences between antecedents that are presumed to be relatively stable (e.g., personality characteristics) versus malleable (e.g., academic motivations). Drawing on previous findings (Schwinger et al., 2014), we were also interested in the potential impact of different self-report measures of self-handicapping as a potential moderating factor of the associations between self-handicapping and its hypothesized antecedents.

The Conceptualization of Academic Self-Handicapping

Self-handicapping refers to behaviors and choices in performance contexts that allow students to attribute academic success internally to their capabilities and failure externally to circumstances outside of their control (Berglas & Jones, 1978) or to factors that are internal but potentially malleable such as lack of effort (Urdan & Midgley, 2001). The presumed culprit for such behaviors lies in students' uncertainty about their capability to be successful in a given situation and resulting feelings of threat to their self-esteem (Berglas & Jones, 1978; Snyder & Smith, 1982). For example, a student who is unsure of their capability to pass and/or do well on an important exam may seek opportunities to protect their (self-)image of a competent person in the event of failure. To avoid negative affect that would result from an *internal* attribution of (anticipated) failure (to lack of ability), the student may decide to help a friend move houses the day before the exam. Potential failure can thus be attributed to *external* factors (i.e., lack of study time because of competing obligations), which would preserve the student's self-image of a competent person and reduce perceived self-threat. Potential success would boost the student's (self-) image in this case because the student was able to succeed despite having to overcome a handicap (Tice, 1991).[3] Importantly, self-handicapping cannot be inferred from specific actions or choices

such as procrastination or lack of effort; an underlying motivation to use these actions as an excuse for (anticipated) failure is a necessary characteristic of self-handicapping.

Previous research has distinguished between two forms of self-handicapping: behavioral versus claimed (Arkin & Baumgardner, 1985; Leary & Shepperd, 1986). Behavioral forms of self-handicapping refer to actual behaviors students choose to engage in to obtain an impediment that can serve as an excuse for potential academic failure. Such impediments may include effort withdrawal and reduced study time (Baumeister et al., 1985), studying in a context that is not conducive to learning (Rhodewalt & Davison, 1986), or even drug abuse (Berglas & Jones, 1978). In contrast, claimed forms of self-handicapping refer to milder handicaps such as *claiming* to be suffering from headaches or other physical symptoms (Smith et al., 1983), a bad mood (Baumgardner et al., 1985), or anxiety (Smith et al., 1982). Leary and Shepperd (1986) point out that claimed handicaps are not necessarily untrue; they can be based on authentic experiences that are exaggerated or overstated so that potential failure can be attributed to physical or psychological handicaps rather than incompetence. Claimed forms of self-handicapping have less severe consequences for students' educational outcomes than behavioral forms because they do not necessarily reduce students' effort investment and thus chances of success (Hirt et al., 1991; Leary & Shepperd, 1986; Zuckerman & Tsai, 2005). However, behavioral handicaps may provide a more convincing excuse for potential failure than claimed ones (e.g., claiming to experience headaches vs. observably experiencing headaches because of excessive drinking the night before). Unfortunately, this critical conceptual distinction between claimed versus behavioral forms of self-handicapping is often neglected in self-report measures, and such measures typically focus on behavioral handicaps.

An Integrative Theoretical Framework of Academic Self-Handicapping

A conceptual framework that integrates different theoretical perspectives on the likely antecedents of academic self-handicapping is missing. Accordingly, based on a comprehensive review of

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[1] The term habitual self-handicapping describes the average amount of an individual's self-handicapping actions over time and thus refers to persons who in self-esteem threatening situations frequently react with self-handicapping as regulatory behavior. Habitual self-handicapping is typically assessed via self-report questionnaires and has to be distinguished from single, situational self-handicapping actions which are, for instance, examined in experimental studies. That is, in this meta-analysis we are interested in antecedents of repeated self-handicapping in students' everyday academic lives but not in predictors of one-time self-handicapping as considered in experimental work.

[2] The factors examined here are theoretically expected to be predictive for the use of self-handicapping, so we use the term "antecedents" throughout the article. However, we explicitly state that available data are largely cross-sectional and thus do not allow to draw any conclusions about causal or time-lagged relationships.

[3] In certain situations, self-handicapping can yield short-term upsides despite individual costs. Some studies have revealed positive short-term effects on, for instance, self-esteem (McCrea & Hirt, 2001), performance (Rhodewalt & Davison, 1986), and intrinsic motivation (Deppe & Harackiewicz, 1996). In the long run, however, a "vicious circle" is created (Zuckerman et al., 1998) in which handicaps worsen performance, then fear of failure increases leading to repeated self-handicapping, and so on.

available evidence and drawing on pertinent theories (Boekaerts, 2011; Covington, 2004; Dweck, 2017; Midgley et al., 1996; Rhodewalt & Tragakis, 2002), we first present an integrative theoretical framework and then use this framework to identify relevant inclusion and exclusion criteria for antecedents of self-handicapping in our meta-analysis. Because the vast majority of the available evidence is based on correlational research, we rely on correlational evidence to identify potential risk and resilience factors of self-handicapping in the academic domain. Our meta-analysis was designed to estimate and compare the main effects of risk and resilience factors of self-handicapping in the academic domain but is not intended to explore the complexity of relations between all variables involved (e.g., via a meta-analytic SEM). Nevertheless, our theoretical framework outlines possible interrelations between different antecedents that have been proposed in the literature. To date, only one meta-analysis has focused on academic self-handicapping and its links with academic achievement (Schwinger et al., 2014), and no meta-analysis has examined its theorized antecedents. Figure 1 shows our proposed theoretical framework and how it expands upon this previous meta-analysis. According to the original work by Berglas and Jones (1978) and conceptual contributions by other experts in the field (e.g., Covington, 2004; Martin et al., 2001; Midgley et al., 1996; Rhodewalt & Tragakis, 2002), we consider the experience of self-esteem threat as the most proximal predictor of self-handicapping in academic contexts. As proposed in several theoretical models (e.g., Covington, 2004; Rhodewalt & Tragakis, 2002), the two central

psychological triggers for self-esteem threat and subsequent self-handicapping are students' low expectancies of success and concerns about how one might be perceived by others (i.e., self-representation and social acceptance). A number of self-related beliefs, emotional-motivational variables, and personality traits have been used to operationalize these two psychological triggers.

Regarding the first trigger (i.e., low expectancy of success), the *self-handicapping and self-regulation cycle* (Rhodewalt & Tragakis, 2002; Rhodewalt & Vohs, 2005) suggests that students' maladaptive self-related beliefs, such as low self-esteem, can lead to low expectancy of success in achievement situations, which in turn increases students' perceived self-esteem threat and thus subsequent self-handicapping in the face of potential failure. Such self-related beliefs can be domain-specific (ability self-concept, self-efficacy) or general (self-esteem; Covington, 2004; Martin et al., 2001; Midgley et al., 1996; Schwinger & Stiensmeier-Pelster, 2011). Greater domain-specificity is likely to lead to stronger associations with academic self-handicapping (e.g., Baranik et al., 2010; Wirthwein et al., 2013). As shown in Figure 1, variables referring to the academic context (e.g., ability self-concept) are likely to be more proximal and thus stronger predictors of academic self-handicapping than global constructs that do not specifically refer to the academic domain (e.g., self-esteem). Beyond the approach of Rhodewalt and Tragakis (2002) and in line with the established expectancy-value theory (Eccles & Wigfield, 2020), we assume in our framework model that prior levels of achievement have a large influence on students' expectation of success for

Figure 1

Integrative Theoretical Framework of Academic Self-Handicapping
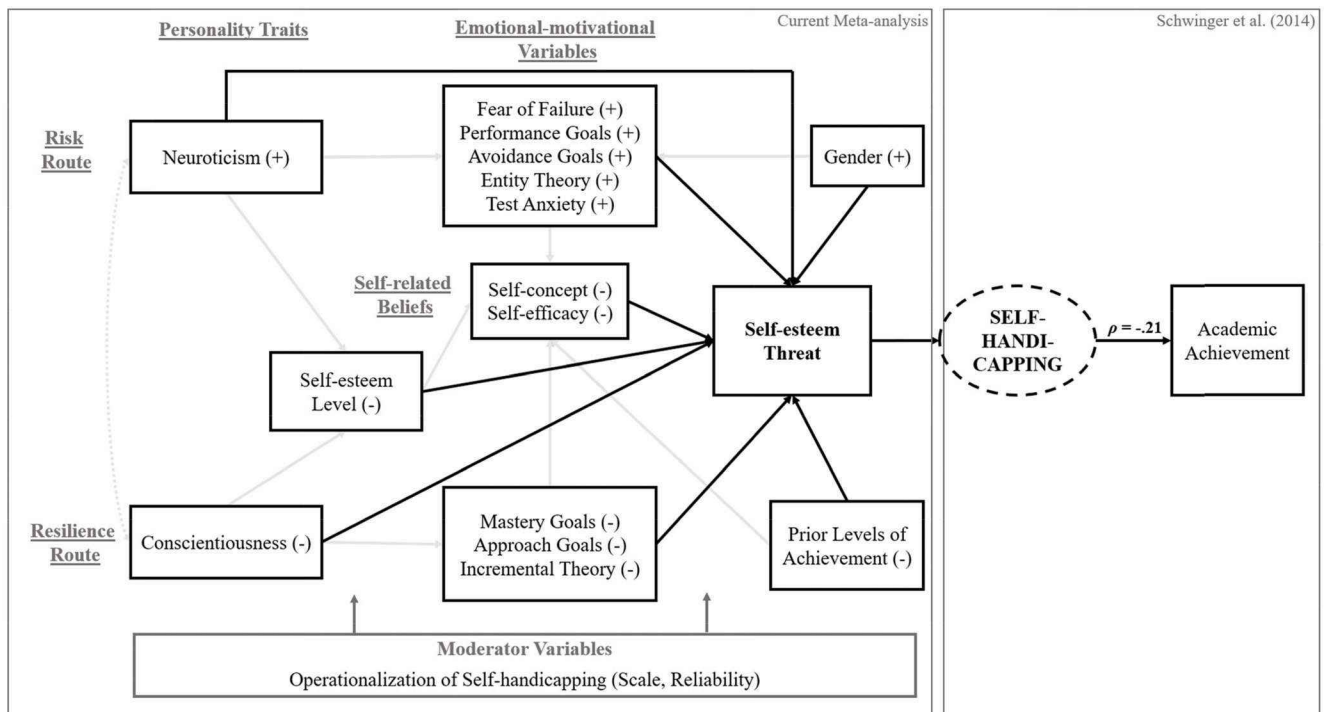
Note. Gray arrows indicate potential connections between different antecedents. (+) and (−) reflect presumably positive or negative relations to self-esteem threat (e.g., neuroticism is supposed to be positively related to self-esteem threat). ρ = average correlation between self-handicapping and subsequent academic achievement from Schwinger et al. (2014).

future performance situations, so that prior achievement also represents a significant antecedent of self-handicapping. In a similar vein, the widely used *self-worth motivation theory* by Covington (2004) suggests that students' school grades (G) are often interpreted by students as an indicator of ability in a given field (G = A), which, in turn, is interpreted as an indicator of students' personal worth and value to others (G = A = W). As Covington (2004) argues, however, students may be unable to achieve their performance goals (i.e., grades) in some subjects. This may lead them to seek to avoid the negative implications of a failure by engaging in self-protective strategies such as self-handicapping. In Covington's terminology, self-handicapping serves to mitigate the assumption that grades are indicative of one's abilities (G ≠ A). Accordingly, Covington's theory stresses the importance of prior achievement, low self-esteem, low ability self-concept, and low self-efficacy, in provoking self-handicapping as a reaction to self-esteem threat.

