



# A meta-analysis of the relations between achievement goals and internalizing symptoms: A pre-registered meta-analysis

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# Introduction



- Achievement goals are generally defined as cognitive representations that guide one's behaviors to competence-related end states that individuals strive to either approach or avoid (Elliot & Thrash, 2002; Hulleman et al., 2010).

**mastery-approach (MAP)**

**performance-approach (PAP)**

**performance-avoidance (PAV)**

**mastery-avoidance (MAV)**

- guide the way people approach the achievement-related situations and how they cognitively, emotionally and behaviorally respond to these situations (Ames, 1992; Elliott & Dweck, 1988)
  - impact academic-related outcomes and motivation in various settings, such as academic or work
  - Are associated with achievement emotions and emotional experiences within the school

Huang, 2011; Lochbaum & Gottardy, 2015; Senko & Dawson, 2017

# Introduction



- Depression and anxiety are among the most common mental health problems (Patel et al., 2016)
- largest contributions to disability during youth and into adulthood across different cultural contexts (Vos et al., 2020).
- Anxiety and depression have negative consequences, such as difficulties in work functioning, lower academic achievement and academic competence  
Brumariu et al., 2022; Huang, 2015; Riglin et al., 2014
- decreased in MAP are related to lower levels of internalizing symptoms, PAP and PAV are related to higher levels of anxiety and depression
  - e.g., Madjar et al., 2021; Mairean & Diaconu-Gherasim, 2020; Mastrotheodoros et al., 2017



**? how motivational achievement goals are related with the internalizing symptoms**

# Basic Components and Models of Achievement Goals

**Dichotomous achievement goals models** (e.g., Ames, 1992; Dweck, 1986; Elliot, 1999) distinguished between two types of goals, conceptualized as:

## Mastery goals

- on developing the competence (self-referenced)
- mastery a task (task-referenced) in order to develop one's ability (reason)

## Performance goals

- focused on demonstrating competence relative to others (appearance standards)
- outperform normative standards in order to demonstrate the ability (reason)

# Basic Components and Models of Achievement Goals

**The trichotomous model** (Elliot, 1997; Middleton & Midgley, 1997; Skaalvik, 1997)  
includes MAP and PAP

+

**PAV**

focused on avoidance to display a low competence relative to others,  
conceptualized as aiming

to avoid demonstrating low  
competence relative to others  
(normative)

to avoid appearing incompetent (appearance)

# Basic Components and Models of Achievement Goals

**A 2 x 2 achievement goal model** (Elliot, 1999; Elliot & McGregor, 2001)  
applied the avoidance component to mastery goals

+

**MAV**

focusing either on preventing or avoiding  
misunderstandings

or avoiding falling to learn a of task

**A 3 x 2 model** (Elliot et al. 2011) the mastery goals were split according to the standards  
for competence

- two MAP (to approach intrapersonal competence or task-based competence)
- two MAV (to avoid intrapersonal incompetence or task-based incompetence)
- Other-based goals (other-approach and other-avoidance) (similar with PAP and PAV)

# Basic Components and Models of Achievement Goals

## MAP

- interest and curiosity (e.g., mastery orientation, Midgley et al., 1998; task orientation, Nicholls, 1984)
- potential attainment (e.g., mastery-approach, Elliot & McGregor, 2001)

## MAV

- goals mirror MAP (e.g., mastery-avoidance, Elliot & Murayama, 2008) + fear about negative outcomes (i.e., mastery-avoidance, Elliot & McGregor, 2001).

## PAP:

- appearance component: ego orientation (Nicholls et al., 1985) or ability validation (Grant & Dweck, 2003)
- normative component: performance-approach (Elliot, 1999), normative goals (Sideridis et al., 2009)
- evaluative component: normative ability validation (Grant & Dweck, 2003) or ego orientation (Nicholls, 1984)

## PAV

- mirror the basic components of PAP + to fear about possible outcomes (performance-avoidance, Elliot & Church, 1997)

see Elliot & Hulleman, 2017; Hulleman et al., 2010 for more details

# Achievement Goals and Internalizing Symptoms

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- **The goal-orientation model of depression (Dykman, 1998):**
  - achievement goals - specific cognitive framework where the events are appraised or interpreted, and which have implications for people's mental health (i.e., depression).
    - Focus on MAP - oriented to growth, learning, and improvement
      - view themselves and situations more positive experienced lower levels of depressive symptoms
    - Focused on PAP - challenging or difficult situations are evaluated as testing the ability
      - more vulnerable to depression and less resilient to failure.



