Heliyon 5 (2019) e02116

Contents lists available at ScienceDirect

Heliyon

journal homepage: www.heliyon.com

Using our understanding of time to increase self-efficacy towards goal achievement

Jill Taylor [a,*], J. Clare Wilson [b]

[a] Teesside University, Middlesbrough, Tees Valley, UK
[b] University of Portsmouth, Portsmouth, Hampshire, UK

ARTICLE INFO

Keywords:
Psychology
Writing intervention
Goal achievement
Time perspective
General self-efficacy

ABSTRACT

This paper reports two studies that uniquely explore how time perspective (TP) predicts general self-efficacy (GSE) towards goal achievement. In Study 1, participants ($N = 162$) identified a goal they wished to achieve within the near future then completed questionnaires. For those who achieved their goal, the 'past positive' and 'future' TPs were found to positively predict GSE, whereas 'present fatalism' negatively predicted GSE. Study 2 explored whether accessing time related information that may not normally be used to determine GSE via a writing intervention can promote both near and distant-future goal achievement. Participants ($N = 139$) were randomly assigned to one of four writing conditions and results reveal that GSE towards goal achievement can increase with a focus on both a 'positive past' with a projective positive 'future' TP. Thus, focusing on particular TPs may function to enhance (or prevent) goal achievement.

1. Introduction

A wealth of research has attempted to discover why some people achieve the goals they set (whereas others fail) by examining how past self-regulation can build present self-efficacy, and how present self-efficacy predicts future goal achievement (e.g., Ajzen, 1985; Aspinwall, 2005; Bandura, 1977; Feldman, 2015; Fryer and Elliot, 2008; Pintrich, 2000, 2004; Milyavskaya et al., 2015; Soric et al., 2017; Snyder, 1994; Taylor et al., 1998; Zimmerman, 1989; Zimmerman and Schunk, 2008). Further, research has identified individual differences in expectancies about future outcomes and attainment, with a focus on future orientated thinking promoting more successful goal achievement (for meta-analysis see Huang, 2016). However, there is little research examining how individual time perspective (TP) influences general self-efficacy (GSE) and goal achievement. Although previous research has expressed the need to examine domain-specific efficacy in a range of settings (see Pajares, 1996), this research focusses on GSE as TP is also a general construct. People devote different amounts of cognitive activity to their past, present or future (Zimbardo and Boyd, 2008), thus, how we focus on different TPs may play a central role in whether we achieve the goals we set. This paper reports two studies that are the first to explore the relevancy of TP in relation to personality traits such as GSE and motivational states such as goal achievement. First, study 1 explored whether setting 'simple' or 'complex' goals (and whether the goal was achieved) results in higher GSE, and how TP is a predictor of GSE towards goal achievement. Then, study 2 uses an experimental method to explore whether accessing time related information (that may not normally be used to determine GSE) can promote goal achievement.

When we decide on a personal goal, we must also decide how to achieve it (that is, we create a goal intention). Goal intentions are defined as sets of behavioural instructions we assign ourselves to achieve our desired outcomes (Gollwitzer and Sheeran, 2006; Triandis, 1980). Thus, they include behaviours we must perform or avoid to maximise our chances of achievement. However, until we formulate a behavioural plan, these intentions may be of little use. That is, people may not follow through with plans for the actual behaviours. Self-regulation is required, and one aspect of self-regulation is self-efficacy (that is, do we think we have the skills to achieve our goal, Bandura, 1986). Global (generalised) efficacy attitudes are important in measuring general confidence in our abilities to achieve the goals we set. There are domain-specific efficacy measures that assess perceived competence in a particular domain (e.g. reading, writing, or mathematical efficacy). Previous research often involves researchers setting participant criterial goals relating to the domain under investigation (see Pajares, 1996). In the current research, participants select their own near future goals (study 1) and more distant future goals (study 2) as GSE involves general self-perceptions allowing

* Corresponding author.
E-mail address: jill.taylor@tees.ac.uk (J. Taylor).

https://doi.org/10.1016/j.heliyon.2019.e02116
Received 20 December 2018; Received in revised form 16 May 2019; Accepted 16 July 2019

us to evaluate our own experiences and general confidence in success. It is these self-perceptions of competence that have been found to be important predictors of goals and outcomes (Pajares, 1996; Urdan and Maehr, 1995).

General self-efficacy (GSE) acts as an internal rule in assisting people to determine how much effort, perseverance, and resilience is required to achieve a goal. Those higher in GSE tend to exert greater effort in using this information to assess aptitude, ability, and previous achievements (Bandura, 1986). GSE can play a central role in the self -regulation of our behaviour via its effects on goal intention formation and our persistence in striving to achieve our goal. In our selection and pursuit of future goals in the present, we demonstrate something of how what we learned in the past can shade our future (e.g. Cartensen et al., 1999; Leduc-Cummings et al., 2017; Locke et al., 2016; Markus and Nurius, 1986; Oyserman and James, 2009). GSE could increase as we learn from our past on how we can better manage ourselves both in the present and in the future. Those who have lower GSE beliefs about achieving their goals have been found to be less likely to form behavioural intentions and often view goals as harder or more complex than they are (e.g. Ajzen, 1985). With low GSE people are less likely to engage in complex tasks or are more likely to give up more quickly (Bandura, 1986). Those with higher GSE tend to set themselves more goals and often feel more 'serenity' in approaching more difficult goals (Bandura, 1986; Donovan and Hafsteinsson, 2006; Pajares, 1996).

The way individuals frame a goal can have different implications for motivation, effort and actions that must be performed (Deci and Ryan, 2008; Oettingen and Mayer, 2002). That is, if we imagine achieving our goal with ease and simplicity by not having to work hard, expectations of success are high whilst chances of success are low. If we have realistic expectations of an achievable goal (in that we know what we need to do and that we need to work at it to achieve it) the chances of success may be higher. As expectations involve making judgements of the likelihood that something will happen in the future based on past success, it can often involve a higher perceived GSE towards achieving goals (e.g. Bandura, 1977; Mischel, 1973). More complex goals, on the other hand, are future events that we mentally conceptualise perhaps without taking the past into account, therefore not considering how hard it may be to achieve it (Klinger, 1990; Singer, 1966). Thus, 'simple' goals may involve more complete goal intentions; whereas 'complex' goals may involve more incomplete goal intentions. With 'simple'goals, we may regulate present behaviour accordingly to maximise our chances of success within the time frame, whereas with 'complex' goals we may underestimate the effort required and so may procrastinate or give up as soon as we come to an obstacle (Taylor and Wilson, 2016).