Regarding the second trigger (i.e., concerns with self-representation and social acceptance), Rhodewalt and Tragakis (2002) propose that in particular students' achievement goals can affect their experience of self-esteem threat in achievement situations. This theoretical link is derived from *achievement goal theory* (Martin et al., 2001; Midgley et al., 1996): Performance-oriented goals—that is, the goal to demonstrate superior ability or to avoid appearing incompetent—can contribute to the experience of self-esteem threat due to students' concern about how their ability is perceived by others. In contrast, mastery-oriented goals—that is, the desire to develop competence and master given tasks—tend to shift students' attention from the self to the task and should therefore serve as a buffer against self-esteem threat (Midgley & Urdan, 1995; Schwinger & Stiensmeier-Pelster, 2011). Whether a person is more mastery-oriented or more performance-oriented is in turn significantly influenced by their implicit theories of intelligence. People who believe that their intelligence and aptitude are malleable (as opposed to fixed) are more likely to pursue mastery (over performance) goals because mastery goals focus on the development (rather than demonstration) of competence[4] (Dweck & Leggett, 1988; Rhodewalt & Tragakis, 2002). Furthermore, achievement goal theory suggests that students' fear of failure and test anxiety might elicit students' self-handicapping by increasing the probability of students' pursuit of performance-oriented over mastery-oriented goals (e.g., Elliot & Church, 2003). The question of social acceptance is also central to the question of gender differences in self-handicapping. Studies indicate that women report using behavioral self-handicapping less often than men, presumably because they value effort more than do men and are thus more likely to view effort withdrawal as socially unacceptable (Hirt & McCrea, 2009).

The two broad categories of self-related beliefs and emotional-motivational variables can be subsumed under the umbrella term "BEATs" (*B*eliefs, *E*motions, *A*ctions, and *T*endencies), which was first introduced in Dweck's (2017) inspiring theoretical work on the interactive associations between personality, motivation, and human development. According to this framework, such personality traits as neuroticism and conscientiousness can be conceptualized as manifestations of underlying basic psychological needs and energize individuals' BEATs. These two personality traits are of particular interest for our theoretical framework because neuroticism, as argued by Dweck (2017), can be seen as a manifestation of individuals' underlying need for social acceptance and related

concerns about social status and self-worth, whereas conscientiousness can be seen as a manifestation of the underlying needs for competence and (self-)control. Consistent with these theoretical assumptions, neuroticism has been (negatively) linked to socially-oriented emotional-motivational variables such as performance-avoidance goals (e.g., Elliot & Thrash, 2002). Conscientiousness has been (positively) linked to individuals' expectancy of success in achievement situations (e.g., Ross et al., 2002). Accordingly, personality traits such as neuroticism and conscientiousness might affect students' self-handicapping tendencies by activating two proximal triggers: students' concerns about self-representation and social acceptance and their expectancy of success in achievement situations.

Our review of theorized antecedents of academic self-handicapping suggests that some of the identified predictors are expected to increase, whereas others reduce the risk of experiencing self-esteem threat and thus of engaging in academic self-handicapping. Accordingly, our integrative conceptual framework differentiates between a "risk route" and a "resilience route" through which different antecedents might affect students' self-handicapping tendencies (see Figure 1). This distinction was derived from Boekaerts' influential *dual processing self-regulation model* (Boekaerts, 2011). According to this model, features of the learning environment can activate two different self-regulation modes that either increase or decrease the propensity of self-handicapping. In the so-called mastery mode, students are likely to focus on task mastery and to experience positive learning-related cognitions and emotions, which foster learning and reduce the likelihood of self-handicapping. In the so-called coping mode, students experience learning and achievement situations as threatening and anxiety-provoking, and their attention is focused on the self rather than the task at hand (e.g., the threat of losing face; Boekaerts, 2011). These self-threatening negative cognitions and emotions can activate such maladaptive coping strategies as self-handicapping.

Our systematic review thus draws on complementary theoretical frameworks to identify antecedents of self-handicapping that represent self-related, emotional-motivational, and personality-related sets of predictors, and that capture a "risk route" and a "resilience route" of (expected) influence on self-handicapping in academic contexts (see Figure 1). Although this approach implies a comprehensive consideration of many antecedents, it also means that our meta-analysis will not take into account factors that are rarely examined[5] and/or do not fit into the theoretical framework (e.g.,

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[4] The respective implicit intelligence theories and goal orientations each suggest certain attributional styles. Although entity theory and performance goals should contribute to internal-stable attribution patterns, incremental theory and mastery goals are more likely to result in controllable attribution patterns. Although such attributional processes have been studied in great detail in experimental, situational contexts, to our knowledge, a person's dispositional attributional style has hardly been related to academic self-handicapping. Therefore, attributional style is not included as a predictor in this meta-analysis.

[5] Previous versions of this meta-analysis included further antecedents. However, to increase the stringency and readability of the article, it was decided to remove these factors from the main article and to report them only in the online supplemental material. This concerns the factors self-esteem stability, self-esteem contingency, mastery goal structure, performance goal structure, mastery-avoidance goals, and work-avoidance goals (see online supplemental material Tables 3–5 and Figures 19–24).

perfectionism, Kearns et al., 2007; or self-concept clarity, Thomas & Gadbois, 2007). Moreover, we acknowledge that most of the presumed relations in this framework may be moderated by several individual, contextual, and methodological factors. However, due to length constraints and due to the relative scarcity of evidence on moderating factors, we limit our analysis to only one potential moderator, namely, different operationalizations of self-handicapping (i.e., scale type and its reliability).

Available Evidence on the Antecedents of Academic Self-Handicapping

Based on the theoretical considerations described above, possible antecedents of habitual academic self-handicapping fall into three general categories: self-related beliefs, emotional-motivational variables, and personality traits. A list of all antecedents included in this meta-analysis and their operational definitions can be found in Table 1. In addition, we address the question whether gender and prior levels of achievement represent meaningful antecedents of self-handicapping.

Self-Related Beliefs

Level of Self-Esteem

Self-handicapping strategies are generally used in situations in which individuals interpret their academic performance as a reflection of their self-worth (Shepperd & Arkin, 1989). *General self-esteem* is an affective-evaluative attitude of a person toward their self that is transversal in scope and relatively stable over time (Rosenberg, 1965). Because self-esteem threat is of central importance for the emergence of self-handicapping, it seems plausible that individual differences in the dispositional level of self-esteem are associated with the tendency to self-handicap. Surprisingly, however, the associations between self-esteem and self-handicapping are mixed, with some studies reporting positive (Martin et al., 2001; Midgley et al., 1996; Thomas & Gadbois, 2007) but others negative links (Midgley & Urdan, 1995; Zuckerman et al., 1998).

Table 1
Operational Definitions and Search Terms of Self-Handicapping and Antecedents Included in the Meta-Analysis

Self-handicapping and antecedents	Operational definition	Search terms
Self-handicapping	Any action or choice of performance setting that enhances the opportunity to externalize (or excuse) failure and to internalize success	(*"self-handicapping" OR "self-sabotage" OR "self-deception" OR "self-defeating behavior" OR "safeguarding" OR "self-deceiving" OR "self-impairment" OR "effort withdrawal" OR "self-impediment" OR "self-hindering"*)
Self-esteem level	Global, affective-evaluative attitude towards oneself	*"self-esteem" OR "self-worth" OR "self-regard" OR "self-evaluation"*
Self-efficacy	Conviction to successfully execute the behavior required	*"self-efficacy"*
Ability self-concept	Cognitive representations of one's own abilities	*"academic self-concept" OR "self-concept of ability" OR "self-perception of ability" OR "ability self-concept"*
Entity theory	Viewing cognitive ability as fixed and uncontrollable	*"implicit theor* of intelligence" OR "implicit theor* of ability" OR "conception* of ability" OR "entity theor*" OR "incremental theor*" OR "ability belief*" OR "mindset*" or "lay theor*" OR "implicit theor* of giftedness"*
Incremental theory	Viewing cognitive ability as malleable and controllable	
Fear of failure	Disposition to avoid situations with possible negative outcomes due to the risk of feeling ashamed of failure	*"achievement motive" OR "fear of failure" OR "need to achieve"*
Test anxiety	Anxiety occurring in evaluative situations	*"test anxiety" OR "performance anxiety" OR "anxiety" NOT "social anxiety"*
Mastery-approach goals	Goal to enhance task-based or intrapersonal competence	*"goal orientation*" OR "achievement goal*" OR "performance goal*" OR "mastery goal*" OR "learning goal*" OR "task orient*" OR "ego orient*" OR "avoidance goal*" OR "approach goal*" OR "mastery-approach goal*" OR "mastery-avoidance goal*" OR "performance-approach goal*" OR "performance-avoidance goal*" OR "goal structure*"*
Perf.-approach goals	Goal to demonstrate superior ability or competence to others	
Perf.-avoidance goals	Goal to avoid appearing incompetent to others	
Conscientiousness	Propensity to be self-controlled, responsible to others, hardworking, orderly, and rule abiding	*personality OR conscientious* OR neurotic**
Neuroticism	Tendency to experience negative emotions, such as anger, anxiety, or depression	
Gender	Participants' self-reported gender	*gender OR "sex" OR "male" OR "female"*
Prior achievement	Participants' prior achievement	*"level of achievement" OR "prior achievement" OR "grade point average" OR "achievement level" OR "school achievement" OR "academic achievement" OR "university achievement"*

Note. The full algorithm or subsets of the algorithm was used whenever possible. In some data bases, additional search terms regarding study designs were added to specify the results (*correlat* OR predict* OR determin**).