# Achievement Goals and Internalizing Symptoms

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- **The motivational systems theory** (Ford, 1992): emotions may influence the achievement goals adoption
  - provide clues about situations or its meanings
- **The adjustment erosion hypothesis** (Moilanen, et al., 2010)
  - anxiety and depression may increase individuals' vulnerability to other areas such as motivation
    - due to eroding the cognitive functioning, interferences with attentional focus and task participation.
    - reduce individuals' motivation and goals direction attention and might distract them from their work.

# Empirical evidence ....

- MAP related with decrease in symptoms of depression (e.g., Madjar et al., 2021; Mairean & Diaconu-Gherasim, 2020) and anxiety (Ariani, 2017; Wei, 2018)
- PAP & PAV positively linked to anxiety (Madjar et al., 2021) and depression (e.g., Ariani, 2017; Mastrotheodoros et al., 2017)
- non-significant relations of MAP, PAP, PAV with anxiety (Duchesne et al., 201; Madjar et al., 2021) and depression (Duchesne et al., 2014; Madjar et al., 2021).
  - Very few studies investigated the impact of MAV and mixed findings were reported (e.g., Sideridis, 2008; Liu et al., 2019).

# Goals

- strength of the relations between the different types of achievement goals (i.e., MAP, MAV, PAP and PAV) and internalizing symptoms (i.e., depressive symptoms, anxiety and broader internalizing).
- Whether the relations are moderated by.....

Whether the relations are moderated by.....

- **theoretical model** of achievement goals
- **conceptual differences** at the level of components of each kind of goal
- **measurement of the achievement goals** (e.g., PALS, ASQ, TESQ)
- **type of setting:** general or subject-specific level

Whether the relations are moderated by.....

- **level of functional impairment of** anxiety and depression symptoms or disorders or both
- **types of anxiety** (e.g., global, trait, panic, separation anxiety)
- **types of depression** (e.g., global, sadness, major depressive disorder)
  
- **Demographic factors** (e.g., educational level, sample of participants, geographical region, age, gender)
- **type of research design utilized** (cross-sectional vs. longitudinal, type of publication)
  - direction of relation between achievement goals and internalizing symptoms



- Protocol was pre-registered in PROSPERO International Prospective Register of Systematic Reviews (protocol number CRD42022298463)
- The systematic review was conducted according to the PRISMA 2020 (Preferred Reporting Items for Systematic reviews and Meta-Analyses; Page et al., 2021) guidelines



