

Self-efficacy as a protective factor when translating under time pressure

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Abstract

This study explores the relationship between translation trainees' self-efficacy, their hormonal and subjective responses to the stress of translating under strict time limits, and how this impacts their actual translation performance. Participants completed a questionnaire on self-efficacy beliefs (Costa, Serrano, & Salvador, 2016), along with the State-and-Trait Anxiety Inventory (Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983) and the Positive and Negative Affect Schedule (Watson, Clark, & Tellegen, 1988). They were also tasked with translating three literary texts from English to Spanish under varying time constraints and afterward provided feedback on their performance. Additionally, five cortisol salivary samples were collected during the session. Overall, the results indicate that self-efficacy beliefs act as a protective factor against stress, mitigating the negative effects of translating under time pressure. Interestingly, translation trainees with higher self-efficacy produced less accurate translations in terms of meaning under strict time pressure, in contrast to those with lower self-efficacy beliefs. Furthermore, elevated cortisol levels appeared to positively impact translation accuracy under the same conditions.

Keywords: time pressure, self-efficacy, anxiety, cortisol, translation quality.

Resumen

El objetivo principal de este trabajo es investigar las relaciones entre la autoeficacia de los estudiantes de traducción y las respuestas hormonales y subjetivas ante la situación de estrés que supone traducir bajo presión temporal y cómo estas pueden repercutir en su rendimiento en la traducción. Los participantes completaron un cuestionario en el que se les preguntaba por sus creencias de autoeficacia (Costa, Serrano, y Salvador, 2016) y otros dos cuestionarios autoinformados: el Inventario de Ansiedad Estado-Rasgo (Spielberger, Gorsuch, Lushene, Vagg, y Jacobs, 1983) y el Positive and Negative Affect Schedule (Watson, Clark, y Tellegen, 1988). Asimismo, se les pidió que tradujeran tres textos literarios comparables del inglés al español en diferentes condiciones de límite de tiempo. Al terminar, completaron un cuestionario sobre sus percepciones y sentimientos acerca de su desempeño. Se recogieron, además, cinco muestras salivales de cortisol en diferentes momentos de la sesión experimental. En general, nuestros resultados muestran que las creencias de autoeficacia son un factor protector contra el estrés que reduce el impacto negativo de traducir bajo presión temporal. En lo que respecta a la calidad de la traducción, los estudiantes de traducción con mayor autoeficacia parecen producir textos meta menos precisos en términos de significado en la condición con mayor presión temporal que aquellos estudiantes con creencias de autoeficacia más bajas. Asimismo, un mayor nivel de cortisol parece tener un efecto beneficioso sobre la precisión del texto meta en la misma condición.

Palabras clave: presión temporal, autoeficacia, ansiedad, cortisol, calidad de la traducción.

1. Introduction

The interest in studying what takes place in the translators and interpreters' minds began around 1960s, after the Cognitive Revolution in psychology which started to focus on learning, perception, memory and thinking from an experimental point of view (Miller, 2003). Since then, Cognitive Translation and Interpreting Studies (CTIS, henceforth) has witnessed a dramatic growth in the number of publications in edited volumes and scientific periodicals (Xiao & Muñoz, 2020).

Research in CTIS has focused on a wide range of issues, and many new avenues have emerged. Two decades ago, some scholars began to point out that certain differences found in the performance of translators might be due to personality traits (Jääskeläinen, 2000, p. 73) and that a trait such as tolerance of uncertainty, which is part of any cognitive decision-making process, deserves to be taken into account in translator training (Tirkkonen-Condit, 2000, p.141). Moreover, Bandura's (1977) concept of self-efficacy is also of great interest for CTIS (cf. Bolaños, 2012) as the

belief in one's own ability to succeed in a particular situation is a mediating variable in processes such as decision-making. Especially during the last few years, further research on translators' personality profiles (e. g., Abihssira, 2019; Bolaños-Medina, 2014; Bontempo & Napier, 2014; Hubscher-Davidson, 2016; Lehka-Paul, 2020), as well as on affective dimensions and emotions (e.g., Cifuentes-Férez & Fenollar-Cortes, 2017; Cifuentes-Férez & Meseguer, 2018; Lehr, 2014; Rojo López & Cifuentes-Férez, 2021) is breaking into this arena. Empirical evidence is also available for the impact of affective and personality variables of translators and interpreters upon translation and interpreting performance (cf. Lehka-Paul, 2020). However, much research is still necessary to gain insight into what role these traits play in the process (e.g., at different stages of the translation process, including reading the source text) and the product of translation (e.g., quality of the target texts, effects of personality on text types, etc.).

In the present paper we are mainly concerned with translator's perception of self-efficacy since it has been linked with numerous benefits, such as resilience to stress and improved performance (e.g., Hitches et al., 2023; Travis et al., 2020; Udayar et al., 2020). We aim at exploring the associations between translation trainees' perception of self-efficacy and their subjective and hormonal responses to the stressful situation of translating under strict time constraints. Moreover, we are also interested in investigating the potential impact of these variables on translation trainees' performance in terms of quality of the translated text. To this purpose, section 2 focuses on time pressure and reviews relevant work on time pressure within CTIS. Section 3 discusses the concept of self-efficacy, its sources and summarizes relevant literature on the effects of self-efficacy within CTIS. Section 4 introduces the study and section 5 summarizes the main conclusions and some avenues for future research.