Self-Concept and Self-Efficacy

In addition to self-esteem concerns, students' *ability self-concept*, that is, students' cognitive representation of their own abilities in performance situations, has emerged as a powerful predictor of their self-regulatory behaviors and a protective factor against self-handicapping in academic contexts (Haugen et al., 2004; Schwinger, 2013). Likewise, *self-efficacy*, that is, the degree to which persons are confident in their capability to master a given task or challenge, is also presumed to be a protective factor. People with low self-efficacy are prone to overestimate the level of task difficulty, to ruminate on mistakes, and to give up when faced with challenges and setbacks. Negative associations between self-efficacy and self-handicapping have been reported in a number of studies, though with varying effect sizes (Arazzini Stewart & De George-Walker, 2014; Boon, 2007; Matthews, 2014).

Emotional-Motivational Variables

Achievement Goals

A considerable amount of research has been conducted on the relations between students' *achievement goals* and self-handicapping. Achievement goals refer to the reasons why people engage in achievement-related behaviors. The majority of research in this field has relied on the trichotomous model of achievement goals (Elliot & McGregor, 2001) that distinguishes between mastery-approach goals (the goal to enhance task-based or intrapersonal competence), performance-approach goals (the goal to demonstrate superior ability or competence to others), and performance-avoidance goals (the goal to avoid appearing incompetent to others).

It is plausible to assume that self-handicapping is a common self-regulatory strategy for performance-avoidance oriented individuals because they strive to avoid the appearance of incompetence or inferior ability (Urdan & Midgley, 2001). Consistent with this assumption, many studies have reported moderate positive correlations with self-handicapping (Elliot & Church, 2003; Martin et al., 2001, 2003; Midgley & Urdan, 2001; Schwinger & Stiensmeier-Pelster, 2012). Even though both performance-avoidance and performance-approach goals reflect concerns about positive self-portrayal (Spinath et al., 2002), the latter are also characterized by high levels of self-efficacy, which should alleviate self-handicapping tendencies among performance approach-oriented individuals. Empirical findings, however, are mixed. Some researchers found negative correlations between performance-approach goals and self-handicapping (Ommundsen, 2004), others reported positive correlations (Cheng & Lam, 2013; Rhodewalt, 1994), and many did not find any significant effects (Midgley & Urdan, 1995, 2001; Shih, 2005). Mastery-approach goals imply that students view mistakes and setbacks as an opportunity to learn and improve their ability (rather than a threat to their self-esteem) so that a negative association with self-handicapping has consistently emerged (e.g., Elliot & Church, 2003; Rhodewalt, 1994; Schwinger & Stiensmeier-Pelster, 2011; Shih, 2007).

Implicit Theories of Intelligence

Students endorsing an *entity theory* of intelligence view their cognitive ability as a fixed and uncontrollable trait, whereas those favoring an *incremental theory* believe that their cognitive ability is a malleable, increasable, and controllable quality (Dweck & Leggett, 1988). Most people tend to identify with one of these theories over the other, but about 15% of people indicate mixed beliefs about the malleability of their ability (Dweck et al., 1995). Such implicit theories can affect students' beliefs about the purpose of investing effort (i.e., as a means of increasing their ability vs. to compensate for lack of ability), which may also be relevant for the development of defensive self-regulation strategies. Students with an entity perspective interpret poor performance as evidence of low cognitive ability and thus attribute potential failures to an internal, stable, and largely uncontrollable cause. Setbacks can therefore trigger avoidance behaviors and a sense of helplessness (Diener & Dweck, 1978; Hong et al., 1999), as well as declines in self-esteem (Robins & Pals, 2002) and achievement (Blackwell et al., 2007; Chen & Pajares, 2010). In contrast, students who endorse an incremental theory of ability are more likely to attribute failure to external or controllable causes and to believe in the utility of investing effort. Moderate to large positive correlations between an entity view and self-handicapping have been reported in some studies (Rhodewalt, 1994; Shih, 2011), but others have found either small (Ommundsen et al., 2005; Rickert et al., 2014) or nonsignificant associations (McCrea et al., 2008).

Fear of Failure

Fear of failure has been identified as one of the central motivational antecedents of academic self-handicapping (Elliot & Church, 2003; Martin & Marsh, 2003). Failure-oriented individuals are more likely to set and pursue unrealistic goals and to select tasks that are either too easy or by far exceed their ability. Potential failures are likely to be attributed to internally stable causes such as lack of ability, which in turn poses a threat to students' self-esteem. Self-handicapping allows failure-oriented individuals to reduce this perceived threat to their self-esteem. Indeed, empirical evidence shows that fear of failure is highly relevant for the development of self-handicapping tendencies (Chen et al., 2009; De Castella et al., 2013; Elliot & Church, 2003).

Test Anxiety

Test anxiety is conceptually related to fear of failure, so that analogous mechanisms of influence may apply. Both constructs capture worries about impending performance situations, and both trigger an affective-motivational process that orients the individual toward negative outcomes and avoidance behaviors. However, based on the matching principle which describes that criterion-related validity is maximized by matching predictor and criterion variables by level of specificity (narrow/specific vs. broad/general, cf. Baranik et al., 2010), we would suspect a closer conceptual proximity between test anxiety and academic self-handicapping due to their shared focus on the learning and performance domain and thus assume higher correlations between them. Empirically reported associations between test anxiety and self-handicapping are heterogeneous and range from large (Martin et al., 2014) or medium effects (Conrad & Patry, 2012; Ross et al., 2001) to small or nonsignificant (Gadbois & Sturgeon, 2011; Haugen et al., 2004). From a conceptual point of view, it should be noted that in early research on self-handicapping, test anxiety was primarily seen as an operationalization of claimed self-handicapping (e.g., Smith et al.,

1982). In the present meta-analysis, however, we conceptualize test anxiety as an antecedent of habitual self-handicapping.

Personality Traits

Conscientiousness

People with a high level of conscientiousness describe themselves as competent, orderly, self-disciplined, and deliberate. A meta-analysis of the antecedents of procrastination identified conscientiousness as one of its strongest negative predictors (Steel, 2007). This finding is of interest for the present meta-analysis because procrastination is often seen as a behavioral manifestation of self-handicapping. A strong negative link between conscientiousness and self-handicapping has also been found (Conrad & Patry, 2012; Ross et al., 2002; Schwinger & Stiensmeier-Pelster, 2012), so that conscientiousness likely represents a protective factor against self-handicapping.

Neuroticism

Neuroticism may enhance the propensity of self-handicapping behaviors because individuals with high scores on this trait tend to describe themselves as anxious, biased, irritable, impulsive, depressed, and vulnerable to stress (Ross et al., 2002), which might trigger defensive behaviors like self-handicapping. Empirical evidence supports substantial positive correlations between neuroticism and self-handicapping (Bobo et al., 2013; Ross et al., 2002).

Gender

A consistent finding in the self-handicapping literature is that women are less likely to use behavioral self-handicapping than men, which has been attributed to their differential valuing of effort and to socialization processes (McCrea et al., 2008). Women are more likely than men to describe themselves as hardworking and to report higher levels of value for this quality. Researchers have also proposed that self-handicapping may be more socially acceptable for men than for women. However, survey research has elicited mixed results regarding such gender differences, which may be at least partially due to the type of measure used to assess self-handicapping. A number of self-report studies document higher levels of self-handicapping among male relative to female students (Martin, 2004; Midgley & Urdan, 1995; Smith et al., 2002), but some report no gender differences (Turner et al., 2002) or stronger self-handicapping tendencies among girls relative to boys (Ommundsen, 2004; Warner & Moore, 2004). The degree to which the measurement instruments used in these studies referenced claimed versus behavioral self-handicapping may contribute to such inconsistent findings, as women may be less likely than men to engage in behavioral but not necessarily in claimed self-handicapping.

Prior Levels of Achievement

Low-achieving students are more likely than high-achieving ones to struggle with uncertainty regarding their capability (or their certainty of low capability) to do well in performance situations, which is likely to make them more vulnerable to self-doubt and self-handicapping tendencies. Furthermore, this association is likely to be reciprocal (Covington, 2004; Zuckerman et al., 1998), insofar as self-handicapping increases the probability of experiencing failure in the future (Schwinger et al., 2014). There is compelling evidence in both school and university contexts that low-achieving students show a stronger tendency to use self-handicapping strategies (Martin et al., 2003, 2013) but some studies report small or even nonsignificant correlations with achievement (McCrea et al., 2008).

Construct Operationalization as Moderator Variable

Our review of available evidence suggests that researchers have mainly relied upon two types of assessments to measure self-handicapping: the *Academic Self-handicapping Scale* (ASHS; Midgley & Urdan, 1995; Urdan et al., 1998) and the *Self-handicapping Scale* (SHS; Jones & Rhodewalt, 1982), including its short and long versions (cf. Strube, 1986; Zuckerman et al., 1998). Despite some overlap, the ASHS and the SHS show considerable differences in their operationalization of self-handicapping. Informed by theory (Midgley & Urdan, 1995), all ASHS items (e.g., "Some students put off doing their schoolwork until the last minute so that if they do not do well on their work, they can say that is the reason. How true is this of you?") reference a particular self-handicapping behavior (e.g., effort withdrawal), the reason for this behavior (e. g., to use low effort as an excuse), and the a priori timing of implementing the self-handicapping strategy (e.g., low effort as an excuse is installed *before* potential failure occurs). In contrast, most items of the SHS describe behaviors that have the potential to function as a handicap but leave the reason and timing of such behaviors open (e.g., "I tend to put things off until the last moment."). A subset of SHS items also emphasizes a person's tendency to search for excuses in the case of failure, but the presumed a priori timing of installing the excuse *before* experiencing failure is not considered. Thus, the SHS items are only partially aligned with the conceptualization of self-handicapping, as outlined by Urdan and Midgley (2001).

Given these differences in scale construction, we believe that researchers' use of either the ASHS or the SHS may moderate the relations between self-handicapping and most of its antecedents. In the SHS, self-handicapping is defined as a much broader construct, thereby reflecting some kind of undifferentiated avoidance behavior. The ASHS, on the other hand, addresses a concrete behavior built on specific motives. Conceptually, the behavior captured by the ASHS can be subsumed under the broad avoidance behavior captured by the SHS. It therefore seems plausible to assume that individuals with maladaptive affective-motivational orientations, such as low self-esteem, are more likely to agree with statements about broad avoidance behavior than with the more specific behavioral descriptions of the ASHS. In principle, this should result in higher correlations using the SHS for all antecedents examined here. In particular, however, this should apply to the factors self-esteem, fear of failure, conscientiousness, and neuroticism, which are also defined more globally, as in the sense of the matching principle (Baranik et al., 2010) the same rather unspecific level of specificity is present here. The Motivation and Engagement Scale (MES) by Martin (2007, 2010), which has also been used several times in self-handicapping research, can rather be attributed to the ASHS in its content-conceptual terms. The subscale of the MES labeled "self-sabotage" consists of four items that

also meet all criteria for a valid measurement of self-handicapping. ASHS and MES differ only in the range or amount of behaviors and domains listed, which could possibly lead to an underestimation of self-handicapping behavior when using the MES.