# Literature Search

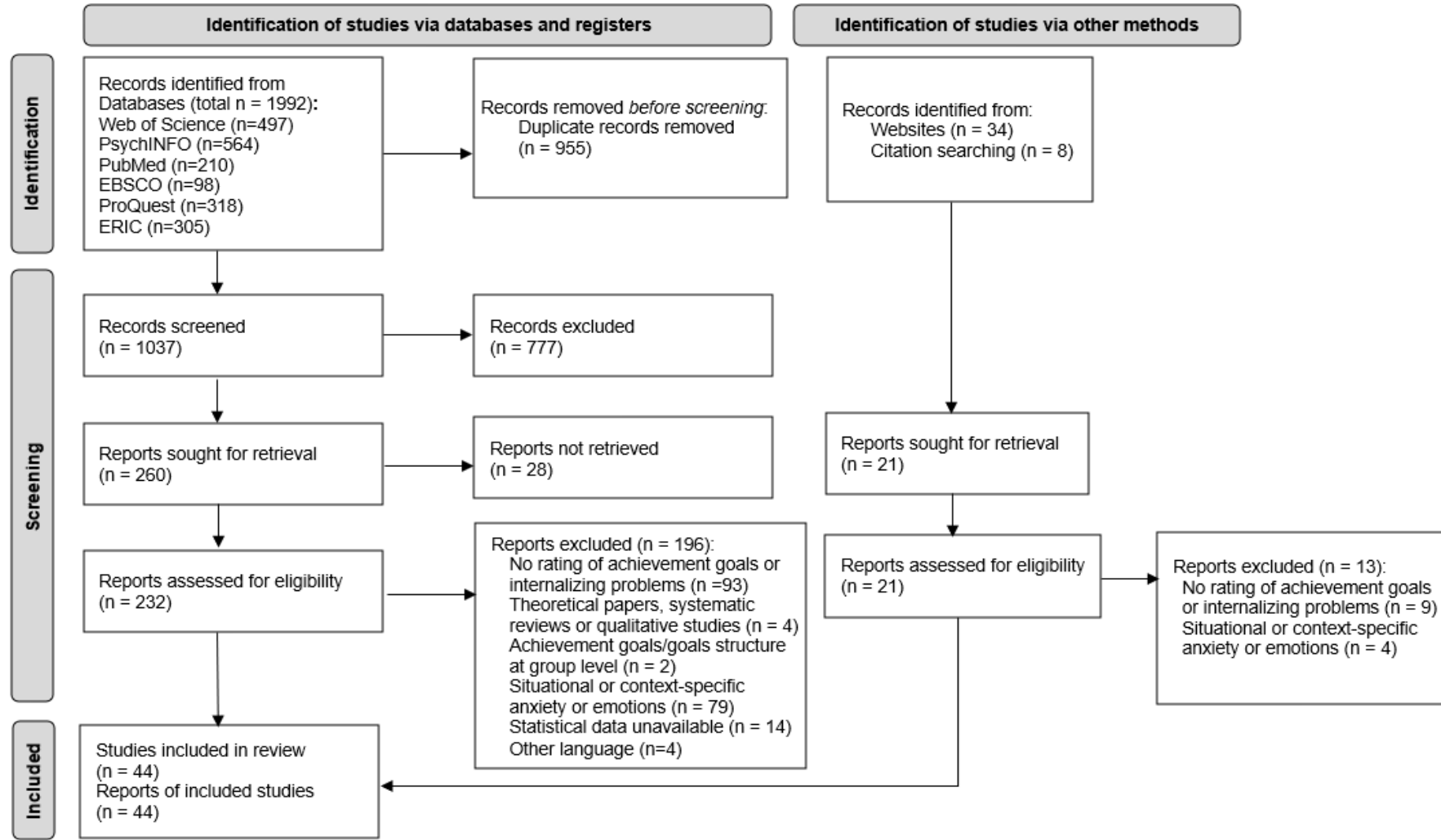
- The literature search conducted in December 2022
- 6 electronic databases: Web of Science, PsycINFO, PubMed, ERIC, Academic Search Premier (EBSCO), and ProQuest.
- publication period: 1980 – 2022.
- search strategy used combination of keywords:
  - ("achievement goal" OR "goal orientation" OR "mastery goal" OR derivate (e.g., “task goal“) OR "mastery avoidance goal" OR derivate (e.g., "development-avoidance goal") OR "performance goal" OR derivate (e.g., "ego orientation“) OR "performance avoidance goal" OR derivate (e.g., "self-defeating ego orientation")
  - AND
  - (internalizing OR derivate (e.g., "internalizing disorders“) OR depression OR derivate (e.g., "depressive disorders" OR “sadness”) OR anxiety OR derivate (e.g., "generalized anxiety" OR "anxiety problems" OR worries).