Time perspective (TP) can be defined as the "often non-conscious process whereby the continual flows of personal and social experiences are assigned to temporal categories, or time frames, that help give order, coherence, and meaning to those events" (Zimbardo and Boyd, 1999 p.1271). Depending on the habitual use of specific TPs, people may spend a great deal of time reminiscing or ruminating about their pasts, living in either a hedonistic or fatalistic present, or planning their futures (Zimbardo and Boyd, 2008). Since its introduction, the Zimbardo Time Perspective Inventory (ZTPI, Zimbardo and Boyd, 1999) has been used extensively in TP research, and is a reliable and valid measure of five time perspective factors: 'past positive'; 'past negative'; 'present hedonistic'; 'present fatalistic'; and 'future' perspectives.

Many people assume that their memories of the past are accurate, but much research suggests that memories are not an objective record of the past, but more of a reconstruction, which is influenced by present attitudes, beliefs, emotions, and information (e.g. Bartlett, 1932; Loftus, 1997; Loftus & Palmer, 1974; Zimbardo et al., 2012). Despite the failings of memory (or perhaps because of it), our subjective remembrance of past events matters more than the actual events themselves; it is these remembrances that we rely on when making decisions about our present and future. The past positive TP involves a focus on past successes, thus reflecting on previous goal achievement(s) may increase GSE by boosting self-regulatory behaviour. However, if we are constantly focusing on past successes we may not be focusing on present opportunities, so too much past focus may not be helpful, even if it is positive. Conversely, the past negative TP may undermine GSE, limiting self-regulatory behaviour. With this TP, previous failure if the focus. Unless this failure is seen as a learning experience that can inform the present, a negative past focus may rapidly reduce any sense of efficacy.

Next are two 'present' TPs of 'present hedonism' and 'present fatalism'. Present hedonists live for the moment and choose courses of action in life that are pleasurable, stimulating and exciting, whilst actively trying to avoid tedious or boring activities. On the other hand, a present fatalistic TP involves a helpless, hopeless attitude towards life and the future. Much research suggests that present oriented people have lower self-control and are more likely to engage in risky behaviours such as unsafe sex, drug and alcohol misuse, but hedonists tend to have more energy whereas fatalists tend to have less self-esteem and more avoidant style coping strategies (e.g. Epel et al., 1999; Keough et al., 1999; Zajenkowski et al., 2016; Zimbardo and Boyd, 1999). The present two TPs are restricted to the present moment, thus often leave little room for agentic movement. By focussing on making the most of the moment (i.e., a present hedonist) some movement is still possible as an attentional focus on present hedonism involves actively seeking pleasure in immediate gratification and avoiding activities that require tedious tasks, but this may result in less self-regulatory behaviour towards future goals. However, it may require some self-regulation to achieve immediate gratification, and there may be immediate gratification in thinking about a future goal that is perceived to be achievable without too much work.

Alternatively, those 'stuck in the moment' (i.e., a present fatalist) often only react and avoid. Such hopelessness and helplessness is passive, and those high in present fatalism tend to have a strong external locus of control, believing that nothing that they do will make a difference, suggesting a decrease in (or lack of) GSE. Of all the time perspectives, this is the most likely to disable any sense of goal achievement as being due to one's behaviour, and therefore, if someone was high in this TP, they may be less likely to attempt goal setting on a regular basis. Finally, the future TP can involve the exploration of a potentially infinite number of possible futures (Markus and Nurius, 1986). Thus, there is a vast landscape in which we can agentically 'move' towards achieving our goals (Richmond et al., 2012). By its very nature, the future TP is suggestive of behaviour being dominated by a striving for future goals and rewards and risk avoidance (e.g. Jackman and MacPhee, 2015). Previous research suggests those high in the future time perspective have higher self-control, are more conscientious, are less impulsive, and plan more (e.g. Zimbardo and Boyd, 2008), The Future TP includes behaviours that are often dominated by a striving for future goals and rewards, but often at the expense of present enjoyment (Zimbardo and Boyd, 1999). Those scoring high in the Future TP usually have higher academic achievement, reduced sensation seeking, and indulge in less risky behaviours compared to those low in the Future TP (e.g. Shell and Husman, 2001). Thus, the future TP indicates a strong present focus on obtaining future goals and avoiding any negative consequences which may increase GSE by enhancing self-regulation.

In relation to GSE and goals, it seems reasonable that being high in the future TP would increase self-efficacy towards goal achievement, but it is unlikely that people can plan for the future without using past information. Thus, people who score high in the future TP may learn from their pasts to create a more positive future, and therefore also may score high in the past positive TP. Boniwell and Zimbardo (2004) posit that TP is malleable, thus we can change our patterns of attentional TP focus and choose to focus on our past successes for future prospects. If the past positive and the future TP's predict higher GSE to promote goal achievement, we may be able to increase GSE by boosting one's focus on past positive and future TP's.

The current research reports two studies that explore how using time related information may increase general self-efficacy towards general (rather than domain-specific) goal achievement. In study 1, the five

different time perspectives are explored as predictors of self-efficacy towards goal achievement within a near future (seven-day) time frame. Study 2 employs an experimental method exploring how focussing on specific TPs via a writing intervention may increase GSE towards goal achievement within a more distant future (one-month) time frame.

2. Study 1

Whether we form realistic expectations regarding achievable goals is likely to influence success (e.g. Oettingen and Mayer, 2002). Study 1 examines whether setting 'simple' goals, rather than more 'complex' goals, is related to achieving goals within one week. First, it is hypothesised those who set 'simple'goals and those who achieve their goal would score higher in general self-efficacy. Then, the five-time perspectives (Zimbardo and Boyd, 2008) are explored in relation to GSE. It is hypothesised that the 'past positive' and 'future' time perspectives positively predict GSE.

3. Methods

3.1. Participants

Psychology students from two UK universities were invited to take part via a series of advertisements on virtual learning environments. Originally 181 students signed up to participate, however, 19 did not return data for phase 2 thus 162 students (Age: $M = 19.98$; $SD = 4.88$) took part (see Table 1 for demographic information). Participants were not offered any incentives.

3.2. Materials

3.2.1. General self-efficacy

The General Self-Efficacy Scale (Schwarzer and Jerusalem, 1995) consists of 10 items in which participants respond using a 4-point Likert scale assessing whether the statements predicting coping with daily hassles are characteristic/true of them from 1 = *not at all true* to 4 = *exactly true* ($\alpha = .71$). Items include 'It is easy for me to stick to my aims and accomplish my goals' and 'Thanks to my resourcefulness, I know how to handle unforeseen situations'.