2. Time pressure in translation

Time and deadlines are extremely important for translators (cf. Gouadec, 2017, p.5). When faced with tight deadlines or stringent time constraints for a prolonged period of time, translators run the risk of suffering from acute stress, which might affect their psychological and physical wellbeing in addition to their performance. Investigating the impact of time pressure on translators' psychological/emotional and physiological responses might be of interest in order to gain a better understanding of the translation process as well as to raise translators' awareness of its impact on their emotional and physical wellbeing. The term time pressure is used in the present paper to refer to the psychological reaction that individuals have when they believe the amount of available time is less than the amount they perceive they need to perform a translation task (cf. Kleiner, 2014; Ordóñez, Benson, & Pittarello, 2015), whereas time constraint is used when individuals face a time limit imposed externally when performing a translation task.

Most of the studies on the effects of time pressure which have used physiological and self-reported measures have focused on interpreting (e.g., Korpál, 2016; Korpál & Jankoviak, 2021; Rojo López, Foulquié-Rubio, Espín López, & Martínez Sánchez, 2021) whereas scarce research attention has been paid on written translation. Over the last two decades, translation research, mainly through key-logging and eye-tracking instruments, has investigated its role on the different translation stages (Jensen 1999, 2000), translators' fixations on source and target texts (Sharmin et al., 2008), and written translation product quality (De Rooze, 2003; Ghobadi et al., 2017; Kourouni, 2012), results up to date being far from conclusive.

In most of the studies on time pressure in translation, time pressure is generally induced by objectively constraining the time frame for a translation task, but other supplementary subjective time-pressure manipulation strategies are available, such as giving instructions about the time frame before starting the task or visualizing the elapse of time (Weng & Zheng, 2020). Thus, it is crucial to consider how time pressure is induced and how it can be measured in the studies.

Bayer-Hohenwarter (2009) was, to our knowledge, the first to explore the methods used in the experimental studies on time pressure in translation. She distinguishes three time-pressure measurement approaches: subjective definition/rating, which include the use of self-report measures such as the State-Trait Anxiety Inventory (STAI) or retrospective questionnaires; pragmatic objectivation (e.g., signs of stress on the face and in body language, that is, signs of the stressful state of the participant); and physiological objectivation, that is, the use of biomarkers, such as stress hormones, blood analysis, etc., to measure the biological reactions to stress induced by time pressure. Despite the fact that according to Bayer-Hohenwarter (2009), physiological markers might be the most reliable for studying time pressure due to their objective character, she argues in favour of combining self-report measures with physiological measures in the study of time pressure since psychological and emotional factors help the researcher to reach conclusive results.

Jensen (1999) examined by means of key-logging the translation process of professionals, non-professionals and young translators, who have to translate four texts with 10, 15, 20 and 30-minute time constraints. The only significant effect of time pressure was observed when more time was available; in this case, two or more rounds of trying to solve problems were found where previous problem-solving time had already been devoted (Jensen & Jakobsen, 2000: 9). Much in the same line, De Rooze (2003) used keystroke logging but instead of focusing on coping tactics during the translation process he paid special attention to stress caused by time pressure and how it affected translation performance. In his research, participants were asked to perform a 10-minute heating task, then asked to translate a text in 15 minutes, and

after that, another text in 10 minutes. De Rooze, unlike Jensen (1999), started with the less stressful translation and then moved onto the text to be translated under stringent time pressure. He found that (a) when asked to translate more than 200 words within 10 minutes, translation quality lowers or decreases more than 15%; (b) there was a tendency to make mistakes in the target text just after making one; and (c) 25% of the participants produced higher quality texts under time pressure. In line with these findings, the results of the study by Ghobadi, Madadi, and Najafian (2017) showed that time pressure had a significant impact on both the quality and quantity of the translation task carried out by the participants, namely, participants in the time pressure group produced more translated materials but their quality lagged behind those of the texts by participants in the control group (no time pressure). However, Kourouni (2012) did not find any statistically significant difference in the overall translation quality for the 30-minute, 20-minute and 10-minute tasks.

Other researchers have used eye-tracking to provide an insight of the effects of time pressure. Sharmin, Špakov, Rähä, and Jakobsen (2008) included text complexity as another variable (using Flesh-Kincaid reading scores) and participants were given 6, 5 and 4 minutes to translate each text. Their findings reveal that time pressure was found to affect fixations, more concretely, in the source text, suggesting that translators can adapt their reading-for-comprehension to variable time constraints, whereas it is more difficult for them to adapt their reading-and-monitoring of the target text (p. 126).