From a theoretical-conceptual perspective, one would expect at this point a discussion of how instruments measuring claimed versus behavioral self-handicapping might contribute to divergent correlations with different antecedents. Unfortunately, this moderation hypothesis cannot be tested empirically, because many instruments contain items for both self-handicapping variants, but mostly only the sum score is used in statistical analyses (see McCrea et al., 2008, for an exception).

The associations between gender, prior achievement, and self-handicapping might also be affected by the type of scale used in different studies. As noted above, women are generally less likely than men to report engaging in behavioral self-handicapping so that we expected that gender (coded 0 for male and 1 for female) will be negatively correlated with the ASHS, but uncorrelated with the SHS (cf. Hirt & McCrea, 2009). With respect to prior achievement, the meta-analysis by Schwinger et al. (2014) reported higher negative relations with achievement when the ASHS was used. Given the presumed recursive cycle of self-handicapping, low achievement, repeated self-handicapping, and so on, we suggest the same results pattern for the current meta-analysis although our focus is on the antecedent role of prior achievement here. Finally, in addition to conceptual differences between scales, it is important to consider the potential moderating effect of the methodological quality of each assessment, which we operationalized in terms of the reliability of each self-handicapping scale used in different studies. We assumed that the higher the reliability, the higher the correlation between self-handicapping and hypothesized antecedents owing to the potential attenuating effects of measurement error.

The Present Research

The meta-analysis by Schwinger et al. (2014) demonstrated that academic self-handicapping can have potentially detrimental effects on student achievement. However, our understanding of which factors are most likely to contribute to the development of habitual self-handicapping is still limited. The literature is prolific but fragmented, and a systematic synthesis of the available evidence is missing. Although partial aspects of this question were examined in detail in narrative reviews (Hirt & McCrea, 2009; Urdan & Midgley, 2001), the inconsistencies in the reported correlations between self-related beliefs, emotional-motivational variables, personality traits, gender, and level of achievement have not yet been systematically integrated in a quantitative research synthesis. The present research is the first meta-analysis of the bivariate associations between self-handicapping and its theorized antecedents.

In our meta-analysis, we examine the average mean effect sizes of the correlations between academic self-handicapping and several presumed antecedents (level self-esteem, ability self-concept, self-efficacy, entity vs. incremental theories of ability, fear of failure, test anxiety, mastery-approach goals, performance-approach goals, performance-avoidance goals, conscientiousness, neuroticism, gender, and level of achievement). In addition, we examine the moderating influence of different construct operationalizations of self-handicapping (scale and reliability). We hypothesize more pronounced correlations when self-handicapping is assessed via the

SHS for the antecedents self-esteem level, self-efficacy, ability self-concept, entity and incremental theory, fear of failure, test anxiety, mastery-approach goals, performance-approach and -avoidance goals, conscientiousness, and neuroticism. Gender is expected to be negatively related with self-handicapping when the ASHS is used but uncorrelated in case of the SHS. Prior achievement is expected to show the highest associations with self-handicapping as operationalized by the ASHS.

Method

Literature Search and Coding

International data bases for psychology and education (PsycINFO [Psychological Information Database], PSYINDEX, ERIC [Education Resources Information Center] ERS), as well as multidisciplinary data bases (Google Scholar, Web of Science, BASE [Bielefeld Academic Search Engine]) were searched. To obtain unpublished documents, multidisciplinary data bases for dissertations and master theses (NDLTD [Networked Digital Library of Theses and Dissertations], ProQuest Dissertations & Theses, Trove National Library of Australia), as well as specialized data bases for gray literature (OpenGrey, NTIS [National Technical Reports Library]) were screened. Further, several available conference programs relevant to the field were manually searched (APA, AERA, EARLI/JURE, ISLS/CSLS, ECER, GEBF, AEPF and Educational Psychology Section Meeting of the German Psychological Society DGPs). Studies up to October 2020 were included. Abstracts were searched with terms adopted from published meta-analyses on adjacent topics and similar correlates (Burnette et al., 2013; Huang, 2012; Payne et al., 2007; Schwinger et al., 2014). Whenever possible, search algorithms were used to identify relevant entries. Table 1 contains the search terms for the relevant antecedents and self-handicapping. Furthermore, cross-referencing and screenings of tables of content of relevant journals (*Journal of Educational Psychology*, *British Journal of Educational Psychology*, *Educational Psychology*, *Learning and Instruction*, *Contemporary Educational Psychology*, *Personality and Individual Differences*, *Learning and Individual Differences*, *Zeitschrift für Pädagogische Psychologie [German Journal of Ecucational Psychology]*, *Zeitschrift für Entwicklungspsychologie [German Journal of Developmental and Educational Psychology]*) were used as search strategies. Furthermore, scientists with known interest and expertise regarding self-handicapping who had published at least one study meeting the inclusion criteria were contacted and asked for additional unpublished manuscripts or raw data.

Studies meeting the following six criteria were included:

1. Studies had to report at least one correlation between habitual self-handicapping and one or more of the following antecedents: gender, achievement, level, stability, and contingency of self-worth, self-efficacy, ability self-concept, conscientiousness, emotional stability, fear of failure, test-anxiety, implicit theories about the malleability of abilities, goal orientations, and/or classroom goal structure. Studies were excluded when self-handicapping and its antecedents were examined in non-academic settings (e.g., sports, arts and music, or social relationships, but

not when assessed in physical education, music or arts classes in schools) or when self-handicapping was not assessed in accordance with at least two out of three of the criteria for self-handicapping (Urdan & Midgley, 2001). Regarding achievement, studies were only included when achievement was either assessed prior to self-handicapping or the achievement situation (e.g., exam) was prior to the assessment, but reported simultaneously or later than self-handicapping to ensure achievement as a predictor, not an outcome of self-handicapping as in Schwinger et al. (2014).

2. Correlational cross-sectional and longitudinal designs assessing self-handicapping in self-report questionnaires were included. Regarding the assessment of prior achievement as potential antecedent of self-handicapping, grades, test results, and self-reports of achievement were included. Experimental studies were excluded (e.g., Snyder et al., 2014) because they manipulate self-handicapping behaviors and thus assess situational self-handicapping as opposed to habitual self-handicapping, which was the goal of the present study.

3. Both field and lab studies were included whenever it could be ensured that no randomization and allocation to different groups nor experimental manipulations had taken place prior to the assessment of the relevant variables.

4. Samples included school and university students, as well as doctoral students and postgraduates. Samples with learning difficulties (e.g., Alesi et al., 2012) were excluded owing to possible confounding effects.

5. Studies were required to report bivariate correlations or sufficient information to compute correlation-based effect sizes. Studies only including regression coefficients from multiple regression or HLM, path coefficients from structural equation models (e.g., Elliot & Church, 2003; Ferrera, 2011; Urdan, 2004), or latent factor correlations from confirmatory factor analyses (e.g., Bodkin-Andrews et al., 2013; Plenty & Heubeck, 2011) were excluded unless they also reported information sufficient to compute relevant correlations or authors sent these information upon request (e. g., Turner et al., 2002). Authors of articles published during the past ten years were contacted in such cases as it was expected that data were still available for reanalyses.

6. Studies published in English or German were included.

Based on these criteria, a coding handbook including coding examples supported three authors in screening titles and abstracts for inclusion. Next, the same three authors examined the full texts and coded inclusion and exclusion criteria based on the coding handbook and examples. If statistical information was missing, the information was requested by the respective authors before the study was excluded.

A PRISMA chart of study exclusion can be found in Figure 2. Based on these criteria we identified 159 studies with 194 independent samples and with a total sample of $N = 81,630$ students and 690 effect sizes. A reference list with all studies included in

the synthesis, as well as a description of all included samples can be obtained from the online supplemental materials (online supplemental material Table 1). Online supplemental material Table 2 displays all considered moderator variables, the coding scheme for these variables, as well as respective kappa coefficients (Cohen, 1992). To obtain a measure of coding reliability, a second independent person coded 28 (17%) of the included studies. Kappas ranging between .61 and .80 indicate substantial, between .81 and 1.00 excellent reliability (Landis & Koch, 1977). For metric variables, we calculated intra class correlations. With the exception of four variables, interrater reliabilities were excellent (see online supplemental material Table 2). When substantial differences in codings occurred, both coders discussed the case and corrected the respective coding where necessary. An overview of sample characteristics of all studies is given in Table 2.

Effect Size Calculation, Moderator Effects, and Sensitivity Analyses

Synthesis of Available Data

Pearson correlations were computed to determine the relations of the various antecedents with self-handicapping. When several effect sizes for one association from the same sample were reported (i.e., when associations between the same antecedent and two subject-specific measures of self-handicapping were reported from one sample), these studies were coded as clustered within the same sample. However, traditional meta-analytic approaches assume effect sizes from primary studies to be independent (Lipsey & Wilson, 2001). To account for these dependencies and to avoid underestimation of standard errors and resulting problems while maximizing power by utilizing as many effect sizes as possible, cluster robust estimation as a robust variance estimation procedure (Hedges et al., 2010) with small-sample adjustment was applied to compute standard errors, inference statistical tests, and confidence intervals of the effects (Sidik & Jonkman, 2006; Viechtbauer, 2020). When two studies referred to the same sample and reported identical effect sizes, only the study with higher publication status (peer-reviewed article rather than dissertation, dissertation rather than gray literature or unpublished data) was included to avoid duplicates. When correlations were reported for subgroups such as gender or age, they were treated as independent samples. To compute total effects for each antecedent, random effects models (REM; Hedges & Vevea, 1998) were computed as they take into consideration that individual effect sizes of the primary studies may differ. A restricted maximum likelihood estimator (REML) of the variance of true effects was used as it is efficient and shows only little bias (Viechtbauer, 2005). Each correlation coefficient was first Fisher-Z–transformed and then weighted according to the REM. All computed mean effect sizes and their respective confidence intervals were converted to Pearson correlations. To interpret the size of the average correlations between antecedents and self-handicapping, we followed the suggestions by Hattie (2009) according to which correlations around $r = .10$ can be classified as small, around $r = .20$ as medium, and around $r = .30$ as large.