3.2.2. Time perspective

Zimbardo and Boyd's (1999) Zimbardo Time Perspective Inventory (ZTPI) consists of 56 items, measuring five TPs. It asks respondents to indicate how characteristic each item is of them using a 5-point Likert scale, which ranges from *very uncharacteristic* (1) to *very characteristic* (5). The 'past positive' subscale ($\alpha = .69$) comprises of 9 items, which include items such as 'It gives me pleasure to think about the past' and 'I get nostalgic about my childhood'. The 'past negative' subscale ($\alpha = .66$) has 10 items, including 'I think about the bad things that have happened to me in the past' and 'I often think of what I should have done differently in my life'. The 'present hedonism' subscale ($\alpha = .81$) comprises of 15 items for example, 'Taking risks keeps my life from becoming boring' and 'I often follow my heart more than my head'. Next, the 'present fatalism' subscale ($\alpha = .71$) includes 9 items such as 'My life path is controlled by forces I cannot influence' and 'Often luck pays off better than hard work'. Finally, the 'future' subscale ($\alpha = .76$) has 13 items, which include 'I am able to resist temptations when I know that there is work to be done' and 'I complete projects on time by making steady progress'. Following reverse scoring of some items, a higher score indicates a higher preference for each TP.

Table 1
Demographics information of participants in study 1.

	n	Age	Ethnicity *(n)*
Male	43	*M* 19.90	White British 43
		SD 3.75	Other 0
Female	119	*M* 20.00	White British 112
		SD 5.24	Other 7

3.3. Procedure

The study was ethically approved by Teesside University Research Ethics Committee and the University of Portsmouth University Ethics Committee. Participants were invited to take part on VLE's by following a link to an online survey. First, participants completed demographic information, then identified their own criterial goal that they wished to achieve within the next week. Next, participants completed Schwarzer and Jerusalem's (1995) General Self-Efficacy Scale and Zimbardo and Boyd's (1999) Time Perspective Inventory (ZTPI). Seven days following completion of the questionnaires, participants were asked to report whether they had achieved their goal.

3.4. Data coding

The type of goal the participant identified was coded by 2 independent coders as either 'simple' (e.g. 'book tutorial appointment'; 'send family email') or 'complex' (e.g. 'quit smoking'; 'lose two stone') in nature within the near-future (seven-day) time frame ($\kappa = .683$, $p < .001$).

4. Results

Chi square analysis was performed to examine whether type of goal (Goal: 'simple'vs. 'complex') was related to Achievement ('yes' vs. 'no'). First, 52.5% ($n = 85$) of participants set 'simple' goals and 47.5% set 'complex' goals ($n = 77$). Next, 40.1% ($n = 65$) participants achieved their goal whereas 59.9% ($n = 97$) participants did not. Of those who identified 'simple' goals, significantly more (69.4%; $n = 59$) achieved their goal compared to 7.8% ($n = 6$) who set 'complex' goals. Significantly more (91%; $n = 59$) of those who achieved their goal set a 'simple' goal compared to the 9% ($n = 6$) who achieved their goal which was rated as 'complex', χ^2 1 ($N = 162$) = 63.85, adjusted residual = 8.0, $p < .001$.

Second, a 2 (Goal: 'simple' vs. 'complex') x 2(Achieved: 'yes' vs. 'no') ANOVA was performed to explore GSE. Those who achieved their goal scored significantly higher general self-efficacy scores ($M = 33.24$ $SD = 2.77$) than those who did not achieve their goal $M = 26.64$; $SD = 2.57$; $F^{(1,162)} = 107.07$; $p < .001$, $d = .77$). However, there was no significant difference for those who set 'simple' goals ($M = 31.10$; $SD = 4.20$) to those who set 'complex' goals ($M = 27.29$; $SD = 3.13$; $F^{(1,162)} = .140$; $p = .709$). There was no significant interaction ($F^{(1,162)} = .260$, $p = .611$).

Finally, two regressions were conducted to explore whether time perspective predicted GSE for those who achieved their goal and those who did not (see Tables 2 and 3 for correlation matrices). For those who achieved their goal, the model was significant ($R^2 = .493$, $F^{(5,64)} = 3.78$, $p = .005$). The future TP significantly positively predicted GSE ($\beta = .270$; $t = 2.07$; $p = .042$), as did the past positive TP ($\beta = .275$; $t = 2.16$; $p = .034$). As Table 4 displays, no other TP's were significant. For those who did not achieve their goal, the model was also significant (R2 = .524, F (5,92) = 6.58, p < .001). There was a significant negative relationship for past negative ($\beta = -.408$; $t = -4.10$; $p < .001$) and present fatalism ($\beta =$

Table 2
Summary of correlations for those who achieved their goal in study 1.

	GSE	FTP	PNTP	PPTP	PHTP
GSE					
Future TP	.368**				
Past Negative TP	-.123	.042			
Past Positive TP	.300*	.160	-.029		
Present Hedonism TP	-.118	-.350**	.167	.324**	
Present Fatalism TP	-.260*	-.257*	.190	.057	.365**

* = p < .005; ** = p < .001.

Table 3
Summary of correlations for those who did not achieve their goal in study 1.

	GSE	FTP	PNTP	PPTP	PHTP
GSE					
Future TP	.083				
Past Negative TP	-.482**	.047			
Past Positive TP	.065	.233*	-.011		
Present Hedonism TP	-.035	.060	-.133	.309**	
Present Fatalism TP	-.288**	-.044	.225*	.261*	.477**

* = p < .005; ** = p < .001.

Table 4
Time perspective predictors of general self-efficacy for those who did and did not achieve their goal in study 1.

	Achieved			Not Achieved		
	β	*t*	*p*	β	*t*	*p*
Future TP	.270	2.07	.042	.070	.734	.465
Past Negative TP	-.088	-.743	.461	-.408	-4.10	<.001
Past Positive TP	.275	2.16	0.34	.111	1.11	.269
Present Hedonism TP	-.033	-.234	.816	-.214	-.214	.831
Present Fatalism TP	-.177	-1.42	.160	-.227	-1.99	.049

-.227; $t = -.1.99$; $p = .049$). No other TPs were significant.

5. Discussion

The results from study 1 demonstrate that setting simple goals is related to goal achievement. Further, those who had higher GSE had achieved their goal a week later. However, whether participants had set 'simple'or 'complex' goals did not predict GSE, and there was no interaction effect. The time frame in which participants were allocated to achieve their goal was small (i.e. one week), thus longer time periods to allow for more complex goals to be attempted would provide further insight. This will be explored in study 2. The regression analysis shows for those who achieved their goal, GSE was predicted by the 'past positive' and 'future' time perspectives, whereas GSE was related negatively to 'past negative' and 'present fatalistic' TPs for those who did not achieve their goal. This is interesting as the two groups did not differ significantly in their scores for the past time perspectives or the present fatalistic time perspective. Thus, it is not that one group is reporting more or less of these TPs (for example, more positive past experiences) but rather that they may be using this information differently. This will also be explored in study 2.