On the whole, these studies provide evidence for the higher occurrence of errors under stringent time conditions, but it is also noted that having enough time does not always guarantee less errors (e.g., Lorenzo, 2002; Künzli, 2007) and that some translators seem to work much better under time pressure (e.g., De Rooze, 2003; Khalzanova, 2008), pointing out at the intervening role of individual differences and personality traits. Recently, Rojo López, Cifuentes-Férez, and Espín López (2021) found that two personality traits seem to play an important role on both the translation process and product: self-esteem as a protective factor against stress and trait anxiety as a predictor of higher accuracy. Despite the fact that self-esteem was found to be a protective factor against stress produced by translating under time pressure, it seems to have a negative effect on target texts since translation trainees with higher self-esteem produced less accurate translations under extreme time pressure in the attempt to translate more words, as also noted by Ghobadi, Madadi, and Najafian, 2017. Moreover, Rojo López, Cifuentes-Férez, and Espín López (2021) noted a decreasing pattern for cortisol levels which pointed to the effect of trainees' attentional response to the translation task (cf. Rojo López & Naranjo Sánchez, 2021; Rojo López, Ramos Caro, & Espín López, 2021).

Drawing from Rojo López, Cifuentes-Férez, and Espín López (2021), in the study presented in Section 4, we use self-report measures and salivary cortisol to measure

the physiological effects of time pressure in written translation and their connection to translation trainees' self-efficacy. Before delving into that section, a critical literature review on self-efficacy beliefs and self-efficacy in CTIS is provided.

3. Self-efficacy beliefs

It is well-known that self-efficacy mitigates the detrimental effects of stress (cf. Fida et al., 2015). Despite this, the assessment of self-efficacy during translation training has been rather overlooked in translation research with a few exceptions (e.g., Bolaños-Medina, 2014; Bolaños-Medina, 2017, 2018; Haro-Soler, 2018, 2022; Jiménez Ivars et al., 2014; Konttinen, 2021; Yang et al., 2021).

The concept of self-efficacy stems from Bandura's Social Cognitive Theory (1986, 1987, 1997), which proposes that cognitive and behavioural aspects of an individual interacts with the environment in a two-way process. In his own words, self-efficacy consists of the "beliefs in one's capacity to organize and execute the courses of action required to produce given attainments" (Bandura, 1997, p. 3). Self-efficacy beliefs can have an effect on decision-making processes, motivation and goal-setting, the effort and persistence when performing a certain task in the face of difficulties or failure, as well as on emotional states, such as anxiety, which can negatively affect problem solving (Bandura, 1986, 1987, 1997). Moreover, Bandura (1977) stated that self-efficacy can influence an individual's level of anxiety in relation to the task to be accomplished. This means that individuals with low self-efficacy will experience higher anxiety whereas those with high self-efficacy will experience lower anxiety.

Bandura (1994, 2006) describes how self-efficacy is the perception of competence rather than actual performance, a distinction that greatly impacts an individual's course of action since it influences the way a person thinks, feels and acts. The construct of self-efficacy should be distinguished from other self-perception concepts (Haro-Soler, 2018; Pajares, 1997), such as self-esteem, which refers to a person's perception of his or her own worth, and self-confidence whose focus is on the perception of one's capabilities in general. Moreover, Bandura (1997) argues that self-efficacy is more or less durable but does not require stability over time. Self-efficacy, thus, could be modified through teaching intervention or training since individuals could be trained to engage in cognitive appraisal to interpret their environment (e.g., translation and interpreting situations) in constructive ways to build up their self-efficacy beliefs (Atkinson, 2014).

One's self-efficacy can generate from four different sources: enactive mastery experience, vicarious experience, verbal persuasion, and physiological and emotional states (Bandura, 1997). First, mastery experience relates to one's self-perceived ability to (un)successfully perform a task based on previous achievements or failures (Bandura,

1997, p. 80; Zhang & Ardasheva, 2019). Second, vicarious experience is linked to the impact that others' performance has on oneself; in other words, by observing a successful or unsuccessful performance of other individuals with similar abilities, one can strengthen or undermine his or her self-efficacy beliefs. Third, verbal persuasion refers to the feedback for performance on a given task and it is the source of self-efficacy most commonly used by teachers, with positive constructive comments enhancing self-efficacy and negative comments undermining it (Haro Soler, 2017, 2022; Torre, 2007). Last, physiological and emotional states refer to the individual's ability to manage their emotions (e.g., stress, anxiety) during performance. According to Bandura (1997), these four sources show how one's beliefs in his or her self-efficacy can affect performance.

In relation to the effects of self-efficacy on performance and behaviour, it has been noted that individuals with low levels of self-efficacy tend to avoid performing activities which they feel unprepared for, preventing them from having the possibility of modifying the beliefs that they are not capable of coping with (Bandura, 1986, 1997). In contrast, individuals who are more confident in their abilities to perform a particular task invest more effort, persevere longer in the face of challenges, and are more resilient to failures than those with lower self-efficacy (Bandura, 1995, 1997; Zeldin & Pajares, 2000). Moreover, it has also been pointed out that when a task is unchallenging, self-efficacy has less effect on performance, whereas, when a task is challenging and attainable, self-efficacy has a positive effect on performance (e.g., Beattie, Fakehy, & Woodman, 2014).

