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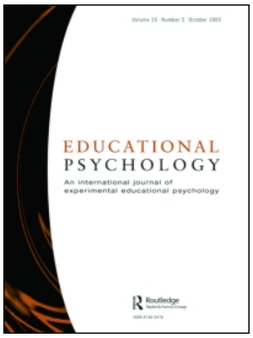

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The 3 × 2 Achievement Goal Questionnaire for Teachers

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Within the past decade, the achievement goal approach has begun to be used to study teacher achievement motivation. In recent research with students, a 3 × 2 model of achievement goals has been proffered that separates mastery-based goals in terms of a task/self distinction. The purpose of the present study was to extend this 3 × 2 model to teachers in order to provide important insights into teachers' individual differences. We devised items for the questionnaire and showed that data obtained with the 3 × 2 Achievement Goal Questionnaire for Teachers fit the 3 × 2 model (in absolute terms and relative to 10 alternative models) and that each goal of the model exhibited good internal consistency. In addition, we linked the 3 × 2 goals to other key constructs relevant to achievement goals, namely, implicit theories of ability, instructional practices and intrinsic interest.

Keywords: teacher motivation; achievement goals; 3 × 2 model; implicit theories; instructional practices

Introduction

Over the past 30+ years, a voluminous amount of research has been conducted on students' achievement goals in school settings. The accumulated literature has provided broad and deep insight into the nature of achievement motivation for students in the classroom (for reviews, see Elliot, 2005; Hulleman, Schrager, Bodmann, & Harackiewicz, 2010; Kaplan & Maehr, 2007; Van Yperen, Blaga, & Postmes, 2014). Achievement goals represent strivings focused on competence – on how well or poorly one is doing at a task or activity. Students are not the only individuals in the classroom who are motivated with regard to competence; teachers also strive to do well and avoid doing poorly (Butler, 2007). As such, teachers' achievement goals, much like students' achievement goals, are an important area of study.

Surprisingly, until quite recently, teachers' achievement goals have been overlooked in the literature. It is only within the past decade that researchers have begun to develop measures of achievement goals for teachers that have allowed empirical work to be conducted (e.g. Butler, 2007; Fasching, Dresel, Dickhäuser, & Nitsche, 2010; Nitsche, Dickhäuser, Fasching, & Dresel, 2011, 2013; Papaioannou & Christodoulidis, 2007; Retelsdorf & Günther, 2011). In the present research, we report research designed to develop a 3 × 2 achievement goal measure for teachers. Research utilising a 3 × 2 achievement goal model has yet to be conducted, despite

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this model providing added precision relative to other, less differentiated models. Research to date has demonstrated the importance of attending to the added precision of the 3 × 2 model with students in different domains of study (see Elliot, Murayama, & Pekrun, 2011; Mascret, Elliot, & Cury, 2015); we anticipate the same with regard to teachers. Prior to describing the specifics of the present research, we provide an overview of the conceptual models of achievement goals used in research with students, as well as an overview of the research conducted to date on teachers' achievement goals.

Models used in the study of students' achievement goals

The initial conceptualisation of achievement goals was a dichotomous model that emerged in the late 1970s and early 1980s (Dweck & Elliott, 1983; Maehr & Nicholls, 1980; Nicholls, 1984). This dichotomous model distinguished between two qualitatively distinct forms of competence strivings: mastery goals and performance goals (see Ames, 1992, for terminological considerations). A mastery goal was conceptualised in terms of striving to develop competence through task mastery and improvement; a performance goal was conceptualised in terms of striving to demonstrate competence relative to others (for measures, see Meece, Blumenfeld, & Hoyle, 1988; Nicholls, Patashnick, & Nolen, 1985).

In the mid-1990s, this dichotomous model was expanded to a trichotomous model by bifurcating the performance goal construct with regard to the distinction between approaching success vs. avoiding failure (Elliot & Harackiewicz, 1996). The resulting model comprised a mastery approach goal comparable to that from the dichotomous model, a performance-approach goal focused on doing well compared to others and a performance-avoidance goal focused on not doing poorly compared to others (for measures, see Elliot & Church, 1997; Middleton & Midgley, 1997).