6. Study 2

Those high in general self-efficacy may be able to see what they need to do to achieve their goals by recognising their past successes when they have previously achieved similar goals (i.e. a past positive TP). Then, by recognising what they do not know (and therefore need to do or learn) and projecting this information into the future, simple realistic goals are set. However, those low in GSE may not use this time-related information, and instead use complex, unrealistic timescales which may result in setting goals that are unrealistic (and thus unachievable within the set time frame). Having a complex goal may not be inherently problematic, however, not knowing the ways to achieve the goal may be (i.e. by breaking the larger, complex goal into smaller, more simple realistic goals). Complex goals are often not reached as following the intention no concrete plans are made, therefore we do not know what is needed to achieve our goal.

Within construal level theory, a near-future (more present) focus elicits concrete thinking whereas a longer-term thinking stimulates abstract thinking. Previous research suggests the relation between behaviour, attitudes (and therefore possibly GSE) is weaker for the near-future than it is the distant-future (Rabinovich et al., 2010). We often set simple goals that are either relatively easy to achieve in a short time period that require low self-regulation, or goals that are more complex that we would ideally love to achieve but are more difficult as they require more long-term high self-regulation. The goals we set ourselves may also depend on our level of general self-efficacy. That is, if we have low confidence in our ability to achieve our goals (i.e. low GSE) we may set more unattainable goals that we do not know how to achieve, or more complex goals that are difficult to achieve within the specific time frame. With higher general self-efficacy, we may set more realistic goals that are easier achieved. The act of planning a goal requires a focus on the future and writing a plan is evidence of future thinking. What is less known is whether writing about the past, the future, or an integrated past and future, increases goal achievement through self-efficacy by accessing time-related information which may not normally be used to determine GSE. To be able to think about the future, we may need to reflect on and learn from our past performances. Thus, Study 2 explores whether writing a general plan (Condition 1), writing a plan with a past focus (Condition 2), a plan with a future focus (Condition 3), or a plan with an integrated past and future focus (Condition 4), will increase general self-efficacy towards goal achievement.

First, regarding both low and high self-regulation goals, it is hypothesised that those who set 'simple' goals will score higher in GSE (as they have higher expectations in their ability to achieve their goals). Those who set 'complex' goals will have lower GSE (as they have lower expectations in their ability). Next, it is hypothesised that for both low and high self-regulation 'simple' goals, the past positive and future TPs predict GSE. Finally, as TP may be a precursor to GSE, it is hypothesised that those with a focus on both the past and the future (writing Condition 4) will achieve their goals and increase in general self-efficacy, the past positive and future TPs scores at phase 2 compared to the other writing conditions.

7. Methods

7.1. Participants

Psychology students from a northern UK university were invited to take part via online links advertising the study. Originally 191 students signed up to participate, however, 52 did not return data for phase 2 thus 139 students (Age: $M = 21.61$; $SD = 6.37$) took part (see Table 5 for demographic information). Participants were not offered any incentives.

7.2. Materials

As in study 1, GSE was assessed using Schwarzer and Jerusalem's (1995) General Self-Efficacy Scale (α = .69). Time perspective was assessed using the 'past positive' (α = .80), 'past negative' (α = .79) and 'future' (α = .81) TP subscales from Zimbardo and Boyd's (1999) ZTPI.

7.2.1. Experimental writing conditions

In *Condition 1* ($n = 40$), participants were given the following instructions: 'Much research into goal setting suggests that the best predictor of achieving your goals is if you write a plan on how you would achieve those goals. Please take a couple of minutes now and write how

Table 5
Demographics information of participants in study 2.

	n	Age	Ethnicity *(n)*
Male	42	*M 20.55* *SD* 2.91	White British 40 Asian British 1 Other 1
Female	97	*M* 21.87 *SD* 6.95	White British 90 Asian British 3 Other 4

you could achieve your goals'.

In *Condition 2* ($n = 41$), the instructions given to participants were: 'Often when people are setting goals, they forget how amazing they have been in achieving goals in the past because often we forgot about them once we achieve them and we forget how many goals we have really achieved. Take a moment now and write some of the goals that you have achieved in the past, even though at the time it may have been quite hard for you to do so (e.g., how often did you study for exams even though you would much rather be doing something else, or avoided overeating even though you were desperate to, or planned to get all your Christmas shopping done on time and did). Particularly write about any goals that have some similarity with the two you described above. Finally, much research into goal setting suggests that the best predictor of achieving your goals is if you write out a plan on how you would achieve those goals. Please take a couple of minutes now and write how you could achieve your goals'.

In *Condition 3* ($n = 36$), participants were instructed: 'Often when people are setting goals, they know how busy they are now (and have been in the past) but they think they will have more time in the future (hence they put off doing anything towards their goals till they have 'more time'). One way to stop this is to think about your future time as the same as the time you have now. Take a moment now and write how you can make time to achieve your two goals above but imagine that you will be as busy as you have been in the past week. Particularly write how could you get creative and innovative to make sure these two goals are achieved. Finally, much research into goal setting suggests that the best predictor of achieving your goals is if you write out a plan on how you would achieve those goals. Please take a couple of minutes now and write how you could achieve your goals'.

Finally, for *Condition 4* ($n = 41$), participants were given the following instructions: 'Often when people are setting goals, they forget how amazing they have been in achieving goals in the past because often we forgot about them once we achieve them and we forget how many goals we have really achieved. Take a moment now and write some of the goals that you have achieved in the past, even though at the time it may have been quite hard for you to do so (e.g., how often did you study for exams even though you would much rather be doing something else, or avoided overeating even though you were desperate to, or planned to get all your Christmas shopping done on time and did). Particularly write about any goals that have some similarity with the two you described above. Next, people setting goals know how busy they are now (and have been in the past) but they think they will have more time in the future (hence they put off doing anything towards their goals till they have 'more time'). One way to stop this is to think about your future time as the same as the time you have now. Spend a moment or two now thinking how you can make time to achieve your two goals above but imagine that you will be as busy as you have been in the past week. Particularly write about how you could get creative and innovative to make sure these two goals are achieved. Finally, much research into goal setting suggests that the best predictor of achieving your goals is if you write out a plan on how you would achieve those goals. Please take a couple of minutes now and write out a plan on how you could achieve your goals'.