Psychological research on the interplay between self-efficacy and performance in different fields has also examined affect, anxiety, and stress. As far as affect is concerned, it has been shown that affect can influence persistence and success on a task, with positive affect leading to higher performance and self-efficacy (e.g., Kavanagh & Bower, 1985; Kavanagh & Hausfeld, 1986; Thelwell, Lane, & Weston, 2007). Moreover, there is empirical evidence indicating that teaching intervention can reduce anxiety and negative affect, increasing in turn positive affect and self-efficacy (e.g., Randler et al., 2016). In musical performing, studies indicate that lower levels of self-efficacy are related to higher music performance anxiety (MPA) in both in adult and young musicians (e.g., Hendricks, Smith, & Legutki 2015; Orejudo et al. 2017). MacAfee and Comeau (2020) found that MPA can have performance-enhancing and performance-impairing effects on self-efficacy, but no association was found between MPA and behavioural anxiety, indicating that music students might appear less anxious than they actually feel. Moreover, research has suggested that individuals have generally an optimal level of anxiety that favours performance (Hanin, 2000; Mor et al., 1995). In sports contexts, Costa, Serrano, and Salvador (2016) found that women with high levels of self-efficacy have better performance, better positive mood, and lower anxiety, suggesting that self-efficacy influences the emotional experience

of the situation. In their study, salivary cortisol (i.e., a steroid hormone secreted into saliva when an individual is under stress) is also measured. Their results suggested that cortisol response did not depend on self-efficacy beliefs, thus, contradicting Bandura's (1997) claim that individuals with low self-efficacy would have greater stress responses. However, other studies have found significant relationships between cortisol and self-efficacy, pointing out the importance of this stress hormone to better understand the entire process (Suay et al., 1999). Therefore, cortisol is not only a stress marker that is used to explain the response to competition, but also another variable affecting performance since it depends on more subjective factors (Lautenbach & Laborde, 2016; Costa, Serrano, & Salvador, 2016).

Within translation studies, some research attempts have been made to include the study of self-efficacy as translation is considered a higher-order cognitive process in which cognitive, affective and emotional aspects are to be taken into consideration (e.g., Angelone, 2010; Hansen, 2010; Shreve & Lacruz, 2014). Self-efficacy is considered to be included in the concept of self-concept (Kiraly, 1995; Muñoz Martín, 2014). The latter pertains to "a sense of the purpose of the translation, an awareness of the information requirements of the translation task, a self-evaluation of the capability to fulfil the task, and a related capacity to monitor and evaluate translation products for adequacy and appropriateness" (Kiraly, 1995, p. 100); whereas the former, self-efficacy in translation, could be defined as the confidence that translators have in their abilities to perform well or fulfil in translation tasks (Haro-Soler & Kiraly, 2019). This is the definition we are adopting in this piece of research.

Pioneering research on self-confidence (that was used as synonym of self-efficacy in Kussmaul (1995)) in the early 1990s indicated that it is a prerequisite for creative translation and that adequate solutions seem to be subsequently lost in the target text due to the translator's insecurity (Kussmaul, 1995). Furthermore, self-efficacy and translation quality seem to be positively related (Tirkkonen-Condit & Laukkanen, 1996) with translators with higher self-efficacy producing better target texts in terms of quality.

More recent research on self-efficacy overall suggests that translators' self-efficacy is associated with their performance, motivations as well as with their competences and/or skills, professional success and job satisfaction (Albin, 2012; Araghian et al., 2018; Atkinson 2012, 2014; Bolaños-Medina, 2014; Haro-Soler, 2018, 2019a). Atkinson (2012) focused on freelance translators' psychological skills. According to his model, psychological skill consists of three components: self-efficacy, attribution style and locus of control (internal and external). Attribution style refers to the way an individual explain behaviour or past events, in other words, what attributions a person makes for the reason of behaviour (i.e., hard work, luck, task difficulty, etc.). Locus of

control is related to attribution style as it also focuses on the perceptions of causation, but the difference lies on the fact that locus of control and self-efficacy centre on future expectations for performance whereas attribution style on explanations of past performance. His results overall suggested that self-efficacy relates to motivation, job satisfaction and posterior job performance. Albin (2012) found that high self-efficacy and a favourable attribution style (i.e., attribution of success to internal and stable causes, such as one's capabilities) correlates with high level management skills and high levels of performance on the use of CAT tools. Moreover, her data indicated that translators with high self-efficacy seem to evaluate themselves against money and prestige criteria. Bolaños-Medina (2014. p. 212) found that self-efficacy correlated positively with tolerance of ambiguity, perceptions of meeting the needed requirements to become a professional translator, source language reading comprehension, the ability to find background documentary information and to be aware of when to stop searching for a solution for a translation problem. Much in the same vein, Araghian et al. (2018) concluded that translation trainees with lower self-efficacy spend too much time translating because of their repeated attempts at production and exhaustive revision.