The trichotomous model was extended to a 2 × 2 model a few years later via the full crossing of the definition component of competence (i.e. mastery/performance) and the valence component of competence (i.e. approaching the positive possibility of success/avoiding the negative possibility of failure; Elliot, 1999; Pintrich, 2000). That is, the mastery goal construct, like the performance goal construct, was bifurcated with regard to the approach-avoidance distinction, yielding an additional, avoidance-based, mastery goal. This fourth goal was labelled a mastery-avoidance goal and was conceptualised in terms of not doing poorly relative to task demands or one's own performance trajectory (for measures, see Elliot & McGregor, 2001; Van Yperen, 2006).

The most recent conceptual development in the achievement goal literature involved extending the 2 × 2 model to a 3 × 2 model by bifurcating mastery-based goals into separate task-based and self-based categories (Elliot et al., 2011). In this model, three definitions of competence are identified according to the standard used to determine competence – the absolute demands of the task, one's own trajectory and how others do (i.e. task/self/other) – and these are fully crossed with the valence of competence (i.e. approaching the positive possibility of success/avoiding the negative possibility of failure). This produces six goals, specifically: a task-approach goal focused on attaining task-based competence (e.g. doing the activity the way it was designed to be done), a task-avoidance goal focused on avoiding task-based incompetence (e.g. not failing to do the activity the way it was designed to be done), a self-approach goal focused on self-based competence (e.g. doing better than

before), a self-avoidance goal focused on self-based incompetence (e.g. not doing worse than before), an other-approach goal focused on attaining other-based competence (e.g. doing better than others) and and an other-avoidance goal focused on avoiding other-based incompetence (e.g. not doing worse than others; for measures assessing students' 3 × 2 achievement goals, see Elliot et al., 2011; Johnson & Kestler, 2013; Wu, 2012; for a measure assessing 3 × 2 achievement goals in the sport and exercise domain, see Mascret et al., 2015).

Prior research on teachers' achievement goals

Research on teachers' achievement goals did not emerge until the mid-2000s. Although considerable research prior to this time had been conducted on students' perceptions of the classroom environment established by teachers (for reviews, see Meece, Anderman, & Anderman, 2006; Skaalvik & Skaalvik, 2013; Urdan & Turner, 2005), direct research on teachers' personally endorsed achievement goals had not yet been conducted. Likewise, although some research had been conducted on the amount or quantity of teachers' motivation (e.g. Davis & Wilson, 2000; Tschannen-Moran, Woolfolk-Hoy, & Hoy, 1998), empirical work on teachers' qualitatively distinct competence-relevant strivings had been overlooked. As noted by Butler (2007), achievement goals are clearly applicable to teachers as well as students because school is an achievement arena for teachers in which they engage in various forms of competence-relevant pursuits. As such, achievement goals are as central to an understanding of teachers' achievement motivation as they are to an understanding of students' achievement motivation.

Only a few studies on teacher achievement goals have utilised the dichotomous model (Paulick, Retelsdorf, & Möller, 2013) or focused on one of the two omnibus goals in this model (Parker, Martin, Colmar, & Liem, 2012; Runhaar, Sanders, & Yang, 2010). Nearly all of the extant research on teacher achievement goals has utilised the trichotomous model, sometimes alone (Cho & Shim, 2013; Daniels, Frenzel, Stupnisky, Stewart, & Perry, 2013; Kucsera, Roberts, Walls, Walker, & Svinicki, 2011; Papaioannou & Christodoulidis, 2007; van Daal, Donche, & De Maeyer, 2014) and sometimes in conjunction with alternative goals, such as work-avoidance goals (i.e. striving to exert as little effort as possible; Butler, 2007; Fasching et al., 2010; Retelsdorf & Günther, 2011) or relational goals (i.e. striving to attain caring personal relationships with students; Butler, 2012; Butler & Shibaz, 2014). Research utilising either the 2 × 2 or 3 × 2 achievement goal models is yet to be conducted.