Figure 2
Overview of Study Characteristics of All Studies Included in the Meta-Analysis
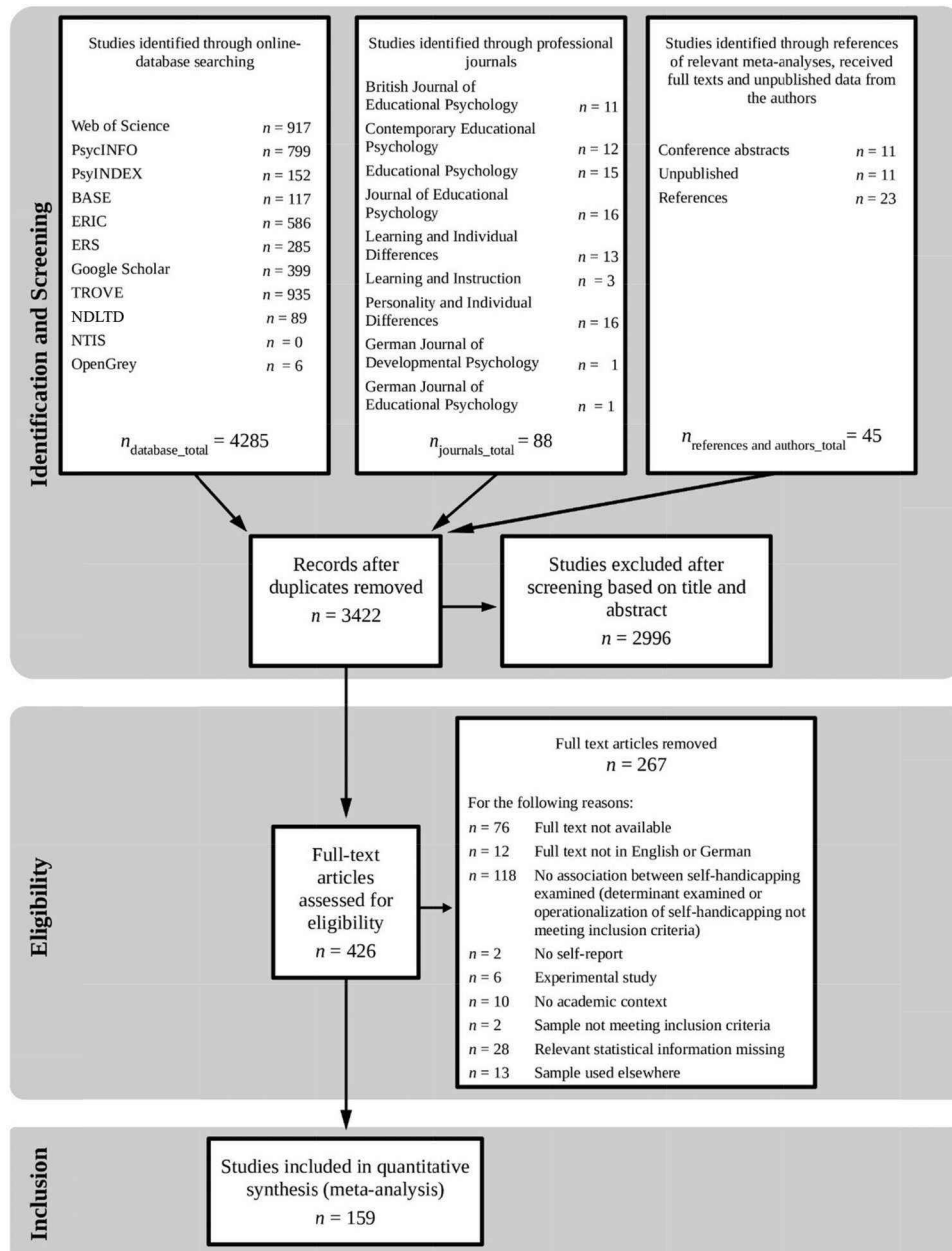
Note. The studies were excluded in order of criteria listed; however, most studies provided multiple reasons for exclusion. For conference abstracts, available programs of AERA, EARLI/JURE, ISLS/CSLS, ECER, GEBF, AEPF and Educational Psychology Section Meeting of the German Psychological Society were searched. PsycINFO = Psychological Information Database; BASE = Bielefeld Academic Search Engine; ERIC = Education Resources Information Center; NDLTD = Networked Digital Library of Theses and Dissertations; NTIS = National Technical Reports Library.

Sensitivity Analyses

To detect outliers, studentized residuals more than 1.96 *SD*s below or above the mean correlation were identified (Viechtbauer & Cheung, 2010). Next, the average effect leaving out the respective studies were checked for conspicuities and methodological errors and deviations. If none were found and if there were no substantial changes in effect sizes and study heterogeneity, the effect size was computed and to assess changes in the average effect size and effect size heterogeneity. Additionally, the respective tial changes in effect sizes and study heterogeneity, the effect

Table 2

Sample Characteristics

Coding	k	%	Coding	k	%
Year of publication			**Country of origin**		
1980–1989	2	1.0	United States	77	39.7
1990–1999	12	6.2	Germany	18	9.3
2000–2009	72	37.1	Australia	21	10.8
2010–2020	108	55.7	China/Taiwan	13	6.7
			United Kingdom	10	5.2
Document type			Canada	10	5.2
Peer-rev. journal articles	132	68.0	Turkey	8	4.1
Book chapter	4	2.1	Norway	5	2.6
Conference papers	3	1.5	Greece, Iran, Japan, Spain each	3	1.5
Dissertation/master thesis	45	23.2	Korea, Pakistan, Romania, Sweden, Ukraine each	2	1.0
Unpublished manuscript/data	10	5.2	Not identified	2	1.0
School type			Brazil, Finland, India, Kenia, Korea, Lebanon, Hungary, Nigeria, Slovenia each	1	0.5
Elementary	11	5.7			
Middle school/junior high	18	9.3	**Language**		
High school	50	25.8	English	186	95.5
University/college	111	57.2	German	8	4.1
Community college	4	2.1			
Sample size			**Antecedent**		
			Self-esteem level	65	34.0
N < 120	42	21.6	Self-esteem stability	12	6.2
N = 121−500	103	53.1	Self-esteem contingency	8	4.1
N > 500	49	25.3	Self-efficacy	50	25.8
			Ability self-concept	17	8.8
Gender			Fear of failure	12	6.2
0−30% female	10	6.0	Test anxiety	30	15.5
31−70% female	127	65.5	Achievement goals	67	34.5
71−100% female	43	22.2	Classroom goal structure	10	5.2
not identified	14	7.2	Implicit theories of ability	23	9.3
			Personality	16	8.2
Ethnicity			Gender	53	27.5
0−30% white	17	8.8	Achievement	40	10.6
31−70% white	19	9.8			
71−100% white	24	12.4			
not identified	134	69.1			

Note. Bold words represent variable names; k = number of independent samples; percentages not adding up to 100 are attributable to rounding.

size was retained for analyses, otherwise the effect size was excluded.[6]

Publication Bias

Additionally, it was examined whether effect size estimation was affected by publication bias (Rothstein et al., 2005). Publication bias can lead to an overestimation of the average true effect because published studies tend to have larger effect sizes than unpublished studies. To this end, we computed funnel plots which plot effect sizes of primary studies against their respective standard errors. If the resulting distribution of effect sizes around the estimated average true effect is asymmetric, the included study sample may be affected by publication bias. Rank correlation tests (Begg & Mazumdar, 1994) and regression tests (Egger et al., 1997) were computed to assess whether the distributions were in fact asymmetric. Additionally, the trim and fill-method (Duval, 2005) was used to assess the magnitude of potential publication bias via the number of studies "filled" into the funnel plot to achieve symmetry and the adjusted effect size based on the inclusion of these imputed studies.

Assessment of Heterogeneity and Moderator Analyses

To examine potential heterogeneity of effect sizes, Cochran's Q-test for homogeneity (Hedges & Olkin, 1985) was computed to assess the existence of heterogeneity. I^2 statistics indicating the proportion of true variance of the effects relative to the overall variance were used to quantify this heterogeneity (Higgins & Thompson, 2002). An I^2 around 25% indicates small heterogeneity, whereas around 50% indicate moderate and around 75% high heterogeneity (Higgins et al., 2003).

Subsequent moderator analyses were conducted to identify variables explaining differences in effect sizes. To this end, weighted least squares metaregression models were computed for each moderator separately. The following formula illustrates this principle:

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[6] Based on this procedure, eight effects were excluded from further analyses. The sample by Sultan and Kanwal (2014) was excluded from the estimation of the average correlation between both self-esteem level and gender with self-handicapping. The sample by Akar et al. (2018) was excluded from computing the average association between both self-efficacy and achievement with self-handicapping. In computing the average correlation between mastery goal structure and self-handicapping, the sample from Tas and Tekkaya (2010) was excluded, as was the effect size by Urdan et al. (1998) when computing the association between performance goal structure and self-handicapping. Finally, the average association between test anxiety and self-handicapping was computed without the sample by Garcia et al. (1995) and the association between work-avoidance goals and self-handicapping without the effect size by Ferradás et al. (2016).

$$\hat{ES}_i = \hat{\mu}_j = \beta_o + \beta_1 X_i$$

where $\hat{ES}_i$ is the predicted effect size in study i, X_i is the moderator value of study i, $\hat{\mu}_j$ is the estimated mean of the true effect size of the moderator category study i belongs to, $\beta0$ is the intercept of the mean effects model (the estimated true average effect at X_i = 0), and $\beta1$ is the regression coefficient of the moderator variable (representing the change in the estimated average true effect, when the level of the moderator X rises by one unit). To avoid cumulation of type-1 error, standard errors were adjusted with the Knapp and Hartung method (Knapp & Hartung, 2003). All analyses were based on meta-analytic mixed-effects models (MEM) with REML as an estimator (López-López et al., 2014) and cluster robust estimation (Sidik & Jonkman, 2006; Viechtbauer, 2020) to deal with effect size dependency for associations in which dependent effect sizes occurred. To assess operationalization of the self-handicapping scale as a categorical moderator, we computed average estimated correlations and confidence intervals for each level of the respective moderator in addition to the meta-analytic parameters. To detect significant differences between factor levels, we referred to the criterion of nonoverlapping confidence intervals of the correlations of interest (Lipsey & Wilson, 2001). When primary studies did not report Cronbach's alpha for scale reliability, alpha from the scale's original publication was used where possible. However, some missingness still occurred. Regarding operationalization of the self-handicapping scale, the Motivation and Engagement Scale (Martin, 2007) was only used in a substantial number of studies for three bivariate associations. For most others, less than three studies operationalized self-handicapping via the MES. Since moderator categories with small numbers of effect sizes tend to produce less reliable results, the MES was recoded into the "others/mixed" category. All analyses were conducted with the R (R Core Team, 2018) metafor package (Viechtbauer, 2010).