The growing interest in self-efficacy in translation has led to scholars to design scales for measuring self-efficacy. By way of illustration, self-efficacy scales have been designed by Lee (2014) for consecutive interpreting and by Bolaños-Medina and Núñez (2018), Haro-Soler (2018, 2022), Yang et al. (2021) and Kottinen (2021) for translation. The development and validation of these scales has narrowed the gap in the assessment of self-efficacy in translation and interpreting; however, they are targeted to specific audiences depending on their scope (e.g., measuring undergraduates translating self-efficacy, self-efficacy in translation service provision, etc.) with specific translation directions and include, overall, a large number of items. We did not opt for these scales so as to avoid participants' fatigue from spending too much time on filling up questionnaires. We, therefore, measure situational self-efficacy beliefs following Costa, Serrano, and Salvador (2016) as it is a light-weight measuring tool consisting of just three items referring to the capacity, confidence and importance of successfully performing the translation task on a 1-to-5 Likert scale. Accordingly, self-efficacy in relation to the translation task in which they were going to take part was operationalized as the mean of these three items.

4. The study

4.1. Aim and hypotheses

Our main aim is to study the impact of perceived self-efficacy on the hormonal (i.e., salivary cortisol response) and subjective emotional (i.e., anxiety, positive and

negative affective states) responses to translating under time pressure, as well as on translation performance in terms of quality and number of translated words.

Based on findings from existing research, we posed the following hypotheses to fulfil our aim:

1. When translating under time pressure, trainees' cortisol response will be higher and their performance will be worse than when translating under no time pressure.
2. Higher levels of self-efficacy will be associated with trainees' lower cortisol levels and state anxiety responses under time pressure (i.e., Text 2 and Text 3).
3. After finishing the translation tasks, positive affect scores will be lower and negative affect and state anxiety scores will be higher.
4. Higher levels of self-efficacy will be associated with better performance in the translation tasks under time constraints (i.e., Text 2 and Text 3).
5. Higher levels of self-efficacy will be associated with trainees' attribution of results to their capacity and effort.

4.2. Participants

After completing a general health questionnaire, 25 female translation trainees at the University of Murcia (Spain) were selected to participate in the study. They did not have any medical or psychological problem. Besides, we ensured they were not taking the contraceptive pill since it has been demonstrated to increase cortisol levels (e.g., Nielsen et. al, 2013) and could, thus, affect our results. All of them had Spanish as mother tongue and English as second language, and their age ranged from 19 to 20 years ($M = 19.32$ years; $SD = .47$). The main characteristics of the sample are shown in Table 1.

Table 1: Descriptive characteristics of the sample (N=25)

Variables	Minimum	Maximum	Mean	SD ^c
Age	19	20	19.32	0.47
BMI ^a	16.65	24.72	21.11	2.31
STAI Trait ^b	8	53	28.76	10.93

^aBody Mass Index.

^bTrait anxiety.

^cStandard deviation.

Participants granted their consent according to the Declaration of Helsinki, and the study protocols were approved by the Ethics Committee at the University of Murcia.

Participants were informed of the general purpose of the study and were told that they could leave the experiment at any point.

4.3. Materials

4.3.1. Source texts

We used the materials and procedure followed in Rojo López, Cifuentes-Férez, and Espín López (2021). The source texts were three English literary texts of similar difficulty according to the Flesch-Kincaid Reading Ease and Grade Level, the Gunning Fog Score, the SMOG Index, and the Coleman Liau Index (see Table 2). They were taken from the novel *The Ballroom* (2016) by Ann Hope. The three texts were descriptive passages in which dialogue was absent. The first text (Text 1) contained 150 words, whereas the second (Text 2) and the third (Text 3), 153 words each. We opted for texts shorter than 200 words for two reasons, namely, (1) participants were in their second year of their degree, so they translate at a slower pace than more advanced students and we wanted to prevent them from fatigue since all of them were requested to translate the three texts; and (2) to differentiate between a time pressure condition (Text 2) where the task was affordable within the given 10 minute time limit (cf. Rojo López, Cifuentes-Férez, & Espín López, 2021) and another condition (Text 3) where the 5 minute time limit would make trainees aware of the impossibility to accomplish this translation task.

Table 2: Scores of text difficulty, grade conversion and comprehension of the three texts

	Text 1	Text 2	Text 3	Grade Conversion - Comprehension
Flesch Kincaid Reading Ease	92.7	100.4	96.4	5th Grade - Very easy to read
Flesch Kincaid Grade Level	3	2.5	2.3	5th Grade - Very easy to read
Gunning Fog Score	5.6	4.1	4.9	5th Grade and below - Very easy to read
SMOG Index	3.9	2.7	3.2	5th Grade - Very easy to read
Coleman Liau Index	9.6	7.3	7.6	8th, 9th & 10th Grade - Conversational English

In order to assess translators in training's performance in each translation task, the accuracy of translated texts was assessed in terms of number of errors (see Table

3). The evaluation sheet was adapted from the one designed for the TRANSCREA research project (cf. Rojo López, 2019). We subtracted from 0.25 to 1 point for each error from a total score of 10 points. Accuracy was assessed by marking errors on three different categories: (1) transfer of meaning (i.e., false and opposite meaning, and unnecessary omissions or additions); (2) transfer of pragmatic function (including mainly loss of literary style, cultural references, implied meaning, humour or irony); and (3) correctness (i.e., grammatical errors, errors in the cohesion of the text, typos and punctuation and spelling errors).