The existing research on teachers' achievement goals has linked them to a variety of different variables. In the main, the pattern of findings corresponds to that observed for students' achievement goals: mastery(-approach) goals are connected to a positive nomological network, performance-avoidance goals are connected to a negative nomological network and performance-approach goals yield a mixed, and often null, set of results. More precisely, mastery-approach goals have been shown to be positively related to variables such as perceiving benefits from help seeking, perceived competence, job satisfaction and positive attitudes towards work (Butler, 2007; Butler & Shibaz, 2008; Cho & Shim, 2013; Fasching et al., 2010; Gorozidis & Papaioannou, 2011; Kucsera et al., 2011; Nitsche et al., 2011, 2013; Papaioannou & Christodoulidis, 2007; Paulick et al., 2013; Runhaar et al., 2010) and negatively related to variables such as stress and burnout (Fasching et al., 2010; Retelsdorf,

Butler, Streblow, & Schiefele, 2010); performance-avoidance goals have been shown to be positively related to variables such as perceiving help seeking as a threat, student cheating, stress, burnout and an emphasis on surface learning (Butler & Shibaz, 2008; Fasching et al., 2010; Nitsche et al., 2011, 2013; Paulick et al., 2013; Retelsdorf & Günther, 2011) and negatively related to variables such as job satisfaction and attitudes towards work (Butler & Shibaz, 2008; Kucsera et al., 2011; Nitsche et al., 2013; Papaioannou & Christodoulidis, 2007); performance-approach goals have been shown to be unrelated to variables such as help seeking behaviour and job satisfaction (Butler, 2007; Butler & Shibaz, 2014; Fasching et al., 2010; Nitsche et al., 2011; Papaioannou & Christodoulidis, 2007) and have shown a mixed pattern of positive and null relations for variables such as perceived competence, attitudes towards work and stress (Butler, 2007; Cho & Shim, 2013; Fasching et al., 2010; Gorozidis & Papaioannou, 2011; Kucsera et al., 2011; Nitsche et al., 2011, 2013; Paulick et al., 2013). We review additional research on links between achievement goals and other variables below (those most directly relevant to the present research).

The present research

The purpose of the present research was to create and test the psychometric properties of a 3 × 2 Achievement Goal Questionnaire for Teachers (AGQ-T) and to examine relations between the goals of the 3 × 2 model and several key variables in the achievement goal literature. The variables that we selected for this study are implicit theories of ability, instructional practices and intrinsic interest. These variables are either central to theoretical accounts of achievement goals (implicit theories of ability and intrinsic interest) or are of direct applied importance with regard to teacher motivation (instructional practices).

Beliefs about teaching knowledge and teaching ability are influenced by several factors (Fives & Buehl, 2008). One such factor that has received extensive attention in the achievement goal literature is implicit theories of ability, which represents a person's lay theories or beliefs about the nature of ability. In entity theory, ability is portrayed as a fixed capacity that cannot be changed, whereas in incremental theory, ability is portrayed as changeable through effort and persistence (Dweck, 1999). Entity theory is thought to focus individuals on the demonstration of ability, particularly with regard to normative standards; thus, this theory is likely to be positively related to performance-based goals. Incremental theory is thought to be conducive to the development of ability and a focusing on the demands of the task per se; thus, this theory is likely to be positively related to mastery-based goals. The existing literature on teacher achievement goals is not much of a guide in this instance, as only one relevant study has been published and it assessed entity theory alone. Shim, Cho, and Cassady (2013) found a negative relation between entity theory and mastery-approach goals, which they interpreted as consistent with a positive relation between incremental theory and mastery-approach goals; entity theory was unrelated to performance-based goals. In the present study, on the basis of existing theory and research, we anticipated that entity theory would be positively related (or, possibly, unrelated) to other-based goals and that incremental theory would be positively related to task-based goals, self-based goals or both.

Instructional practices have received considerable attention in the achievement goal literature, particularly with regard to their influence on mastery-based and