Results

The included 159 studies reported 194 independent samples with a total of N = 81,630 participants (range: n = 13 to n = 12,237). A total of 690 effect sizes was reported in these samples, whereby most effect sizes (k = 75) represented correlations of self-handicapping with self-esteem level and the fewest (k = 14) with fear of failure. All studies were published between 1986 and 2020 and came mainly from the US/Canada (44.8%), Europe (28.9%), Asia (12.9%), Australia and Pacific Islands (10.8%), but also Africa (1%) and South America (.5%). The samples represented mainly higher education and university students (60.3%), but also elementary and high school students (39.2%) and one mixed sample (.5%). Further details on sample characteristics are displayed in Table 2. An overview of all included studies, effect sizes, and descriptive statistics can be obtained from online supplemental material Table 1.

Publication Bias

As Figure 1a–1e of the online supplemental materials displays, statistical tests of funnel plot asymmetry were not significant, implying no asymmetric effect size distributions for self-related beliefs. However, visual inspections of funnel plots revealed some asymmetry for self-esteem level (online supplemental material Figure 1a) and at least slight asymmetry for self-efficacy (online supplemental material Figure 1b). For all five associations except with incremental theory of ability, the trim and fill method suggested at least some plot asymmetry, most strongly, however, for self-esteem level (estimated number of additional studies of the right side: k = 15) and self-efficacy (k = 10). Thus, there are hints for publication bias for self-esteem level and self-efficacy.

For fear of failure and test anxiety, statistical tests of plot asymmetry were also not significant, neither did a visual inspection of funnel plots hint toward asymmetric distributions of effect sizes (online supplemental material Figure 2a and 2b). However, for the three achievement goal variables, some evidence for publication bias emerged (online supplemental material Figure 2c–2e): For mastery-approach goals and performance-avoidance goals, regression tests were significant, their funnel plots slightly asymmetric, and trim and fill procedures suggested considerable numbers of additional studies ($k_{mastery}$-approach goals = 19, $k_{performance}$-avoidance goals = 9). For performance-approach goals, the rank regression test was significant, the funnel plot was also slightly asymmetric, and the trim and fill-procedure suggested k = 11 additional studies.

For conscientiousness, neuroticism, gender, and achievement, statistical tests for plot asymmetry were not significant and funnel plots were not or only slightly (in the case of achievement) asymmetric (online supplemental material Figure 3a–3d), indicating no or only little publication bias. The trim and fill method, however, suggested k = 7 additional studies for the association between self-handicapping and gender and k = 10 for the association with achievement. Overall, the aggregated correlations of self-handicapping with self-esteem level, self-efficacy, mastery-approach, performance-approach, and performance-avoidance goals, as well as achievement should be treated with some caution due to potential publication bias.

Mean Effect Sizes and Heterogeneity

An overview of all average correlations and respective confidence intervals between antecedents and self-handicapping including the number of included effect sizes and participants is given in Table 3. Forest plots for all bivariate associations can be obtained from the online supplemental material (Figures 4–17). All self-related beliefs showed medium to large significant associations with self-handicapping. Lower self-esteem level (r = −. 34), self-efficacy (r = −.25), ability self-concept (r = −.32), and incremental theory of ability (r = −.23), as well as a stronger entity theory of ability (r = .24) were significantly associated with higher levels of self-handicapping. Furthermore, emotional-motivational variables were also significantly related to self-handicapping. Fear of failure (r = .39), test anxiety (r = .29), and performance-avoidance goals (r = .27) showed medium to large positive associations with self-handicapping. Performance-approach goals (r = .08) only showed a small positive association with self-handicapping, while mastery-approach goals (r = −.19) were found to have a medium, but negative relation with self-handicapping. Additionally, both personality variables were strongly and significantly associated with self-handicapping: The more neurotic (r = .38) and the less conscientious (r = −.40) learners reported to be, the more self-handicapping they reported on average. Furthermore, prior achievement (r = −.17) displayed a moderate and negative, but significant

Table 3

Average Bivariate Associations Between Antecedents and Self-Handicapping

Measure	Average r (μ^ρ)	SE	95% CI	k	N	τ^2[95% CI]	Q	l^2[95% CI]
Self-related beliefs								
Self-esteem level	−.339***	0.025	[−.382, −.295]	75	21,301	0.036 [.025, .052]	1,030.03***	92.15 [89.01, 94.44]
Self-efficacy	−.254***	0.016	[−.284, −.224]	57	33,851	0.007 [.004, .015]	205.53***	81.28 [72.06, 89.72]
Ability self-concept	−.320***	0.035	[−.385, −.253]	27	6,610	0.018 [.010, .037]	215.13***	89.09 [81.95, 94.34]
Entity theory of ability	.235***	0.028	[.182, .288]	29	8,790	0.014 [.008, .030]	166.21***	84.65 [75.28, 92.06]
Incremental theory of ability	−.234***	0.052	[−.340, −.123]	16	4,981	0.026 [.013, .065]	193.19***	92.08 [85.28, 96.67]
Emotional-motivational variables								
Fear of failure	.390***	0.060	[.272, .497]	14	5,893	0.049 [.025, .132]	521.22***	98.61 [97.24, 99.58]
Test anxiety	.291***	0.021	[.251, .330]	35	36,581	0.013 [.007, .023]	642.66***	92.57 [87.09, 95.58]
Mastery-approach goals	−.193***	0.013	[−.218, −.167]	78	43,957	0.008 [.005, .014]	315.40***	82.86 [75.82, 88.89]
Performance-approach goals	.081**	0.029	[.022, .139]	65	17,933	0.034 [.023, .051]	805.03***	92.38 [89.00, 94.85]
Performance-avoidance goals	.272***	0.022	[.231, .312]	62	37,053	0.024 [.016, .037]	986.21***	93.78 [90.80, 95.77]
Personality variables								
Conscientiousness	−.398***	0.027	[−.474, −.365]	21	7,150	0.025 [.013, .058]	192.93***	92.03 [86.30, 96.47]
Neuroticism	.381***	0.034	[.315, .444]	16	4,945	0.026 [.013, .067]	160.26***	90.92 [82.89, 96.28]
Demographic and achievement variables								
Gender[a]	−.032	0.017	[−.065, .002]	64	19,084	0.011 [.007, .018]	275.90***	79.51 [70.12, 86.56]
Achievement	−.172***	0.021	[−.213, −.130]	65	16,880	0.013 [.008, .021]	388.77***	83.79 [77.00, 89.62]

Note. average r (μ^ρ) = cluster robust estimated mean of the true correlation; *SE* = standard error; KI = confidence interval; *Q* = heterogeneity index with *df* = *k* − 1; τ^2 = estimated variance between study-specific true effects; *l*^2 = proportion of variance of true effect sizes in the overall variance of observed effects in %; *k* = number of effect sizes; *N* = number of included participants; random effects models were used for estimating average true correlations; variances of study specific true values (τ^2) were estimated using Restricted Maximum-Likelihood (REML) estimator.
[a] A negative correlation with gender reflects a stronger likelihood for men (coded 0) than women (coded 1).
** *p* < .01. *** *p* < .001.

correlation with self-handicapping: the lower one's prior achievement was, the more self-handicapping was reported. Finally, gender was not significantly related to self-handicapping (*r* = −.03).

For all associations, Cochran's Q was significant indicating a substantial amount of heterogeneity beyond sampling error in observed effects from the primary studies. This heterogeneity can be classified as large according to the I2-statistics, which ranged between 79.51% for the association between self-handicapping and gender and 98.61% for the association between self-handicapping and fear of failure.

Moderating Effects of Self-Handicapping Scale Reliability and Scale Type

Reliability of the self-handicapping scale emerged as a significant moderator for the associations between self-handicapping and five antecedents (see Table 4), namely self-esteem level (*b* = .744), ability self-concept (*b* = −.778), mastery-approach goals (*b* = −.704), gender (*b* = −.532), and achievement (*b* = −.653). Practically, this means an increase in the average correlation between self-handicapping and, for example, self-esteem of .074 for an increase of .1 in alpha (i.e., a difference between an average correlation of *r* = −.39 if Cronbach's alpha is on average .70 compared with *r* = −.32 for if alpha is .80). Overall, these results imply a mixed effect of scale reliability on these associations: Average correlations between self-handicapping and ability self-concept, gender, and achievement become more strongly negative as the reliability of the self-handicapping scale increases (indicated by negative *b*s). In contrast, associations with self-esteem level and mastery-approach goals become smaller and more positive with increasing scale reliability.

Eleven of fourteen associations between self-handicapping and antecedents were significantly moderated by the type of self-

handicapping scale (see Table 5). The Self-Handicapping Scale (SHS) by Jones and Rhodewalt (1982) and short SHS by Rhodewalt (1990) and Strube (1986) produced significantly stronger (positive or negative) associations between self-handicapping and self-esteem level (*r*s = −.41/−.23), fear of failure (*r*s = .59/.23), and test anxiety (*r*s = .39/.25) than the Academic Self-Handicapping Scale (ASHS) by Midgley and Urdan (1995). Furthermore, the association between self-handicapping and gender was positive and significant when the SHS/short SHS (*r* = .09) was used, implying that women reported more self-handicapping than men. It was significantly negative, however, when the ASHS was used (*r* = −.07), translating into men reporting more self-handicapping than women. Contrarily, associations between self-handicapping and both entity theory of ability (*r*s = .23/.11) and achievement (*r*s = −.22/−.10) were significantly stronger when self-handicapping was measured with the ASHS instead of the SHS/short SHS.

Regarding other instruments, associations of self-handicapping with both conscientiousness (*r*s = −.48/−.27) and neuroticism (*r*s = .47/.24) as well as gender (*r*s = .09/−.08) were significantly stronger when the SHS/short SHS was used compared with other instruments like the MES, while associations between self-handicapping and entity theories (*r*s = .10/.34), as well as achievement (*r*s = −.10/−.22) were significantly weaker when SHS/short SHS was used compared with other instruments. Last, significantly smaller associations between self-handicapping and both self-efficacy (*r*s = −.21/−.29) and performance-avoidance goals (*r*s = .21/.38) occurred when self-handicapping was assessed via the ASHS compared with other instruments.