# Study selection. Inclusion & Exclusion criteria

- ratings of achievement goals (MAP, MAV, PAP and PAV) and internalizing problems (depressive symptoms, anxiety symptoms or global internalizing symptoms)
- statistically relevant information available for the relations between achievement goals and internalizing problems (e.g., correlation, sample size) allowing the computation of effect size statistics.
- theoretical papers, systematic reviews or meta-analyses, and qualitative studies;
- studies that measured achievement goals (or goal structures) at the group level, and studies that induced achievement goals situationally;
- studies measuring situational anxiety (e.g., test anxiety, sport anxiety, academic anxiety, fear of failure, achievement-related emotions);
- studies for which no full texts were accessible or sent upon request







**Figure 1.** The PRISMA 2020 flow diagram

# Coding



## 1.study characteristics

- 1.*publication year, publication type* (e.g., peer review or non-peer review study)
- 2.*study design* (cross-sectional, longitudinal, other)
- 3.*sample description* (e.g., N, age, gender, education level, family status, country)

## 2. conceptualization of achievement goals

- 1.*theoretical model* (2-factor, 3-factors, 2 x 2 factors, 3 x 2 factors model),
- 2.*type of achievement goals* (MAP, MAV, PAP, PAV)
- 3.*type of each goals* (e.g., mastery-approach goals, mastery-approach goal, learning goal orientation)

## 3.conceptualization of internalizing symptoms

- 1.*types of anxiety/ depression* (symptoms or disorders),
- 2.*forms of anxiety* (e.g., global anxiety, generalized anxiety, panic, social anxiety, worry)
- 3.*forms of depression* (e.g., global depression, persistent depressive disorder)

**4. achievement goal scales** (e.g., PALS, AGQ, TEOSQ),

**5. type of setting for achievement goals:** general vs. specific

**6. type of informant:** self-report, parent, coach report

**7.correlation coefficients:** AG & internalizing problems

**8. direction of the relation**

# Results

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The effect sizes were computed based on

- 68 samples exploring the associations between MAP and internalizing symptoms
- 8 samples of the association of MAV with anxiety and depressive symptoms,
- 70 samples of the associations of PAV with internalizing symptoms
- 44 samples of the associations between PAV and internalizing symptoms.



## Associations between Achievement Goals and Anxiety and Depressive Symptoms

Results of the meta-analysis between achievement goals and anxiety symptoms

	k	r	95% CI	Q within
Mastery-approach	33	-.16**	-.25 to -.06	944.99***
Mastery-avoidance	4	.05	-.05 to .16	20.68
Performance-approach	37	.15***	.11 to .19	189.40***
Performance-avoidance	21	.23***	.19 to .27	69.12***

## Associations between Achievement Goals and Anxiety and Depressive Symptoms

Results of the meta-analysis between achievement goals and depressive symptoms

	k	r	95% CI	Q within
Mastery-approach	35	-.16***	-.20 to -.12	214.43***
Mastery-avoidance	4	.13	-.05 to .32	113.13***
Performance-approach	33	.03	-.00 to .07	193.08***
Performance-avoidance	23	.13***	.07 to .18	167.85***

## Categorical moderators for the associations between AG and Anxiety

Mastery-approach goals	<i>k</i>	<i>r</i>	95% CI	<i>Q</i> within	<i>Q</i> between
<b>Achievement goal theoretical model</b>					
Two factors	8	-.09	-.30 to .11	16.01*	50.13***
Three factors	18	-.23**	-.35 to -.09	874.02***	
2x2 factors	6	-.03	-.27 to .20	4.83	
<b>Achievement goal conceptualization</b>					
Mastery goals/orientation	15	-.19*	-.34 to -.03	855.23***	54.00***
Mastery-approach goal	4	-.04	-.33 to .24	3.07	
Task goal orientation	4	-.13	-.42 to .17	2.35	
Learning goal orientation	5	-.07	-.33 to .19	11.81*	
Development-approach goal	5	-.28*	-.51 to -.01	18.52**	
<b>Forms of anxiety symptoms</b>					
global anxiety	20	-.17*	-.30 to -.03	859.38***	10.85*
social anxiety	9	-.20	-.38 to .00	71.29***	
specific anxiety/phobia	1	-.01	-.56 to .54	0	
Worry	1	.01	-.53 to .54	0	
<b>Achievement goal scale</b>					
PALS	10	-.07	-.27 to .13	37.63***	30.99***
AGQ	4	-.03	-.33 to .28	4.19	
AGQ-R	1	-.04	-.58 to .53	0	
Nicholls scale	3	-.10	-.45 to .27	0.54	
Others	15	-.27**	-.42 to -.11	871.62***	