performance-based goal adoption (Ames, 1992; Lau & Lee, 2008; Lüftenegger, van de Schoot, Schober, Finsterwald, & Spiel, 2014). The types of instructional practices considered herein are the mastery- and performance-based emphases and policies that teachers use that create the classroom goal structure or climate. Mastery-oriented practices entail using optimally challenging tasks, encouraging effort and highlighting improvement, whereas performance-oriented practices entail focusing on grades and correct answers, using normative grading structures and highlighting or rewarding high ability or competitive achievement (Anderman & Wolters, 2006; Kaplan, Middleton, Urdan, & Midgley, 2002). It seems straightforward to posit that instructional practices and teacher goals of the same focus (i.e. both mastery-based or both performance-based) would be positively related to one another. The existing literature on teacher goals has borne this out to a large degree. Mastery-oriented practices have repeatedly been shown to be positively related to mastery-approach goals and unrelated to performance-approach and performance-avoidance goals; performance-oriented practices have shown to be positively related, but sometimes unrelated, to both performance-approach and performance-avoidance goals and are consistently unrelated to mastery-approach goals (Butler, 2012; Cho & Shim, 2013; Daniels et al., 2013; Dresel, Fasching, Steuer, Nitsche, & Dickhäuser, 2013; Retelsdorf et al., 2010; Retelsdorf & Günther, 2011; Shim et al., 2013). In the present study, on the basis of existing theory and research, we anticipated that mastery-oriented practices would be positively related to task-based goals, self-based goals or both and would be unrelated to other-based goals; performance-oriented practices were expected to be positively related to other-based goals and unrelated to task-based and self-based goals.

Intrinsic interest is a person's interest in and enjoyment of an activity for its own sake (Deci & Ryan, 1985; Lepper, Greene, & Nisbett, 1973) and is considered a gold standard outcome in research on achievement motivation. This variable is viewed as a purely appetitive form of motivation and is likely to be positively related to approach-based goals. Mastery-approach goals are the most purely appetitive form of regulation, as performance-approach goals are often grounded in both appetitive and aversive tendencies (Elliot & Thrash, 2002); thus, mastery-approach goals are most likely to be positively related to intrinsic interest. The negative focus of avoidance-based goals (of any type) is presumed to be antagonistic to intrinsic interest, performance-avoidance goals perhaps particularly so, given that they represent a combination of normative and aversive foci. The existing literature on teacher achievement goals has found a positive relation between intrinsic interest and mastery-approach goals, both positive and null results for performance-approach goals and null results for performance-avoidance goals (Butler & Shibaz, 2014; Paulick et al., 2013; Retelsdorf et al., 2010). In the present study, on the basis of existing theory and research, we anticipated that intrinsic interest would be positively related to task-approach goals, self-approach goals or both; that it would be positively related or unrelated to other-approach goals; and that it would be negatively related or unrelated to avoidance-based goals.

Method

Participants and procedure

The sample comprised 304 teachers (184 female, $\text{Mean}_{\text{age}} = 38.25$, $\text{SD}_{\text{age}} = 9.82$) from 21 French college (ages 11–15) and lycee (ages 15–18) schools in the

Marseilles area. Permission was granted by the school principal to contact teachers directly; teachers participated voluntarily. Participants completed a questionnaire containing the focal constructs either individually or in a small group (3–4 people).

No manipulations and no data exclusions were used in this study and all variables that were analysed are reported. Sample size was based on the maximum number of participants that could be recruited during a predetermined period of data collection.

Measures

Achievement Goal Questionnaire for Teachers

A series of pilot studies was conducted prior to the study presented herein. The 18 items of Elliot et al.'s (2011) 3 × 2 AGQ, designed for students, were translated, back-translated and revised for applicability to teachers. Following Elliot et al.'s (2011) procedure, item pools were generated to correspond to each goal construct with regard to teaching; a variety of different item sets were tested on several different teacher samples. Participants were informed that they would be shown statements representing types of goals that they may have when they teach their students; they were instructed to respond on 1 (*strongly disagree*) to 7 (*strongly agree*) scales. At the completion of the pilot work, three items were chosen to represent each achievement goal (see Appendix 1 for an English translation of the original French); these item sets were selected on the basis of factorial separation, reliability and face valid coverage of the focal construct. A separate sample of teachers completed the 18 items of the AGQ-T.

Implicit theories of intelligence

We assessed entity and incremental theories of intelligence with Da Fonseca et al.'s (2007) six-item French measure. Three items assess entity theory (e.g. 'It's difficult to change your intelligence level') and three items assess incremental theory (e.g. 'You have to work hard to be intelligent'). Participants responded on 1 (*strongly disagree*) to 7 (*strongly agree*) scales. A confirmatory factor analysis (CFA) supported the hypothesised two-factor structure: $\chi^2(8, N = 304) = 14.12$, $p = .08$, CFI = .99, IFI = .99, ECVI = .13, RMSEA = .050. The standardised factor loadings ranged from .57 to .85; α_s were 77 and .80, respectively.