Discussion

With the present meta-analysis, we aimed to provide a comprehensive review of a broad taxonomy of possible antecedents of

Table 4
Moderating Effects of Reliability of Self-Handicapping Scale

Measure	k	b	SE	t	R^2 %	τ^2	F, [$df1$, $df2$]
Self-esteem level	62	.744	.330	2.26*	7.31	.038	$F(1, 51) = 5.10$*
Self-efficacy	45	−.078	.182	−0.43	0.00	.005	$F(1, 37) = 0.18$
Ability self-concept	23	−.778	.332	−2.34*	15.19	.013	$F(1, 11) = 5.48$*
Entity theory	26	.370	.453	0.82	2.27	.013	$F(1, 17) = 0.67$
Incremental theory	15	−.141	.697	−0.20	0.00	.029	$F(1, 9) = 0.04$
Fear of failure	14	−.106	.975	−0.11	0.00	.053	$F(1, 10) = 0.01$
test anxiety	32	−.640	.359	−1.78	5.13	.012	$F(1, 25) = 3.18$
Mastery-approach	71	−.704	.220	−3.20**	27.83	.005	$F(1, 58) = 10.24$**
Perf.-approach	57	.588	.374	1.57	2.85	.033	$F(1, 46) = 2.48$
Perf.-avoidance	58	.336	.267	1.26	0.00	.025	$F(1, 46) = 1.58$
Conscientiousness	19	.486	.379	1.28	0.98	.025	$F(1, 11) = 1.65$
Neuroticism	13	−.773	.489	−1.58	4.69	.031	$F(1, 7) = 2.50$
Gender[a]	58	−.532	.227	−2.35*	13.59	.010	$F(1, 46) = 1.09$*
Achievement	59	−.653	.152	−4.29**	22.03	.009	$F(1, 42) = 18.43$**

Note. k = number of effect sizes; b = cluster robust estimated regression coefficient of the moderator in the mixed effects meta-analytic model; SE = standard error of b; t = t test for significance of b; p = p value of t test; R^2 = pseudo R^2 indicating the amount of heterogeneity explained by the moderator; τ^2 = between-study variance in observed correlations; F = omnibus test statistics of moderators according to the Knapp and Hartung (2003), df = respective degrees of freedom; reliability of the self-handicapping scale: Cronbach's α was coded from the primary samples if available, in other cases Cronbach's α from the original study presenting the respective questionnaire was used unless the scales were changed.
[a] Gender coded 0 for men and 1 for women.
* $p < .05$.　** $p < .01$.

academic self-handicapping. Therefore, we developed an integrative theoretical framework based on already existing theories (e.g., Boekaerts, 2011; Covington, 2004; Dweck, 2017; Midgley et al., 1996; Rhodewalt & Tragakis, 2002) to structure possible antecedents of self-handicapping. In this context, we examined self-related beliefs (e.g., self-esteem level), emotional-motivational variables (e.g., achievement goals), and personality traits (e.g., conscientiousness). By examining the relationships between the aforementioned antecedents and self-handicapping in the academic domain we sought to provide a rank order of mean correlations that enables researchers to identify the most relevant risk and resilience factors for self-handicapping. Based on findings from a previous meta-analysis (Schwinger et al., 2014), another aim of this meta-analysis was to examine the moderating impact of different self-handicapping questionnaires.

Mean Effect Sizes

The various self-related beliefs were found to be associated with academic self-handicapping in the anticipated directions, that is, substantive negative correlations were revealed for self-esteem level, self-concept, and self-efficacy. Regarding the selected emotional-motivational variables, fear of failure, test anxiety, an entity theory of ability as well as performance-approach and -avoidance goals showed positive relationships with self-handicapping. In contrast, mastery-approach goals as well as an incremental theory of ability displayed negative correlations. With respect to personality traits, the presumed negative correlation was confirmed for conscientiousness as well as the positive correlation for neuroticism. Moreover, prior levels of achievement had the suggested negative effect (cf. Schwinger et al., 2014). Overall, the directions of the estimated mean correlations were in line with our theoretical expectations, as well as general theoretical assumptions in the literature (e.g., Rhodewalt & Tragakis, 2002).

Another aim of this meta-analysis was to provide a rank order of possible antecedents of self-handicapping. Based on the

guidelines for effect sizes suggested by Hattie (2009), large effects ($r = .30$) were found for self-esteem level, ability self-concept, fear of failure, conscientiousness, and neuroticism. Moderate effects ($r = .20$) could be identified for self-efficacy, entity theory of ability, incremental theory of ability, test anxiety, performance-avoidance goals, and prior achievement. Small ($r = .10$) effects were determined for mastery-approach and performance-approach goals and gender. However, to bring the various effects into a meaningful rank order, it is additionally necessary to see in which cases the confidence intervals do not overlap. For example, for fear of failure and neuroticism the confidence intervals show substantial overlaps with those for test anxiety and performance-avoidance goals indicating nonsignificant differences in effect sizes.

In sum, the meta-analytic results suggest that academic self-handicapping is mainly driven by personality traits. Moreover, stable, trait-like factors such as self-esteem level, self-concept, or fear of failure which are shaped by socialization processes early in life seem to be relevant antecedents. In this context it seems plausible that self-handicapping might be developed early in life as well due to the manifestation of one's unstable or low self-worth and the focus on social comparisons (i.e., the fear of appearing stupid toward significant others, Urdan & Midgley, 2001). With regard to our theoretical framework, our assumptions of the assumed risk and resilience factors associated with self-handicapping are supported meta-analytically. Hence, conscientiousness, mastery-approach goals, and an incremental theory of ability can be seen as protective factors. In other words, as Boekaerts (2011) proposed in her dual processing self-regulation model, a mastery mode, but also scoring high in conscientiousness might be associated with positive cognitions and might prevent self-handicapping behavior. This seems plausible given the substantial associations between conscientiousness and subjective well-being (e.g., Hayes & Joseph, 2003). The coping mode might elicit a focus on the self and is associated with negative emotions and with emotional-motivational variables such as test anxiety

Table 5
Moderating Effects of Type of Self-Handicapping Scale

Measure	ASHS				SHS & short SHS				Others including MES						
	k	b_0	SE	r, 95% CI	k	b_1	SE	r, 95% CI	k	b_2	SE	r, 95% CI	R^2 %	τ^2	F, [$df1$, $df2$]
Self-esteem level	21	−.236**	.025	−.232 [−.278, −.184]	41	−.203**	.039	−.413 [−.462, −.361]	13	−.058	.074	−.283 [−.408, −.154]	20.30	.029	$F(2, 62) = 13.81$**
Self-efficacy	26	−.211**	.022	−.208 [−.249, −.166]	14	−.103*	.049	−.304 [−.382, −.222]	17	−.082**	.028	−.285 [−.317, −.252]	15.08	.006	$F(2, 47) = 4.87$*
Ability self-concept	18	−.301**	.035	−.292 [−.360, −.222]	4	−.031	.069	−.320 [−.437, −.193]	5	−.144	.096	−.417 [−.562, −.247]	8.68	.017	$F(2, 13) = 1.12$
Entity theory	14	.234**	.023	.229 [.182, .275]	7	−.127**	.044	.106 [.028, .182]	8	.119*	.047	.338 [.261, .411]	48.86	.007	$F(2, 18) = 7.88$**
Incremental theory	9	−.288*	.055	−.280 [−.388, −.165]	0	—		—	7	.134	.097	−.173 [−.340, .005]	6.88	.024	$F(1, 10) = 1.36$
Fear of failure	6	.234**	.054	.230 [.165, .270]	2	.437**	.057	.586 [.556, .613]	6	.260*	.114	.457 [.261, .617]	48.02	.026	$F(2, 9) = 30.13$**
Test anxiety	8	.250**	.020	.245 [.205, .283]	9	.163**	.049	.391 [.311, .465]	17	.024	.033	.267 [.216, .317]	20.66	.010	$F(2, 26) = 5.48$*
Mastery-app. goals	43	−.185**	.017	−.183 [−.216, −.149]	10	.061	.039	−.123 [−.205, −.039]	25	−.049	.026	−.230 [−.268, −.192]	9.10	.007	$F(2, 63) = 3.46$*
Perf.-app. goals	38	.052	.036	.052 [−.020, .125]	7	−.042	.093	.010 [−.162, .182]	17	.115	.059	.165 [.071, .256]	8.31	.031	$F(2, 49) = 2.43$
Perf.-avoi. goals	36	.218**	.024	.214 [.167, .260]	7	.029	.053	.241 [.151, .327]	19	.177**	.033	.375 [.310, .436]	25.93	.028	$F(2, 48) = 8.33$**
Conscient.	4	−.373**	.048	−.357 [−.440, −.363]	13	−.152*	.067	−.481 [−.549, −.404]	4	.091	.075	−.274 [−.369, .174]	36.81	.016	$F(2, 12) = 7.61$**
Neuroticism	0	—		—	10	.503**	.047	.465 [.379, .543]	6	−.261**	.050	.237 [.175, .298]	67.50	.009	$F(1, 10) = 27.34$**
Gender[a]	22	−.066**	.021	−.068 [−.108, −.024]	19	.153**	.031	.086 [.040, .133]	22	.015	.030	−.081 [−.128, −.034]	47.66	.006	$F(2, 50) = 17.20$**
Achievement	24	−.227**	.022	−.223 [−.265, −.181]	30	.123**	.033	−.104 [−.154, −.053]	11	.000	.038	−.223 [−.281, −.164]	31.89	.009	$F(2, 36) = 8.00$**

Note. k = number of effect sizes; b = cluster robust estimated regression coefficient of the moderator in the mixed effects meta-analytic model; ASHS/PLAS was used as the reference category b_0, b_1 and b_2 reflect slopes except for the association with neuroticism, for which the SHS/short SHS served as the reference category with b_1 reflecting the intercept and b_2 reflecting the slope in this line; SE = standard error of b; r = estimated average correlation between determinant and self-handicapping at the respective factor level transformed back from Fisher's Z to r; CI = lower and upper limits of 95% confidence interval transformed back from Fisher's Z to r; R^2 = pseudo R^2 indicating the amount of heterogeneity explained by the moderator; τ^2 = between-study variance in observed correlations, F = omnibus test statistics of moderators according to the Knapp and Hartung (2003). df = respective degrees of freedom; ASHS = Academic Self-Handicapping Scale (Midgley & Urdan, 1995); SHS = Self-Handicapping Scale, Jones and Rhodewalt (1982); Short SHS = Short Self-Handicapping Scale (Rhodewalt, 1990; Strube, 1986); MES = Motivation an Engagement Scale (Martin et al., 2003).

[a] Gender coded 0 for men and 1 for women.

* $p < .05$. ** $p < .01$.

or avoidance goals, but also with neuroticism. However, because our analyses are just correlational, we can just speculate about the causal orderings of the considered variables. Hence, future longitudinal or experimental research could test our proposed theoretical assumptions. As also other important theoretical models assume recursive paths (without testing them adequately), future studies should explicitly examine the causal ordering of the above-mentioned variables.