Table 3: Evaluation sheet for the assessment of target texts

Transfer of meaning	
False meaning / Not the same meaning	- 0.5
Opposite meaning / Incoherent meaning	- 1
Unnecessary omission / addition of meaning	- 0.5
Transfer of pragmatic function	
Loss of cultural reference and/or implied meaning	- 1
Loss of humor or irony	- 1
Correctness	
Grammatical errors	- 1
Cohesion errors (connectors, loss of repetition)	- 0.5
Orthotypographic errors	
Typos	- 0.25
Written accents and punctuation marks	- 0.5
Serious spelling mistakes	- 1

We also considered the number of translated words across the different translation tasks by counting the number of words translated by each participant in each source text. Because of the time constraints imposed on participants, all of them completed the translation of Text 1, 17 did not finish Text 2 and none did it for Text 3. Therefore, a correction index was applied to the accuracy scores for these two texts in order to increase comparability among the error categories across the three different texts. The correction index consisted of dividing the score for each type of error by the number of translated words and multiplying the result by the total number of words from the source text (153 words).

4.3.2. Measures and instruments

Self-efficacy was measured following Costa, Serrano, and Salvador (2016). We used a brief questionnaire that consisted of just three items, referring to the capacity, confidence and importance of successfully performing a task (in this case, three translation tasks) on a Likert-type scale ranging from 1 (none) to 5 (a lot). Therefore, their self-efficacy beliefs in relation to the translation tasks in which they were going to take part was operationalized as the mean of the ratings for these three items.

Anxiety was measured by the State-Trait Anxiety Inventory (STAI) (Seisdedos, 1998; Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983). This is a 40-item self-report inventory that measured participants' levels of state anxiety (STAI-S) and trait anxiety (STAI-T) on a 4-point Likert scale, ranging from 1 (almost never) to 4 (almost always).

Positive and negative affect was measured by the Positive and Negative Affect Schedule (PANAS) (Watson et al., 1988). This is a 20-item self-reported questionnaire in which 10 items measure positive affect and 10 negative affect on a 5-point Likert scale, ranging from 1 (nothing) to 5 (very much). Scores can range between 10 and 50 and the higher the scores, the higher levels of positive or negative affect.

Salivary cortisol was gathered employing the Salivette® collection apparatus (Sarstedt, Newton, NC). Over the course of an hour, five saliva samples were procured at distinct temporal junctures relative to the initiation of the experimental task (referred to as sample t0): t-20 (baseline, 20 minutes before task commencement), t0 (commencement of the experimental task), t+20 (20 minutes post-task onset), t+35, and t+45. Participants were instructed to place the cotton swab in their mouths for a duration of 2 minutes, refraining from chewing it to prevent potential alterations in salivary protein composition and flow rate (Bosch, Veerman, de Geus, & Proctor, 2011). They were further directed to maneuver the swab in a circular motion to collect saliva from all salivary glands (Rohleder & Nater, 2009). The uncentrifuged saliva specimens were promptly preserved at -80 °C until subsequent analyses. In order to minimize potential sources of variation, all five samples from each participant were subjected to analysis within a unified assay. The samples underwent evaluation via a competitive solid phase radioimmunoassay (tube coated) utilizing the commercial kit Coat-A-Count Cort (DPC, Siemens Medical Solutions Diagnostics). The assay exhibited a sensitivity of 0.5 ng/ml. Cortisol levels were denoted in nmol/l, featuring intra- and inter-assay variation coefficients of less than 10%.

Attribution style was measured by a 4-item self-reported questionnaire on a 5-point Likert scale in which participants were asked to rate factors that may have contributed

in their results, namely, capabilities, bad/good luck, effort invested, and task difficulty (Espin López, 2009). After completing this questionnaire, participants' perception and feelings in relation to effort invested, level of frustration, accomplishment of the tasks, tasks difficulty, importance of doing well, and marker assessment of the tasks on a 5-point Likert scale were also measured.

4.4. *Procedure*

Participants who met the criteria of not having any physical or mental health problems, and of not being on the pill were contacted and asked to attend the experimental session on an agreed date. Participants were told to maintain their general habits, sleep as long as usual, refrain from heavy physical activity the day before the session, and not to consume alcohol after the previous dinner. Instead, they were requested to drink only water and not to eat chocolate or take coffee, cola, tea in the two hours prior to the session.

Participants entered the experimental room individually and were tested in a single session. Each experimental session lasted approximately 1 hour and 10 minutes for each participant and was held between 2 pm and 6 pm. Once inside, the researcher asked the participants whether they had followed the instructions previously given. They were asked to read the participant information form which informed them that the experiment involved filling up some psychological tests and questionnaires, and translating three texts under different time constraints. They were also informed that five salivary samples would be collected at different times throughout the experimental session and explained how to use the salivette for the own collection of salivary cortisol.