Instructional practices

We assessed mastery- and performance-oriented teaching practices with Midgley et al.'s (2000) measure from the Patterns of Adaptive Learning Scales. Four items assess mastery-oriented practices (e.g. 'I make a special effort to recognise students' individual progress, even if they are below grade level'); five items assess performance-oriented practices (e.g. 'I encourage students to compete with each other'). The original English version was translated into French and then back-translated. Participants responded on 1 (*strongly disagree*) to 5 (*strongly agree*) scales. A CFA supported the hypothesised two-factor structure: $\chi^2(26, N = 304) = 71.06$, $p < .001$, CFI = .91, IFI = .92, ECVI = .36, RMSEA = .076. The standardised factor loadings

ranged from .40 to .66; α_s were.59 and $\alpha = .76$, respectively; the weaker alpha for mastery-oriented practices is consistent with other studies (Midgley et al., 2000; Wolters & Daugherty, 2007).

Intrinsic interest

We assessed intrinsic interest with Roth, Assor, Kanat-Maymon, and Kaplan's (2007) four-item intrinsic motivation for teaching measure (e.g. 'When I try to find interesting subjects and new ways of teaching, I do so because it is fun to create new things'). The original English version was translated into French and then back-translated. Participants responded on 1 (*strongly disagree*) to 5 (*strongly agree*) scales. A CFA supported the hypothesised single-factor structure: $\chi^2(2, N = 304) = 3.91$, $p = .14$, CFI = .99, IFI = .99, ECVI = .07, RMSEA = .056. The standardised factor loadings ranged from .61 to .72; α was .77.

Results

CFA, descriptive statistics, internal consistencies and intercorrelations

A CFA was conducted on the covariance matrix of the 18 goal items, and the solution was generated using maximum likelihood estimation. The results supported the hypothesised six-factor structure. The fit statistics met the criteria for a good fitting model: $\chi^2(120, N = 304) = 150.73$, $p < .05$, CFI = .99, IFI = .99, ECVI = .83, RMSEA = .029; the standardised factor loadings ranged from .76 to .95. Alphas for the six achievement goal scales were: task-approach goals (.83), task-avoidance goals (.87), self-approach goals (.88), self-avoidance goals (.94), other-approach goals (.91) and other-avoidance goals (.93). Table 1 provides the descriptive statistics and internal consistencies of the achievement goals' variables and their intercorrelations.

Comparison with alternative models

Additional analyses were conducted to compare the fit of the hypothesised model with 10 alternative models (see Elliot et al., 2011): (1) a *2 × 2* model: approach task-based and self-based goals load together on a joint latent factor, as do avoidance task-based and self-based goals; other-based goals load on their hypothesised latent factors; (2) a *trichotomous* model: task-based and self-based goals load together on a joint latent factor; other-approach and other-avoidance goals load on their hypothesised latent factors; (3) a *dichotomous* model: task-based and self-based goals load together on a joint latent factor and other-based goals load together on another joint latent factor; (4) a *task-approach*/*task-avoidance* model: task-approach and task-avoidance items load together on a joint latent factor and the remaining items load on their hypothesised latent factors; (5) a *self-approach*/*self-avoidance* model: self-approach and self-avoidance items load together on a joint latent factor and the remaining items load on their hypothesised latent factors; (6) an *other-approach/other-avoidance* model: other-approach and other-avoidance items load together on a joint latent factor and the remaining items load on their hypothesised latent factors; (7) an *approach* model: all approach-based items load together on a

Table 1. Descriptive statistics, internal consistencies and intercorrelations among the achievement goals' variables.

Variable	*M*	SD	Observed range	Cronbach's α	1	2	3	4	5	6
1. Task-approach goals	6.68	.60	2–7	.83	–					
2. Task-avoidance goals	6.49	.82	1–7	.87	.48***	–				
3. Self-approach goals	5.55	1.49	1–7	.88	.15**	.10	–			
4. Self-avoidance goals	4.68	1.89	1–7	.94	.13*	.12*	.50***	–		
5. Other-approach goals	1.98	1.31	1–7	.91	−.03	−.17**	.15*	.12*	–	
6. Other-avoidance goals	2.80	1.74	1–7	.93	−.04	−.08	.11	.28***	.38***	–

*$p < .05$; **$p < .01$; ***$p < .001$.