## Categorical moderators for the associations between AG and Anxiety

Performance-approach	<i>k</i>	<i>r</i>	95% CI	<i>Q</i> within	<i>Q</i> between
<b>Achievement goal theoretical model</b>					
Two factors	10		.11**	.05 to .18	84.46***
Three factors	20		.20***	.14 to .25	43.08**
2x2 factors	7		.06	-.01 to .14	9.93
<b>Achievement goal conceptualization</b>					
Performance goals	2		.00	-.09 to .20	1.67
Performance-approach goal	20		.10***	.06 to .14	39.73**
Ego goal orientation	3		.08	-.04 to .21	4.27
Ability goals	1		.15	-.02 to .31	0
Prove goal orientation	3		.25***	.32 to .48	1.89
Demonstration-approach goal	6		.41***	-.01 to .16	23.86***
<b>Forms of anxiety symptoms</b>					
global anxiety	23		.12***	.07 to .17	75.66***
social anxiety	10		.25***	.17 to .32	103.44***
specific anxiety/phobia	1		.09	-.19 to .36	0
Worry	1		.17	-.06 to .38	0
<b>Achievement goal scale</b>					
PALS	11		.15***	.07 to .23	3.22
AGQ	5		.09	-.01 to .20	12.20*
AGQ-R	1		.03	-.19 to .24	0
Nicholls scale	3		.08	-.07 to .25	4.27
Others	17		.18***	.12 to .24	149.61***

## Categorical moderators for the associations between AG and Anxiety

Performance-avoidance	<i>k</i>	<i>r</i>	95% CI	<i>Q</i> within	<i>Q</i> between
<b>Achievement goal theoretical model</b>					
Three factors	15	.26***	.22 to .30	39.71**	26.59***
2x2 factors	6	.15***	.09 to .21	2.81	
<b>Achievement goal scale</b>					
PALS	11	.22***	.17 to .28	16.18	25.34***
AGQ	4	.19***	.10 to .27	12.76*	
AGQ-R	1	.13	-.02 to .27	0	
Others	5	.29***	.21 to .36	14.83*	
<b>Type of setting for achievement goals</b>					
General	1	.35***	.22 to .46	0	9.61**
Specific	20	.22***	.18 to .26	59.59***	
Global achievement	15	.19***	.15 to .22	27.82*	
Math achievement	2	.26***	.14 to .38	.12	
Sport	1	.34***	.20 to .46	0	
Work context	1	.39***	.27 to .49	0	
Others	1	.11	-.09 to .30		



# Categorical moderators for the associations between AG and depression

Mastery-approach	<i>k</i>	<i>r</i>	95% CI	<i>Q</i> within	<i>Q</i> between
<b>Achievement goal theoretical model</b>					
Two factors	8	-.09*	-.18 to .00	22.28**	42.60***
Three factors	20	-.19***	-.24 to -.13	131.75***	
2x2 factors	7	-.17**	-.25 to -.08	17.78**	
<b>Achievement goal conceptualization</b>					
Mastery goals/orientation	19	-.12***	-.17 to -.06	124.70***	52.18***
Mastery-approach goal	7	-.16***	-.24 to -.08	18.29**	
Task goal orientation	5	-.20**	-.31 to -.08	7.30	
Development-approach goal	4	-.35***	-.45 to -.23	11.94**	
<b>Achievement goal scale</b>					
PALS	14	-.18***	-.25 to -.11	32.03**	39.04***
AGQ	3	-.21**	-.34 to -.06	11.65**	
AGQ-R	2	-.16	-.32 to .00	2.11	
Nicholls scale	4	-.07	-.21 to .06	12.472**	
Others	12	-.15***	-.23 to -.08	117.11***	