Moderator Analyses for Self-Handicapping Operationalizations

For most investigated antecedents, we found divergent effect sizes dependent on the type of self-handicapping scale used. A closer inspection of the nature of these moderator effects revealed that studies using the ASHS by Midgley and colleagues differed remarkably from those using the SHS by Jones and Rhodewalt. Specifically, studies built on the SHS resulted in highest correlations for rather general, attitude-based, avoidance-oriented factors such as fear of failure, self-esteem level, and avoidance-focused achievement goals. In studies using the ASHS, correlations with self-handicapping were sometimes higher for context-specific, behavior-related factors such as entity theory. Although there were also some antecedents that showed similar importance to self-handicapping across both types of questionnaires, the differences appear considerable as they suggest a different type of rank order for risk and resilience factors of self-handicapping.

As argued in the theory section, the instruments used to assess self-handicapping differ in several ways. In fact, the SHS items are only partially in line with Urdan and Midgley (2001) required features of a valid self-handicapping item, and the criteria that the items meet are not consistent across all SHS items. Moreover, the SHS assesses rather undifferentiated avoidance behavior, and agreement with items on the SHS can be justified by several reasons other than self-handicapping. With regard to the underlying specificity of self-handicapping measures, for instance, the ASHS and the MES measure self-handicapping more directly in terms of concrete behaviors and have also motives built into the self-handicapping items, whereas the SHS rather assesses individual differences in the tendency to engage in self-handicapping behaviors. That is, the SHS operationalizes self-handicapping as a more distal construct like a broad personality trait. It is thus not surprising that this kind of global construct assessment results in higher correlations with rather globally formulated antecedents such as fear of failure and self-esteem (Baranik et al., 2010). Importantly, although the overall association between self-handicapping and gender was not significant, when the associations were computed separately for the self-handicapping operationalizations, three significant effects emerged. Two of these effects were negative (ASHS and others) indicating a stronger likelihood for men to self-handicap and one positive (SHS), indicating women to be more likely to report avoidance behavior. This points toward gender differences in responses to these questionnaires.

Possible Interactions Between Antecedents of Self-Handicapping

As moderator analyses have shown, there is not a unique rank order of antecedents of academic self-handicapping which could be applied to create tailored intervention programs. Instead, researchers and practitioners have to carefully consider individual and contextual conditions under which they seek to prevent students from self-handicapping. A further shortcoming of a meta-analysis such as the one provided here is the restricted focus on main effects. This is problematic on the one hand because we could not control for shared variance among antecedents; that is, some of the notable antecedents might drop out once they accounted for variance shared with other antecedents. On the other hand, our results do not allow us to derive inferences on the interactive effects of these different predictors on the use of self-handicapping strategies.

This is a significant pitfall because both empirical evidence and theoretical suggestions lead us to presume numerous interactions between the antecedents considered in this meta-analysis. For example, Schwinger and Stiensmeier-Pelster (2011) found that the pursuit of mastery goals buffers the relations between self-handicapping and low self-esteem as well as between self-handicapping and high performance-avoidance goals. Moreover, studies revealed interactive effects of self-esteem level and stability in the way that people with low and unstable self-esteem use self-handicapping more often than people with high and stable self-esteem (Spalding & Hardin, 1999; Tice, 1991). In a similar vein, Chen et al. (2009) found that the frequency of self-handicapping behavior as a result of fear of failure also depended on the type of achievement goal the students adopted. Also, Niiya et al. (2010) showed in experimental studies that incremental theories about one's ability were only associated with less self-handicapping behavior for students with low contingencies of self-worth. Students with incremental theories and a highly contingent self-esteem facing a difficult task self-handicapped just as much or even more as highly contingent entity theorists. Taking into account interactions between self-handicapping predictors can thus provide important insights for interventions, for example, which self-related beliefs are promising targets for interventions either by themselves or only jointly with other predictors.

Overall, however, it can be concluded (a) that the number of studies investigating such interactive impacts of antecedents of self-handicapping is rather small, (b) that so far not all conceivable constellations have been considered, and (c) that the moderation effects discussed in this meta-analysis should be included in the interpretation of such interactive effects at least to the same extent. A suitable way to address this complex research question could be to use a person-centered approach. Compared with traditional variable-centered approaches, the use of a person-centered analysis perspective enables researchers to grasp the complexity of human self-regulation in more detail (Bergman & Andersson, 2010; Schwinger et al., 2012, 2016). There are already some promising studies in this regard that used a small subset of the antecedents considered here as indicators of individual profiles and subsequently linked them to academic self-handicapping. Kärchner and Schwinger (2018), for instance, identified latent profile groups based on students' self-esteem level, stability, and contingency. Results revealed highest self-handicapping values for students holding a "low-unstable-contingent" and those with a "unstable-contingent" self-esteem profile. These preliminary studies notwithstanding, more research is clearly needed on individual profiles of a broad range of antecedents of academic self-handicapping.

Comparison of Self-Handicapping Meta-Analyses

To our knowledge, there is only one other meta-analysis on the phenomenon of self-handicapping in the academic domain besides the one presented here (Schwinger et al., 2014), so we will briefly compare them here. The main difference is in the objectives. As graphically illustrated in Figure 1, Schwinger et al. (2014) focused exclusively on the association with academic achievement, whereas the meta-analysis presented here focuses exclusively on potentially significant antecedents. The Schwinger et al. (2014) meta-analysis was based on 36 studies, whereas the one presented here was based on 159 studies. Eighteen of these studies were included in both meta-analyses, but rarely with the same correlations, so the data overlap should be considered small. On the other hand, there is a large overlap in the moderator variables considered, which, however, seems to be understandable due to the theoretical foundation of self-handicapping research. Combining the findings of both meta-analyses yields a comprehensive overview of antecedents and consequences of self-handicapping, even though further differentiated studies are still needed, especially on the outcome side.

Self-Handicapping Interventions

The results of our meta-analysis can give some important indications regarding self-handicapping interventions. However, it is again important to mention that our results are just correlational and hence, we can just give some suggestions. The fact that variables that can be influenced more easily by interventions (e.g., achievement goals, incremental beliefs) appear at first glance to be less important factors, seems discouraging with regard to the question of how habitual self-handicapping can be reduced through systematic training. At second glance, however, these rather changeable variables also appear to explain a substantial amount of variance in academic self-handicapping, which means that their optimization is still likely to yield a practical benefit. A specific intervention strategy should thus be based on two points, first, on the question of stability or changeability of the respective determining factor, and second, on the significance of this factor for the development and maintenance of self-handicapping, as determined in this meta-analysis by the respective effect size. Furthermore, it has to be noted that the ranking of the most important antecedents changes significantly when considering moderators such as the type of self-handicapping scale.

Because there are still fewer available standardized trainings focusing directly on reducing self-handicapping (e.g., Kearns et al., 2007), it might be useful to refer to motivational trainings instead. In this context, Martin (2005) already found hints that workshops focusing on students' motivation and engagement were also effective in reducing self-handicapping. Future studies could explicitly examine the effects of emotional-motivational trainings over and above other self-handicapping interventions such as different cognitive–behavioral techniques (Kearns et al., 2007; Török et al., 2018). Moreover, because conscientiousness was the most important predictor of self-handicapping in our analyses, one could also refer to interventions used for increasing conscientiousness. Although the change of this personality trait seems to be limited (but see the "Free Trait Theory"; Little, 1996), there are several

cognitive–behavioral techniques that seem promising (e.g., Javaras et al., 2019).

Limitations and Conclusion

As an important limitation, we predominantly used cross-sectional correlations regarding the associations between self-handicapping and the investigated antecedents. The few existing longitudinal studies and the theoretical assumptions of the Self-Handicapping and Self-Regulation Cycle (Rhodewalt & Tragakis, 2002) indicate that the investigated variables can actually be treated as determinants. However, more research is needed investigating longitudinal and reciprocal effects. A further limitation of the current meta-analysis is its focus on bivariate correlations because they do not take into account the influence of potential confounding variables or other predictors and their interaction. Future meta-analyses on this topic may therefore aggregate associations from multivariate designs to disentangle unique associations between self-handicapping and its determinants as well as relations between determinants to obtain a more detailed picture of the mechanisms influencing self-handicapping. This was not yet feasible in the current study because there were not enough studies reporting identical multivariate designs (including the same number and quality of covariates), which would have made the interpretation of aggregated partial correlations of betas from these designs difficult. In this regard, preregistered prospective meta-analyses (Patall, 2021) represent an interesting methodological option for systematic improvement of the comprehensive empirical evidence on this topic.

One may further criticize our selection of possible antecedents of self-handicapping. Of course, it would be interesting to investigate associations with other possible determinants but also with effects of self-handicapping (e.g., regarding learning behavior or subjective well-being). The narrow focus on just two moderator variables can be critically discussed as well, additional moderators such as the specific domain (e.g., mathematics or verbal subjects) or a student's ability level could be considered in further analyses (Török et al., 2018). Another option would be to focus on the measurement scales of the various antecedents. Given the quantity and heterogeneity of the constructs involved, it seems difficult to formulate clear theory-driven hypotheses here. Explorative analyses could nevertheless provide exciting insights here, including the question whether there are higher (or more distinct) associations between antecedents and self-handicapping when they are from the same instrument (like in PALS, e.g., see Midgley et al., 2000). Furthermore, it might additionally be relevant to differentiate between claimed and behavioral self-handicapping in more detail (Schwinger et al., 2014; Török et al., 2018). Most of the questionnaires include both forms of self-handicapping, although the SHS includes predominantly claimed self-handicapping items compared with the ASHS or MES. Further research could address the separation of both components and could additionally take the domain specificity (Schwinger, 2013) and different forms of the construct (e.g., procrastination) into account.

Another interesting limitation refers to the fact that the questionnaires considered in our meta-analysis might not be valid to assess self-handicapping at all. Regarding the question whether self-handicapping is a conscious or unconscious process, there is no clear opinion in the literature. If students are not aware that, for

example, they have stopped studying early to avoid attributing the impending failure in the exam to a lack of ability, they will consequently not report this in the questionnaire. Still, even if they are aware of the mechanisms of self-handicapping, they will not necessarily indicate this either as this would depend on the will to publicly admit this very personal behavior. In this respect, however, studies show that the correlations between self-handicapping and relevant correlates remain the same when controlling for social desirability (e.g., Schwinger & Stiensmeier-Pelster, 2012), which would tend to support the validity of measuring self-handicapping by questionnaire.

Despite these shortcomings, we conducted a comprehensive meta-analysis on various antecedents of self-handicapping mentioned in previous theoretical models. Besides personality traits and self-related beliefs, we found hints that emotional-motivational variables show substantial associations with self-handicapping, especially when the ASHS is used. Our results provide important implications for self-handicapping prevention and therapy. Besides cognitive–behavioral techniques addressing especially the increase of self-esteem, further motivational trainings could be used in reducing self-handicapping as well. However, testing the effectiveness of emotional-motivational trainings in reducing self-handicapping behavior could be a promising goal for future research.

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