Table 2. Comparison of the hypothesised model and alternative models.

Model	df	χ^2	IFI	CFI	RMSEA	ECVI
3 × 2 Model (baseline model)	120	150.73	.99	.99	.029	.83
2 × 2 Model	129	1412.54	.69	.69	.181	4.94
Trichotomous model	132	1481.12	.72	.72	.184	5.15
Dichotomous model	134	2243.93	.52	.52	.228	7.65
Tap/Tav model	125	413.56	.93	.94	.087	1.67
Sap/Sav model	125	549.99	.89	.89	.106	2.12
Oap/Oav model	125	807.93	.81	.81	.134	2.97
Approach model	129	1490.62	.66	.66	.187	5.20
Avoidance model	129	1894.98	.55	.55	.213	6.53
Definition model	132	1479.72	.66	.6	.184	5.14
Valence model	134	2996.45	.25	.25	.290	11.57

Notes: Tap = task-approach, Tav = task-avoidance, Sap = self-approach, Sav = self-avoidance, Oap = other-approach and Oav = other-avoidance.

joint latent factor and all avoidance-based items load on their hypothesised latent factors; (8) an *avoidance* model: all avoidance-based items load together on a joint latent factor and all approach-based items load on their hypothesised latent factors; (9) a *definition* model: all items sharing a competence definition load together on joint latent factors; and (10) a *valence* model: all items sharing valence load together on joint latent factors. As indicated in Table 2, the hypothesised model provided a better fit to the data than any of these 10 alternative models.

The achievement goals were correlated with the implicit theories of intelligence, instructional practices and intrinsic interest variables. Entity theory was found to be positively related to other-approach goals ($r = .26$, $p < .001$) and other-avoidance goals ($r = .41$, $p < .001$) and negatively related to task-avoidance goals ($r = -.12$, $p < .05$); incremental theory was found to be positively related to self-approach goals ($r = .19$, $p < .01$) and self-avoidance goals ($r = .12$, $p < .05$). Mastery-oriented practices were found to be positively related to task-approach goals ($r = .11$, $p < .05$), whereas performance-oriented practices were found to be positively related to both other-approach goals ($r = .12$, $p < .05$) and other-avoidance goals ($r = .13$, $p < .05$) and negatively related to task-approach goals ($r = -.13$, $p < .05$). Intrinsic interest was found to be positively related to both task-approach ($r = .24$, $p < .001$) and self-approach goals ($r = .21$, $p < .001$) and also task-avoidance goals ($r = .31$, $p < .001$). All correlations are presented in Table 3.

Discussion

This research represents the first application of the 3 × 2 achievement goal model to teachers; indeed, it represents the first application of any achievement goal model beyond the trichotomous model (and variants thereof) to teachers. Our findings provide strong support for the proposal that the 3 × 2 model is relevant to teachers as well as students. We generated a set of items to assess each of the six goals in the model, and a series of CFAs confirmed that the 3 × 2 model not only fit the data well, but did so better than each of 10 alternative models, including the dichotomous, trichotomous and 2 × 2 models. The achievement goal variables were linked to important, competence-relevant constructs – implicit theories of intelligence, instructional practices and intrinsic motivation – in a manner quite consistent with existing theory and empirical work. Our CFA results clearly indicate that teachers differentiate

Table 3. Correlations between achievement goal variables and other variables.

Variable	Entity theory	Incremental theory	Mastery-oriented practices	Performance-oriented practices	Intrinsic interest
Task-approach goals	−.09	−.00	.11*	−.13*	.24***
Task-avoidance goals	−.12*	.06	.09	−.07	.31***
Self-approach goals	.03	.19**	.02	.02	.21***
Self-avoidance goals	.11	.12*	.00	.07	.08
Other-approach goals	.26***	−.00	−.06	.12*	−.04
Other-avoidance goals	.41***	−.10	.05	.13*	.09

*$p < .05$; **$p < .01$; ***$p < .001$.