7.3. Procedure

The study received ethical approval from Teesside University Research Ethics Committee and the University of Portsmouth University Ethics Committee. The data was collected in two phases. In phase 1, participants first completed demographic information, items from the three ZTPI subscales and the general self-efficacy questionnaire. Next, participants were asked to outline two of their own criterial goals that they would really like to achieve within one month. The first should be a simple goal that participants should realistically be able to achieve in the next month (low self-regulation goal), and the second should be a more complex goal that they would really love to achieve in the next month (high self-regulation goal).

Participants were then randomly assigned to one of four writing conditions: Condition 1 (writing a general plan); Condition 2 (priming a past positive TP by highlighting past successes in goal achievement); Condition 3 (priming a future TP by highlighting time discounting in the future); or Condition 4 (priming both a past positive and future TP by integrating both past and future focusses). One month later, participants were invited back for phase 2. Participants once again completed the General Self-Efficacy Scale and the subscale items on the ZTPI. Next, participants were again asked to identify their two goals ('low self-regulation goal' and 'high self-regulation goal'), and state whether they had achieved their goals.

7.4. Data coding

Participants 'low self-regulation' goals were coded by 2 independent coders as either 'simple'or 'complex' in nature ($\kappa = .762$, $p < .001$). For example, 'return book to the library' was coded as a 'simple' goal, whereas 'quit smoking' was coded as a 'complex' goal. Participant's 'high self-regulation goals' were also independently coded as either 'simple' or 'complex' ($\kappa = .691$, $p < .001$). For example, 'complete editing of assignment' was coded a 'simple' goal whereas 'travel the world' was coded as a 'complex' goal to fully achieve within one month.

8. Results

First, regarding the low self-regulation goals, participants 82.7% ($n = 62$) achieved their 'simple' goal whereas 17.3% ($n = 13$) did not. Next, 69.5% participants ($n = 41$) achieved their 'complex' goal within a month whereas 30.5% ($n = 18$) did not. Regarding the high self-regulation goals, 39.0% ($n = 23$) of participants achieved their 'simple' goal and 61.0% ($n = 36$) did not, whereas 30.0% ($n = 24$) achieved their 'complex' goal and 70.0% ($n = 56$) did not.

Next, a series of t-tests were performed examining goals, GSE and TP. Regarding the low self-regulation goals, as Table 6 shows those who set 'simple' goals ($n = 77$) rather than 'complex' ($n = 64$) goals scored significantly higher GSE scores ($t = 8.04^{(127)}$ $p < .001$, d=.62), past positive TP scores ($t = 2.87^{(138)}$, $p = .009$, d=.44), and future TP scores ($t = 3.93^{(139)}$, $p = .016$, d=.42). Those who set 'simple' goals scored significantly lower past negative TP scores ($t = 4.58^{(127)}$, $p = .004$, $d = .81$). Regarding high self-regulation goals, Table 6 shows those who set 'simple' goals ($n = 59$) rather than 'complex' ($n = 82$) goals scored significantly higher GSE scores ($t = 7.25^{(127)}$, $p < .001$, d=.58), past positive TP scores ($t = 2.88^{(137)}$, $p = .005$, $d = .48$), and future TP scores ($t = 3.85^{(139)}$, $p < .001$, $d = .68$). Those who set 'complex' goals scored higher in past negative TP scores ($t = -3.02^{(128)}$, $p = .003$, $d = .54$).

Next, the regression model for those who achieved their goals was significant ($R^2 = .667$, $F^{(3,93)} = 59.99$, $p < .001$). The future TP significantly positively predicted self-efficacy ($\beta = .651$; $t = 8.88$; $p < .001$), as did the past positive TP ($\beta = .168$; $t = 2.35$; $p = .021$). There was a significant negative relationship for the past negative TP ($\beta = -.507$; $t = -.7.90$; $p < .001$). For those who did not achieve their goal, the regression model was also significant ($R2 = .699$, $F(3,24) = 16.22$, $p < .001$). The future TP also significantly positively predicted self-efficacy ($\beta = .661$; $t = 3.13$; $p = .005$). The past positive TP ($\beta = .117$; $t = .839$; $p = .411$) the past negative TP ($\beta = -.202$; $t = -.1.67$; $p = .109$) did not significantly predict self-efficacy (see Tables 7 and 8 for correlation matrices).

In exploring the writing conditions and goal achievement, as Table 9 shows significantly more participants in both Condition 2 (past focused) and Condition 4 (past and future focused) achieved their goals. Interestingly, more participants in Condition 1 (general plan) had achieved their goal compared to those in Condition 3 (future focused). It appears that a positive view of the past with a positive view of the future increases goal achievement rather than just the future alone.

Finally, as scores were not normally distributed, a Wilcoxon Signed Rank Test was performed to analyze change scores for general self-efficacy; past positive, past negative, and the future time perspectives

Table 6
Means and Standard Deviations for self-efficacy, time perspectives for low and high self-regulation goals in study 2.

	Low SR Goal				High SR Goal			
	Realistic		Complex		Realistic		Complex	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
GSE	33.14	3.48	28.33	4.37	33.03	2.37	28.70	4.61
Past Positive TP	3.65	.64	3.33	.78	3.67	.56	3.33	.81
Past Negative TP	2.86	.79	3.44	.63	2.95	.73	3.35	.73
Future TP	3.70	.54	3.47	.55	3.71	.46	3.37	.53

Table 7
Summary of correlations for those who achieved their goal within one month in study 2.

	GSE	FTP	PNTP
GSE			
Future TP	.583**		
Past Negative TP	-.361**	.228*	
Past Positive TP	.527**	.478**	-.070

* = p < .005; ** = p < .001.

Table 8
Summary of correlations for those who did not achieve their goal within one month in study 2.

	GSE	FTP	PNTP
GSE			
Future TP	.823**		
Past Negative TP	-.198	.044	
Past Positive TP	.750**	.834**	-.034

* = p < .005; ** = p < .001.

Table 9
Percentage of low and high self-regulation goals achieved or not achieved across the four writing conditions in study 2.

	Low SR Goal				High SR Goal			
	Achieved		Not Achieved		Achieved		Not Achieved	
	%	*n*	%	*n*	%	*n*	%	*n*
General Plan (C1)	71.8	28	28.2	11	25.6	11	65.1	28
Past Focussed (C2)	73.3	33	15.4	6	28.9	13	62.2	28
Future Focused (C3)	62.5	15	37.5	9	24.1	7	58.6	17
Past and Future Focussed (C4)	78.9	30	21.1	8	43.9	18	56.1	23

(see Howell, 2010). Participants in Condition 4 significantly increased in GSE scores (Z=5.10, $p < .001$), past positive scores (Z=5.16, $p < .001$), future time perspective scores (Z=4.78, $p < .001$) and significantly decreased in past negative scores (Z=-4.70, $p < .001$). No other conditions were significant.