# Categorical moderators for the associations between AG and depression

Performance-approach	<i>k</i>	<i>r</i>	95% CI	<i>Q</i> within	<i>Q</i> between
<b>Achievement goal theoretical model</b>					
Two factors	9	.11**	.03 to .18	50.43***	15.82***
Three factors	17	.02	-.03 to .08	105.05***	
2x2 factors	7	-.01	-.09 to .06	21.77**	
<b>Achievement goal conceptualization</b>					
Performance goals	2	-.00	-.12 to .11	1.94	81.910***
Performance-approach goal	23	-.00	-.04 to .03	89.92***	
Ego goal orientation	4	.10	-.01 to .22	3.74	
Demonstration-approach goal	2	.46***	.33 to .57	4.96*	
<b>Achievement goal scale</b>					
PALS	12	-.01	-.08 to .05	39.97***	44.72***
AGQ	3	-.00	-.10 to .09	1.80	
AGQ-R	2	-.07	0.20 to .05	2.02	
Nicholls scale	4	.09	-.01 to .21	4.78	
Others	11	.10**	.04 to .17	99.77***	

# Categorical moderators for the associations between AG and depression

Performance-avoidance	<i>k</i>	<i>r</i>	95% CI	<i>Q</i> within	<i>Q</i> between
Achievement goal conceptualization					
Performance-avoidance goal	22	.14***	.08 to .19	151.65***	16.20***
Other-avoidance goal	1	-.26	-.50 to .02	0	
Achievement goal scale					
PALS	14	.09*	.02 to .16	83.11***	65.32***
AGQ	3	.15*	.01 to .28	13.02**	
AGQ-R	1	.04	-.19 to .26	0	
Others	5	.21***	.11 to .31	6.38	
Type of setting for achievement goals					
General	1	.27*	.03 to .47	0	20.86***
Specific	22	.12***	.06 to .17	146.98***	
Global achievement	18	.12***	.06 to .18	139.69***	
Math achievement	3	.10	-.05 to .25	4.13	
Sport	1	.08	-.20 to .34	0	

# Categorical moderators for the associations between AG and Anxiety

Mastery-approach	k	r	95% CI	Q within	Q between
Type of publication					
Peer-review journal articles	25	-.19**	-.30 to -.08	889.85***	25.07***
Non-peer review studies	8	-.05	-.25 to .15	30.07***	
Direction of relation					
goals-anxiety	2	-.15	-.50 to .24	0.41	8.06*
anxiety-goals	2	-.02	-.40 to .36	0.82	

Performance-approach	k	r	95% CI	Q within	Q between
Type of design					
cross-sectional	33	.14***	.10 to .19	177.97***	10.39**
Longitudinal	3	.15*	.02 to .27	1.02	
Others	1	.21	-.01 to .41	0	
Cultural context					
Western	34	.16***	.12 to .20	174.12***	15.27***
Eastern	3	.03	-.10 to .16	0.00	

Performance-avoidance	k	r	95% CI	Q within	Q between
Type of design					
cross-sectional	16	.21***	.17 to .26	39.29**	14.88**
Longitudinal	4	.24***	.16 to .32	14.94**	
Others	1	.35***	.18 to .49	0	
Direction of relation					
goals-anxiety	2	.29***	.17 to .40	10.73**	7.99*
anxiety-goals	2	.18**	.05 to .30	0.16	
Participants education					
middle school	7	.20***	.13 to .27	8.14	12.44**
high-school	7	.25***	.17 to .33	17.95**	
College	4	.22***	.12 to .31	19.81***	

# Categorical moderators for the associations between AG and depression

Mastery-approach	k	r	95% CI	Q within	Q between
Type of design					
cross-sectional	32	-.16***	-.20 to -.11	206.59***	7.30**
Longitudinal	3	-.22**	-.35 to -.08	0.53	
Participants education					
middle school	12	-.12**	-.19 to -.05	96.46***	30.67***
high-school	8	-.11*	-.20 to -.01	20.74**	
College	8	-.24***	-.33 to -.16	56.25***	

Performance-approach	k	r	95% CI	Q within	Q between
Type of design					
cross-sectional	30	.04*	.01 to .08	169.29***	8.44**
Longitudinal	3	-.05	-.17 to .07	15.35***	
Cultural context					
Western	29	.05*	.01 to .10	161.89***	6.68*
Eastern	4	-.07	-.18 to .03	24.49***	
Sample category					
school students	23	.01	-.03 to .06	94.44***	15.95***
college students	6	.06	-.03 to .15	57.07***	