between task-based and self-based forms of mastery regulation in their goal reports. Furthermore, our findings linking the 3 × 2 goals to implicit theories, instructional practices and intrinsic interest highlighted the importance of separating mastery-based goals according to the task/self distinction. For each measure, differential results were observed for task-based and self-based goals. The most noteworthy of these differential findings were those for incremental theory and for mastery-oriented instructional practices. With regard to incremental theory, which portrays ability as changeable through effort and persistence, it was positively related to self-approach and self-avoidance goals, but was unrelated to task-approach and task-avoidance goals. Conceptually, it makes sense that self-based goals (focused on improvement) would be more closely linked to incremental theory than task-based goals (focused on fully completing or mastering a task). Empirically, if an omnibus mastery goal measure comprised of a combination of task- and self-based items had been used in our study instead of the separate measures, it is likely that the link between this omnibus construct and incremental theory would have been null (thereby masking an important relation). With regard to mastery-oriented instructional practices, they were positively related to task-approach goals, but were unrelated to self-approach goals. This suggests that the specific foci of mastery-oriented practices may be important for determining which type of mastery-based goal is facilitated. In addition, as with incremental theory, if an omnibus mastery goal measure comprised of a combination of task- and self-based items had been used in our study instead of separate measures, it is likely that the link between this omnibus construct and mastery-oriented instructional practices would have been null (thereby masking an important relation).

In the present research, we operationalised teachers' task-based goals in terms of teachers' promoting of student success and avoiding student failure. Student success/failure is one manifestation of teacher task-based competence (Nye, Konstantopoulos, & Hedges, 2004), but other manifestations are also possible. For example, teachers' task-based competence may focus on the degree to which they deeply understand the material they are teaching or the degree to which they teach in a clear and engaging manner. A similar point may be made regarding teachers' self-based goals – our focus herein was on teachers' improvement, but alternative self-based goals are possible as well (e.g. reaching one's full potential; see Elliot, Murayama, Kobeisy, & Lichtenfeld, 2015). Thus, it is important to note that within each of the 3 × 2 goal categories, there must be flexibility with regard to how the goal construct is operationalised; it would be a mistake to rigidly apply the current (or any) achievement goal measure to all achievement contexts without taking this issue into consideration.

It is sensible that the goals of the 3 × 2 model would apply to teachers as well as students because the six goals of the model focus on valenced competence (i.e. various types of doing well and not doing poorly), and competence and incompetence are of considerable importance to both teachers and students alike in the classroom. Although teachers and students adopt and pursue the same general types of achievement goals, their different roles, different tasks and different evaluative contexts undoubtedly mean that the specifics regarding their goal regulation will be somewhat different. That is, teachers are in a role of authority and establish the classroom structure and ethos, have the task of imparting information to and fostering the development of those under their charge and are evaluated individually on their ability to carry out a broad range of responsibilities effectively. Students, in contrast, are in a subservient role in which they primarily respond to the existing classroom structure and ethos, have the task of learning material and performing on examinations and are evaluated en masse on assignments and examinations directly relevant to their cognitive ability. It is likely that these differences have implications for how the same type of achievement goal is utilised and experienced in self-regulation. For example, other-avoidance goals may be less inimical for teachers than for students because for teachers, these goals largely emerge proactively out of the teacher's dispositional tendencies, but for students, these goals may simply be an attempt to cope with a classroom structure that is a poor match to their desired or typical way of orienting to achievement environments (for relevant work on regulatory fit, see Higgins, 2000; Tamir, 2009). The pursuit of other-avoidance goals may also be experienced as less aversive for teachers because evaluation for them is typically more individualised and less directly diagnostic of cognitive ability than it is for students. This may be reflected in the null relation that we observed for intrinsic interest and other-avoidance goals in our study with teachers (see also Paulick et al., 2013; Retelsdorf et al., 2010), in contrast to the negative relation found in many studies with students (for meta-analytic results, see Hulleman et al., 2010).