9. Discussion

The present studies sought to determine whether time perspective is a precursor to general self-efficacy, and whether changing our time perspective by recalling past successes and positively planning for future goals can increase GSE towards goal achievement. Results support the hypotheses in that the 'past positive' and 'future' time perspectives positively predicted general self-efficacy and by writing about both a positive past and those future goals can increase the belief that we have the skills to achieve both low and high 'simple'

self-regulation goals. As the future time perspective involves planning for the future and a striving towards future goals (Zimbardo and Boyd, 2008), it is not surprising that those scoring high in the future time perspective achieved their goals more than those lower in the future TP. However, it is interesting that in focusing on the past to boost general efficacy and the future to plan for how to achieve our goals, we may increase our chances further towards goal achievement. It appears that we need the past to inform our future, as focusing on the future alone means that we are not recalling or remembering information from our past that may be needed to increase general self-efficacy (and thus our chances of success).

In study 1, participants who identified 'simple' goals achieved their goals within a week, and in study 2, participants who set more 'simple' goals scored higher GSE scores. Previous research suggests that people who have lower efficacy beliefs about achieving their goals are less likely to make behavioural plans from behavioural intentions (e.g. Ajzen, 1985; Bandura, 1986; Pintrich, 2004; Soric et al., 2017; Zimmerman and Schunk, 2008). In not achieving our goals (or by giving up on them) we may have more of a 'past negative' focus on past failures whilst attempting to achieve a future goal, thus setting ourselves up for more failure in future attempts.

The current results support previous research findings in that those with higher self-efficacy tend to set higher goals (Donovan and Hafsteinsson, 2006), and as higher GSE promotes goal achievement, then altering our time perspective can be a relatively easy way to increase general self-efficacy. Indeed, participants writing with an integrated past and future focus in study 2 increased in GSE, 'past positive' and 'future' time perspective scores, suggesting that by focusing what we have achieved in the past and thinking about managing our future time in the same way we think about our present time can help us to achieve our goals.

Boniwell and Zimbardo (2004) suggest that a balanced time perspective involves being high in the 'past positive' perspective, moderately high in both the 'future' and 'present hedonistic' perspectives, and low in 'past negative' and 'present fatalistic' time perspectives. Indeed, in relation to goal achievement, it appears that being high in the 'past positive' and the 'future' time perspectives can increase self-efficacy towards goal attainment, whereas being high in the 'past negative' and 'present fatalistic' results in less goal achievement. Also, results suggest that those high in 'present hedonism' did not achieve their goals, perhaps as a result of less self-regulation towards goal achievement, as hedonists often actively seeking pleasure in immediate gratification whilst avoiding activities that require tedious tasks. Thus, an optimal balanced time perspective may alter depending on the task at hand. We often think that we should be taught how to manage our time more effectively in the future, but results suggest that we should also try to accurately reflect on when we have successfully managed our time in the past and therefore achieved our goals, and how we can use these skills again to repeat this successful performance in the future.

Writing about the past with the future having such a strong effect is perhaps not surprising. There are many aspects that are worth exploring; among them memory, reminiscing, and temporal direction. Working memory and long-term memory are involved in determining our temporal judgements (e.g. Taatgen, van Rijn, & Anderson, 2007). We often know that our future will not be an exact replication of our past; however, we are often unaware of the extent to which our memory of the past is prone to errors and distortions. It seems clear that memory involves not

only our ability to 're-experience' events from the past, but also our ability to imagine, or 'pre-experience' events in the future (e.g. Atance & O'Neill, 2005; Schacter, 2001; Suddendorf & Busby, 2005). Although Bartlett (1932) did not posit that memory is always inaccurate (Ost & Costall, 2002), he suggested that because we live in an ever-changing world, reproductive memory is not as important as constructive memory. Further, the difference between thought and reality can be large, for example, when we think about the previous day, we may remember 20 or 30 things that happened compared to the thousands of things that the brain processed. Thus, our 'past' is our memory of a very small collection of items that we focus on, and we use this to extrapolate into the future. This extrapolation is the ability to mentally simulate hypothetical situations, and we are able to simulate alternative pasts and hypothetical futures to regulate present emotions and goal motivation behaviours (e.g. Szpunar, 2010; Taylor & Schneider, 1989; Tulving, 1983).

Future research may wish to expand that of Zimbardo et al. (2012) to explore the therapeutic value of understanding subjective time (and how changing and adapting the focus of past experiences) may be beneficial in helping people to cope with previous events and use this information to create better potential futures. Reminiscing about positive past experiences can function to establish and maintain identity (e.g. Erikson, 1963), boost self-esteem (e.g. Lewis, 1971), or create enjoyment and pleasure (e.g. Bryant, Smart, & King, 2005; Hughston & Merriam, 1982; Thornton & Brotchie, 1987), and assist when we try to cope with life's many demands. In setting goals, it may be possible that a quick trip down memory lane to recall previous successes may increase our confidence (GSE) that we can achieve what we want and give us information and insight to what steps to take. If "episodic reconstruction is just an adaptive feature of the future planning system" (Suddendorf & Busby, 2003, p.393), remembering past successes may indeed be of use to move us closer to what we want. With the proliferation of electronic apps, it would be most interesting to explore whether a 'reminiscing app' could help people deal with their present and future more effectively by reminding them of their past successes and what they have done well to achieve the goals they set, increasing general efficacy.

Lam and Buehler (2009) suggest that the temporal direction of recalled events can determine how we subjectively experience temporal distance. That is, we may feel closer to a past event if we recall a stream of related events in a backwards (from where we are now), reverse chronological direction (rather than working from the past event to the present). This reverse recall is thought to create an impression that relatively little has changed since this past event (and in turn makes us feel closer to that event). Thus, future research may wish to consider temporal direction, that is, whether recalling past successes in this reverse direction can further increase general efficacy for both near and distant-future goal achievement. Overall, it seems important to be more aware of how focussing on different time perspectives can function to enhance (or indeed prevent) the effective achievement of our goals.