Performance-avoidance	k	r	95% CI	Q within	Q between
Type of publication					
Peer-review journal articles	17	.12***	.06 to .19	144.00***	6.67*
Non-peer review studies	6	.13*	.00 to .25	17.17**	
Participants education					
middle school	8	.12*	.02 to .22	52.17***	13.69**
high-school	8	.14**	.04 to .24	63.19***	
College	3	.14	-.00 to .29	13.02**	

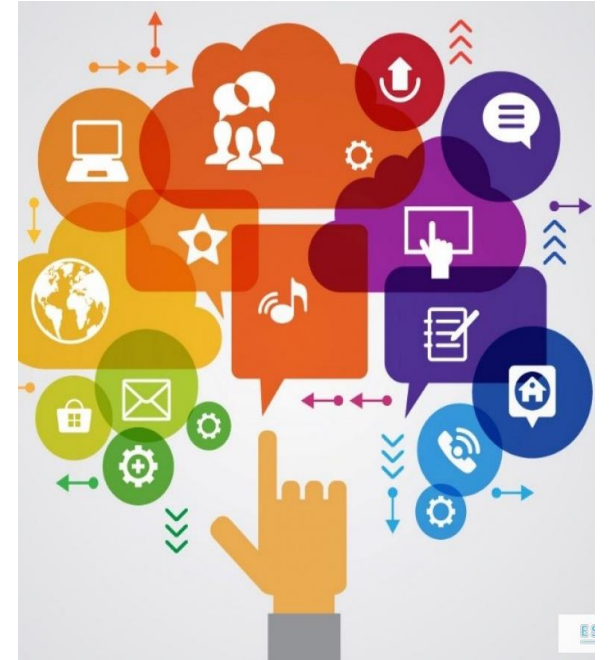
## Moderating role of age and gender

	Anxiety		Depression	
	point estimate	<i>p</i>	point estimate	<i>P</i>
<b>Mastery-approach</b>				
% male gender			.002	.04
<b>Mastery-avoidance</b>				
Age			-.64	<.001
<b>Performance-approach</b>				
Age	.01	0.008		
% male gender			.003	.005
<b>Performance-avoidance</b>				
Age	.008	<.001	.01	<.001

# Discussion

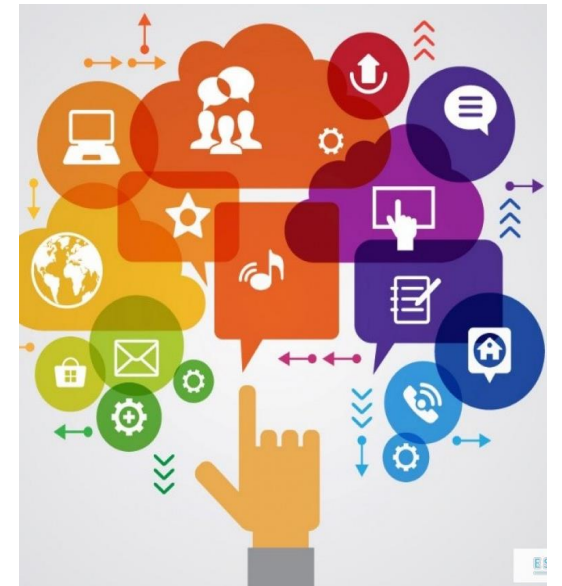
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- Our results advance the literature indicating that the way people approach the achievement-related situations might differently impact their emotional responses
- Relations among MAP, PAP, PAV with anxiety and depression were stronger in studies in which the 2-factor or 3-factor models were used.