Establishment of a 3 × 2 measure of achievement goals for teachers (the 3 × 2 AGQ-T) in the present work paves the way for an extensive programme of research on the goals of the 3 × 2 model. In utilising the 3 × 2 AGQ-T measure, it is important to bear in mind that it, like the 3 × 2 AGQ measure for students (Elliot et al., 2011), may be used flexibly. That is, one need not always assess all goals of the 3 × 2 model when studying achievement goals, but instead, one can focus specifically on a subset of the full range of goals, such as approach goals only, other-based goals only or mastery-based goals only. This flexible approach is sensible from a conceptual standpoint, in that some research questions may be of particular importance to a subset of the full range of goals. It is also sensible from a methodological standpoint, in that it may help minimise the multicolinearity that is inevitably produced when one presents a large number of similarly worded achievement goal items to a less than optimally motivated and attentive group of participants (see Krosnick, 1991). Importantly, the 3 × 2 AGQ-T may be used for practical purposes, as well as for research purposes per se. For example, in the process of training teachers, their 3 × 2 goals could be assessed and feedback could be given on the potential positive and negative implications of pursuing (and not pursuing) particular types of goals in the classroom.

Our research is not without limitations. First, it is important to highlight that our research focused on a subset of teaching domains (covering student ages 11–18) and took place in a single country (France). Additional research is needed to examine

the generalisability of our findings to other teaching domains and countries. Second, although we linked the 3 × 2 goals to variables central to the achievement goal literature, there are many other variables that are also in need of being examined to more fully flesh out the nomological network of this framework. Such variables might include job satisfaction, work stress/burnout, pursuit of additional training/knowledge, perceived competence and actual competence (for examples of such work grounded in the trichotomous achievement goal model, see Cho & Shim, 2013; Gorozidis & Papaioannou, 2011; Nitsche et al., 2013; Papaioannou & Christodoulidis, 2007). Third, our research used a single-session survey methodology. Subsequent research would do well to use a broader and more rigorous set of methods, such as prospective and longitudinal designs. Finally, future research could also implement the additional facets of achievement goals that have been proposed by Nitsche et al. (2011), specifically, different domains of teacher knowledge (pedagogical content, subject matter content and pedagogical process) for task- and self-based goals and different external addresses (self, students, colleagues and the principal) for other-based goals. Two things should be kept in mind when focusing on these interesting and promising facets. First, including these facets into an analysis of achievement goals provides additional detail in analysing the 3 × 2 goals, it does not provide additional goal constructs per se; we believe that the 3 × 2 taxonomy comprehensively covers the conceptual space of basic competence-based goal constructs (Elliot et al., 2011). Second, studying external addresses entails including a 'demonstrate to' element to other-based goals; from our perspective, this turns the goal construct into a goal complex construct comprising a goal and a reason for pursuing it (see Elliot & Thrash, 2001).

In closing, a great deal of research on achievement goals has been conducted over the past three and a half decades, but until recently, this empirical work had focused primarily on students and, to a somewhat lesser extent, employees and athletes. Butler (2007) has recently sounded the call for an extension of such work to teachers, and the present research is designed to answer this call using the most fully developed (i.e. differentiated) model in the achievement goal literature. The emerging work on teacher achievement goals has already borne much fruit, thereby attesting to the breadth of applicability and generativity of the achievement goal approach to achievement motivation. Given this successful extension of achievement goal research from students to teachers, perhaps the next item in the research agenda is a further extension to the achievement goals of employers and coaches.

Disclosure statement

No potential conflict of interest was reported by the authors.

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Appendix 1. English translation of the French version of the 3 × 2 AGQ-T

Instructions: The following statements represent types of goals that you may or may not have when you teach your students. For each item, put a mark on the scale from 1 (strongly disagree) to 7 (strongly agree) to indicate your level of agreement with the statement. All of your responses will be kept anonymous and confidential. There are no right or wrong responses, so please be open and honest.

With my classes this year, I try …

Task-approach goal items

… to enable my students to succeed.

… to promote the success of my students.

… to ensure that my students succeed.

Task-avoidance goal items

… to avoid that my students fail.

… to avoid having failing students.

… to avoid student failure.

Self-approach goal items

… to teach more effectively than before.

… to be better than before in my teaching.

… to teach better than in previous years.

Self-avoidance goal items

… to avoid being worse than before in my teaching.

… to avoid teaching less effectively than in previous years.

… to avoid teaching less efficiently than before.

Other-approach goal items

… to teach better than other teachers.

… to be a better teacher than others.

… to be more effective than other teachers.

Other-avoidance goal items

… to avoid being less effective than other teachers.

… to avoid teaching less effectively than other teachers.

… to avoid being a worse teacher than others.