A limitation of the current research was the subjective nature of whether a goal was achieved. That is, participants were asked to report whether their goal was achieved. Future research may include more objective measures of goal achievement to avoid demand characteristics. Also, it is important to note the sample predominantly comprised of white British females (although typical of a UK psychology undergraduate cohort) future research should examine possible cultural and gender differences. Future research may also consider examining domain-specific self-efficacy measures to discover whether domain-specific time perspective interventions may increase confidence in our abilities to achieve domain-specific criterial goals. For example, academic mathematical-efficacy may increase by priming and integrating both past and future focusses of mathematic ability (as in writing condition 4). This TP intervention may enable appropriate coping strategies to allow for accomplishment in particular domains. Future research may also wish to consider developing the ZTPI to incorporate further items that distinguish between a 'complex' future and more realistic expectations about the future. This could include taking into account the consideration of both immediate and more delayed future consequences of behaviour, to further examine near-versus distant-future attitude-behaviour consistency (e.g. Rabinovich et al., 2010). Items that assess a more 'mindful' present may also allow for a deeper understanding of how people may use time to their benefit (or disadvantage). Thus, those with a 'shorter' future time perspective may not value more distant future goals as much as those with a 'longer' future time perspective due to the temporal delay. An understanding and appreciation of the insights from the past, the resources that are available to us in the present, and an extended future time perspective may increase our chances of focussing on the steps towards achieving our goal rather than just on the goal end-state. This may be especially important if the goal requires higher self-regulation. Typically, people prefer smaller rewards that are more immediate compared to larger but more delayed rewards (e.g. Frederick, Loewenstein, & O'Donoghue, 2002; Leduc-Cummings et al., 2017). It is often difficult to stay focussed on a goal if the reward is in a more distant future, thus we should perhaps be more aware of how the path towards our goal and the steps required are interrelated. A focus on the 'process' rather than the 'end state' may give us more agency in the present, increasing general self-efficacy (and in turn self-regulation) when we realise minor yet significant progress has been made. We may then recognise that each step is itself a reward closer to the end-goal reward, which may also assist us in continuing towards our goal.

We are rarely consciously aware of how flexible and potentially useful our subjective experiences of time are. To have 'time on our side' in a society that demands everything done by yesterday and availability be 24/7, rethinking time perspective may allow for more 'breathing space' to achieve what we want (and avoid what we don't). With a reminiscence of a positive past to increase efficacy to allow for more realistic thinking with less worry and anxiety over the future and less depressive rumination about the past, it may be possible to increase the likelihood of goal achievement.

Declarations

Author contribution statement

Jill Taylor: Conceived and designed the experiments; Performed the experiments; Analyzed and interpreted the data; Contributed reagents, materials, analysis tools or data; Wrote the paper.

Clare Wilson: Conceived and designed the experiments; Wrote the paper.

Funding statement

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Competing interest statement

The authors declare no conflict of interest.

Additional information

No additional information is available for this paper.

References

Ajzen, I., 1985. From intentions to actions: a theory of planned behavior. In: Kuhi, J., Beckmann, J. (Eds.), Action. Control: from Cognition to Behavior, 39. Springer, Heidelberg, p. 11.

Aspinwall, L.G., 2005. The psychology of future-oriented thinking: from achievement to proactive coping, adaptation, and aging. Motiv. Emot. 29, 203–235.

Atance, C.M., O'Neill, D.K., 2005. The emergence of episodic future thinking in humans. Learn. Motiv. 36, 126–144.

Bandura, A., 1977. Social Learning Theory. General Learning Press, New York.

Bandura, A., 1986. Social Foundations of Thought and Action. Prentice-Hall, Englewood Cliffs, NJ.