Afterwards, the first sample of salivary cortisol was taken and they completed the self-efficacy three-item questionnaire, the STAI (both trait anxiety and state anxiety), and the PANAS. Once finished, the second salivary cortisol sample was taken just before the start of the translation task. No time limit was given for Text 1, but participants overall spent a maximum of 20 minutes translating this text. On completion, the third cortisol sample was taken. They were then given 10 minutes to translate Text 2. When done, they were given 5 minutes to translate Text 3. A visible countdown timer was displayed in the room, but participants were also told to display one on their own computer screen to keep track of time, as an additional manipulation for time pressure inducement and intensification (cf. Weng & Zheng, 2020). Participants were allowed to use any online documentation resource they wished during the translation task in order to maximize ecological validity. The fourth salivary sample was collected on completion of the translation of Text 3. Next, participants were asked to complete again the STAI-state questionnaire and the PANAS, and were also requested to fill in another brief questionnaire in which they were asked about the factors that may have

contributed in their results (i.e., capabilities, bad/good luck, effort invested, and task difficulty); and about their perception and feelings in relation to effort invested, level of frustration, accomplishment of the tasks, tasks difficulty, importance of doing well, and marker assessment of the tasks. Finally, the fifth salivary sample was taken. Then, they were thanked for the participation and debriefed.

4.5. Results

4.5.1. Data analysis

Salivary cortisol was tested for normal distribution and homogeneity of variance using the Shapiro-Wilk test before the statistical procedures were applied. These analyses revealed significant deviations from normality and were transformed to logarithm.

To assess the cortisol response across the different phases of the protocol as well as the response in PANAS and STAIS before and after the translation tasks, we conducted separate repeated measures analyses of variance (ANOVAs) with time as a within-subjects factor (five phases for salivary cortisol: t-20, t0, t+20, t+35 and t+45) and two phases for PANAS and STAIS (pre- and post-task).

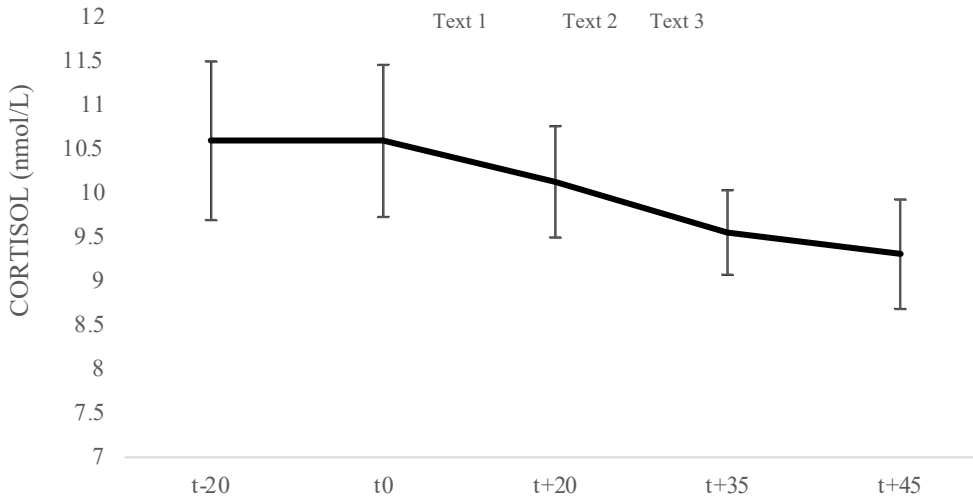
To examine whether cortisol levels could be associated with translation performance scores for the three texts, we conducted Pearson's bivariate correlation analyses between the variables. Moreover, Pearson's bivariate correlation analyses were carried out to test the relationship between self-efficacy, trait-state anxiety, positive and negative affect, and the five cortisol samples. They were also run to examine whether levels of self-efficacy, anxiety, affect and stress-induced cortisol were related to performance scores in the translation tasks. These correlations were conducted for each type of error scale (the total accuracy scale, i.e., the mean score obtained from the three subscales: meaning, pragmatic and correctness errors; and each of the three subscales separately) and for each text (Text 1, Text 2, Text 3). The number of words translated in each text was also included as a performance score.

4.5.2. Results

Salivary cortisol response

A repeated-measures ANOVA was conducted with time (5) as within-subject factor to test differences in salivary cortisol between the different phases. The results did not show a significant main effect for this factor [$F(4; 96) = 1.19$, $p = 0.32$, $\eta^2_p = 0.05$], revealing no statistically significant differences in participant's cortisol levels between the different phases of the experimental task (see Figure 1).