# Discussion

- Definitions of basic components of goals
  - MAP: self-referenced components vs task-referenced basic component.
    - e.g., development-approach goals/ task goal orientation vs. mastery goals/orientation/ mastery-approach goals
  - PAP and PAV: appearance goals vs normative or evaluative goals.
    - e.g., demonstration-approach goals that in studies defining these goals as prove goals orientation or performance-approach goals

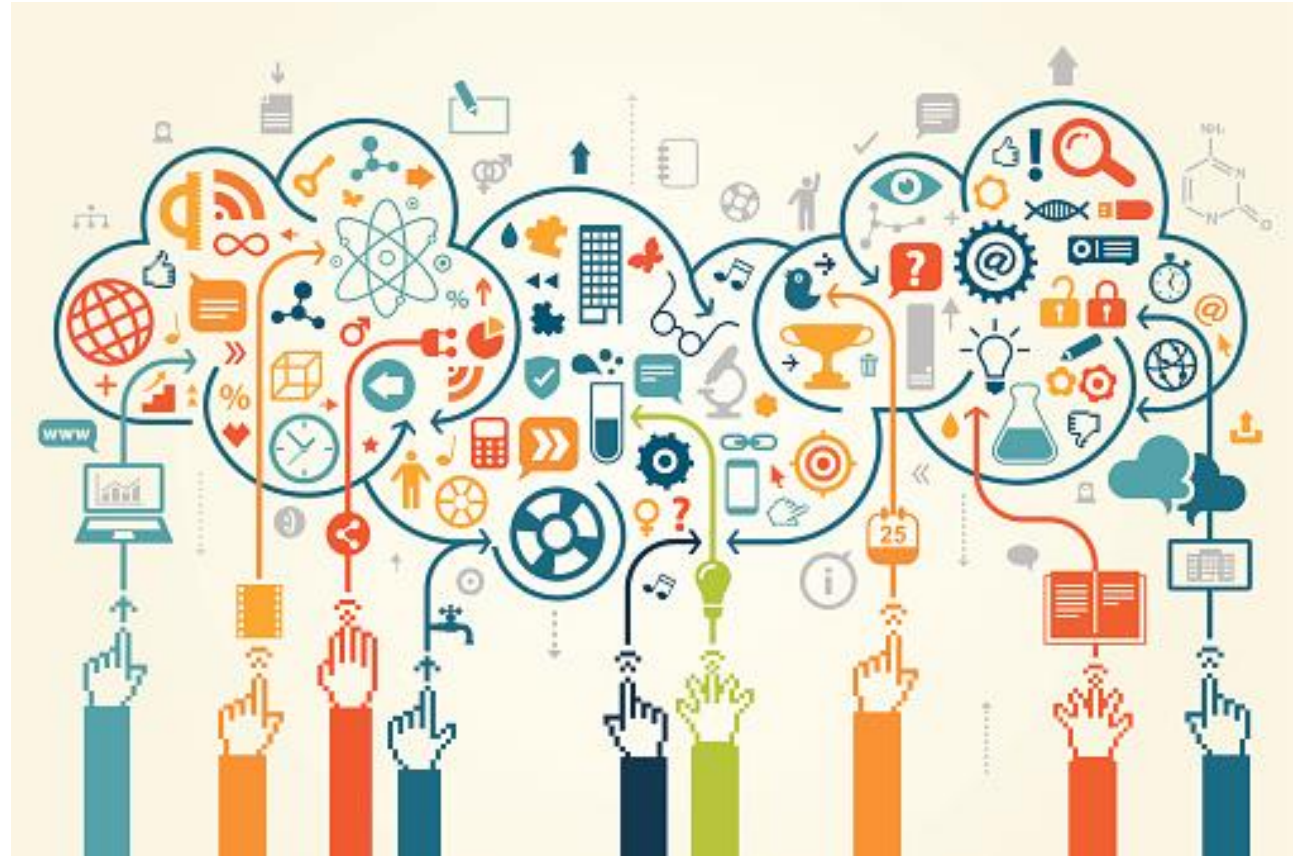




# Discussion

- the effect sizes were small to medium range should not be disregarded, particularly when there is a potential for cumulative effects, as they could grow across years of schooling
- Both internalizing problems and achievement goals have the potential to have long-standing effects on each other
  - necessity to study how anxiety and depression and achievement goals influence one another across time
- school-based programs designed to enhance motivational beliefs may be more effective if they take in account participants' (nonacademic) level of anxiety and/or depression given their relations with achievement goals

Thank you for your  
attention!



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