Bartlett, F.C., 1932. Remembering: A study in experimental and social psychology. Cambridge University Press, Cambridge.
Boniwell, I., Zimbardo, P., 2004. Balancing time perspective in pursuit of optimal functioning. In: Linley, P.A., Joseph, S. (Eds.), Positive Psychology in Practice. John Wiley & Sons, New Jersey.
Bryant, F.B., Smart, C.M., King, S.P., 2005. Using the past to enhance the present: Boosting happiness through positive reminiscence. J. Happiness Stud. 6, 227–260.
Cartensen, L.L., Issacowitz, D.M., Charles, S.T., 1999. Taking time seriously: a theory of socioemotional selectivity. Am. Psychol. 54, 165–181.
Deci, E.L., Ryan, R.M., 2008. Facilitating optimal motivation and psychological well-being across life's domains. Can. Psychol. 49 (1), 14–23.
Donovan, J.J., Hafsteinsson, L.G., 2006. The impact of goal-performance discrepancies, self-efficacy, and goal orientation on upward goal revision. J. Appl. Soc. Psychol. 36 (4), 1046–1069.
Epel, E.S., Bandura, A., Zimbardo, P.G., 1999. Escaping homelessness: the influences of self-efficacy and time perspective on coping with homelessness. J. Appl. Soc. Psychol. 29, 575–596.
Erikson, E., 1963. Childhood and society. W. W. Norton Company, New York.
Feldman, D.B., 2015. Hope, self-efficacy, optimism, and academic achievement: distinguishing constructs and levels of specificity in predicting college grade-point average. Learn. Individ. Differ. 37, 210–216.
Frederick, S., Loewenstein, G., O'Donoghue, T., 2002. Time discounting and time preference: A critical review. J. Econ. Lit. 40 (2), 351–401.
Fryer, J.W., Elliot, A.J., 2008. Self-regulation of achievement goal pursuit. In: Schunk, D.H., Zimmerman, B.J. (Eds.), Motivation and Self-Regulated Learning: Theory, Research, and Applications. Lawrence Erlbaum Associates, New York.
Gollwitzer, P.M., Sheeran, P., 2006. Implementation Intentions and goal achievement: a meta-analysis of effects and processes. Adv. Exp. Soc. Psychol. 38, 69–119.
Huang, C., 2016. Achievement goals and self-efficacy: a meta-analysis. Educ. Res. Rev. 19, 119–137.
Howell, D.C., 2010. In: Statistical methods for psychology, 7th ed. Wadsworth, Belmont CA.
Hughston, G.A., Merriam, S.B., 1982. Reminiscence: A non-formal technique for improving cognitive functioning in the aged. Int. J. Aging Hum. Dev. 15, 139–149.
Jackman, D.A., MacPhee, D., 2015. Self-esteem and future orientation predict adolescent risk engagement. J. Early Adolesc. 37 (3), 339–366.
Keough, K.,A., Zimbardo, P.G., Boyd, J.N., 1999. Who's smoking, drinking, and using drugs? Time perspective as a predictor of substance use. Basic Appl. Soc. Psychol. 21 (2), 149–164.
Klinger, E., 1990. Daydreaming: Using Waking Fantasy and Imagery for Self-Knowledge and Creativity. Tarcher, Los Angeles.
Lam, K.C., Buehler, R., 2009. Trips down memory lane: Recall direction affects the subjective distance of past events. Personal. Soc. Psychol. Bull. 35 (2), 230–242.
Leduc-Cummings, I., Milyavskaya, M., Peetz, J., 2017. Goal motivations and the subjective perception of past and future obstacles. Personal. Individ. Differ. 109, 160–165.
Lewis, C.N., 1971. Reminiscing and self-concept in old age. J. Gerontol. 26, 240–243.
Locke, K.D., Sayegh, L., Weber, C., Turecki, G., 2016. Interpersonal self-efficacy, goals, and problems of persistently depressed outpatients. Assessment 1–13.
Loftus, E.F., 1997. Creating false memories. Sci. Am. 277, 70–75.
Loftus, E.F., Palmer, J.C., 1974. Reconstruction of automobile destruction. J. Verb. Learn. Verb. Behav. 13, 585–589.
Markus, H., Nurius, P., 1986. Possible selves. Am. Psychol. 41 (9), 954–969.
Milyavskaya, M., Inzlicht, M., Hope, N., Koestner, R., 2015. Saying "no" to temptation: want-to motivation improves self-regulation by reducing temptation rather than by increasing self-control. J. Personal. Soc. Psychol. 109, 677–693.
Mischel, W., 1973. Toward a cognitive social learning reconceptualization of personality. Psychol. Rev. 80, 252–283.
Oettingen, G., Mayer, D., 2002. The motivating function of thinking about the future: Expectations versus fantasies. J. Personal. Soc. Psychol. 83, 1198–1212.
Ost, J., Costall, A., 2002. Misremembering Bartlett: a study in serial reproduction. Br. J. Psychol. 93, 243–255.
Oyserman, D., James, L., 2009. Possible selves: from content to process. In: Markman, K., Klein, W.M.P., Suhr, J.A. (Eds.), The Handbook of Imagination and Mental Stimulation. Psychology Press, NY, pp. 373–394.
Pajares, F., 1996. Self-efficacy beliefs in academic settings. Rev. Educ. Res. 66 (4), 543–578.
Pintrich, P.R., 2000. Multiple goals, multiple pathways: the role of goal orientation in learning and achievement. J. Educ. Psychol. 92, 544–555.
Pintrich, P.R., 2004. A conceptual framework for assessing motivation and self-regulated learning in college students. Educ. Psychol. Rev. 16, 385–407.
Rabinovich, A., Morton, T., Postmes, T., 2010. Time perspective and attitude-behaviour consistency in future-oriented behaviours. Br. J. Soc. Psychol. 49, 69–89.
Richmond, J., Wilson, J.C., Zinken, J., 2012. A feeling for the future: how does agency in time metaphors relate to feelings? Eur. J. Soc. Psychol. 42, 813–823.
Schacter, D.L., 2001. The seven sins of memory: How the mind forgets and remembers. Houghton Mifflin, Boston and New York.
Soric, I., Penezic, A., Buric, I., 2017. The big five personality traits, goal orientation and academic achievement. Learn. Individ. Differ. 54, 126–134.
Shell, D.F., Husman, J., 2001. The multivariate dimensionality of personal control and future time perspective beliefs in achievement and self-regulation. Contemp. Educ. Psychol. 26, 481–505.
Schwarzer, R., Jerusalem, M., 1995. Generalized self-efficacy scale. In: Weinman, J., Wright, S., Johnston, M. (Eds.), Measures in Health Psychology: A User's Portfolio. Causal and Control Beliefs. NFER-NELSON, Windsor, UK, pp. 35–37.
Singer, J.L., 1966. Daydreaming. Random House, New York.
Snyder, C.R., 1994. The Psychology of hope: You Can Get There from Here. Free Press, New York.
Suddendorf, T., Busby, J., 2003. Mental time travel in animals? Trends Cogn. Sci. 7, 391–396.
Suddendorf, T., Busby, J., 2005. Making decisions with the future in mind: Developmental and comparative identification of mental time travel. Learn. Motiv. 36, 110–125.
Szpunar, K.K., 2010. Episodic future thought: An emerging concept. Perspect. Psychol. Sci. 5 (2), 142–162.
Taatgen, N.A., van Rijn, H., Anderson, J.R., 2007. An integrated theory of prospective time interval estimation: the role of cognition, attention, and learning. Psychol. Rev. 114, 577–598.
Taylor, S.E., Schneider, S.K., 1989. Coping and the simulation of events. Soc. Cogn. 7, 174–194.
Taylor, S.E., Pham, L.B., Rivkin, I.D., Armor, D.A., 1998. Harnessing the imagination: mental simulation, self-regulation and coping. Am. Psychol. 53, 429–439.
Taylor, J., Wilson, J.C., 2016. Failing time after time: time perspective, procrastination,and cognitive reappraisal in goal failure. J. Appl. Soc. Psychol. 46, 557–564.
Thornton, S., Brotchie, J., 1987. Reminiscence: A critical review of the empirical literature. Br. J. Soc. Clin. Psychol. 26, 93–111.
Triandis, H.C., 1980. Values, attitudes, and interpersonal behavior. In: Howe, H., Page, M. (Eds.), Nebraska Symposium on Motivation 1979, 195–295. University of Nebraska Press, Lincoln, NE.
Tulving, E., 1983. Elements of episodic memory. Oxford University Press, New York.
Urdan, T.C., Maehr, M., 1995. Beyond a two-goal theory of motivation: a case for social goals. Rev. Educ. Res. 65, 213–244.
Zajenkowski, M., Witowska, J., Manciantowicz, O., Malesza, M., 2016. Vulnerable past, grandiose present: the relationship between vulnerable and grandiose narcissism, time perspective and personality. Personal. Individ. Differ. 98, 102–106.
Zimbardo, P.G., Boyd, J.N., 1999. Putting time in perspective: a valid, reliable individual differences metric. J. Personal. Soc. Psychol. 77 (6), 1271–1288.
Zimbardo, P.G., Boyd, J.N., 2008. The Time Paradox. Free Press, Simon & Schuster, New York.
Zimbardo, P.G., Sword, R., Sword, R., 2012. The Time Cure: Overcoming PTSD with the New Psychology of Time Perspective Therapy. John Wiley & Sons, San Fransisco.
Zimmerman, B.J., 1989. A social cognitive view of self-regulated academic learning. J. Educ. Psychol. 81, 329–339.
Zimmerman, B.J., Schunk, D.H., 2008. Motivation: an essential dimension of self regulated learning. In: Schunk, D.H., Zimmerman, B.J. (Eds.), Motivation and Self Regulated Learning: Theory, Research, and Applications. Erlbaum, Mahwah, NJ, pp. 1–30.