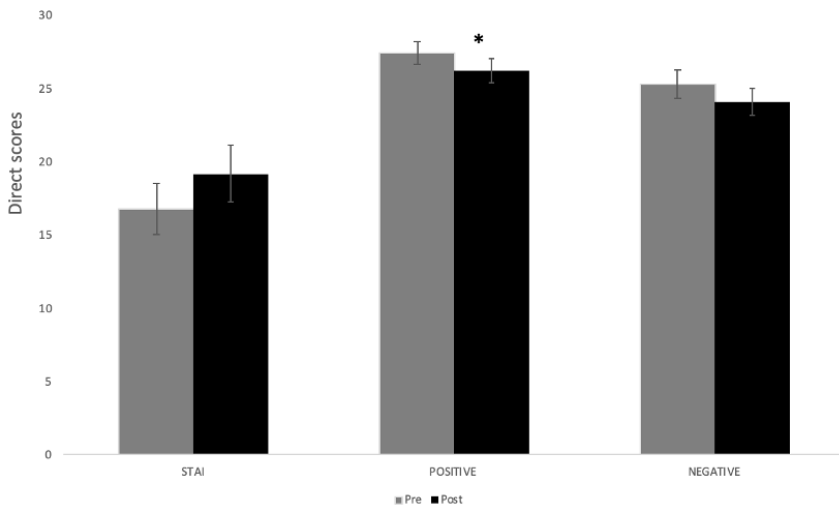
Figure 1: Variation in cortisol response during the experimental session



PANAS (Negative and Positive Affect; NA and PA) AND STALS

A repeated-measures ANOVA was conducted with time (2) as within-subject factor to test differences in affect and state anxiety before and after the experimental task. The results did not show a significant main effect for the negative affect [$F(1; 24) = 2.15$, $p = 0.15$, $\eta^2_p = 0.08$], but significant results were found for positive affect, [$F(1; 24) = 4.14$, $p = 0.05$, $\eta^2_p = 0.14$], with lower scores for positive affect in the post-task as compared with the pre-task ($M_{pre} = 27.44$; $M_{post} = 26.20$). Results for state anxiety did not show a significant main effect [$F(1; 24) = 3.47$, $p = 0.07$, $\eta^2_p = 0.12$] (see Figure 2).

Figure 2: Pre- and Post of PANAS (positive and negative affect) and STAL-State



To examine whether the translation performance scores for the three texts was associated with cortisol levels, we conducted Pearson's bivariate correlation analyses between the variables. The results showed a significant negative correlation between t0 and the scores obtained on accuracy ($r=-.50^{**}$) and meaning ($r=-.52^{**}$) in Text 1. In addition, we found a positive correlation between t+45 and the scores obtained on correctness ($r=.40^{*}$) for Text 3 (see Table 4).

Table 4: Correlations between performance of each text and cortisol levels

Type of text		Cortisol				
		t-20	t0	t+20	t+35	t+45
TEXT 1	Readability	-.14	.07	.18	-.01	.24
	Total Accuracy	-.26	-.50**	-.35	-.32	-.30
	Meaning	-.34	-.52**	-.35	-.28	-.27
	Pragmatics	.13	.03	-.08	-.15	-.10
	Correctness	.10	-.12	.03	-.02	-.05
	Translated words	-	-	-	-	-
TEXT 2	Readability	-	-	-	-	-
	Total Accuracy	.01	-.13	-.06	-.03	.09
	Meaning	-.07	-.09	-.05	-.02	.18
	Pragmatics	.09	-.05	-.005	.06	-.15
	Correctness	.001	-.15	-.21	-.32	-.08
	Translated words	-.27	-.39	-.14	.04	-.10
TEXT 3	Readability	-	-	-	-	-
	Total Accuracy	.35	.23	.22	.21	.30
	Meaning	.35	.22	.14	.34	.31
	Pragmatics	.11	.04	.08	-.09	-.17
	Correctness	.11	.12	.18	.03	.40*
	Translated words	-.24	-.30	-.19	.04	-.009

Table 5: Pearson coefficients for associations between self-efficacy and cortisol levels, state-anxiety (STAI) and Negative and Positive Affect (PANAS)

	1	2	3	4	5	6	7	8	9	10	11	12
Self-efficacy	-	-.14	-.37	-.16	-.31	-.52**	-.53**	-.39	-.21	-.22	.18	.07
T20	-.13	-	.80**	.42*	.41*	.23	.08	.35	.03	.30	-.02	.08
T0	-.37	.80**	-	.67**	.67**	.53**	.20	.26	.21	.39	-.02	.08
T+20	-.16	.42*	.67**	-	.76**	.55**	.13	.13	.27	.20	.11	-.05
T+35	-.32	.41*	.67**	.76**	-	.70**	.02	-.05	.13	.08	.03	-.12
T+45	-.52**	.23	.53**	.56**	.71**	-	.19	.17	.12	.02	-.30	-.34
PR-STAI-S	-.53**	.08	.20	.13	.02	.19	-	.75**	.23	.36	-.25	-.20
PT-STAI-S	-.39	.35	.26	.13	-.05	.17	.75**	-	.18	.40*	-.31	-.09
PR-PANAS-N	-.21	.03	.21	.27	.13	.12	.23	.18	-	.62**	.27	.10
PT-PANAS-N	-.21	.30	.39	.20	.08	.02	.36	.40*	.62**	-	.22	.43*
PR-PANAS-P	.18	-.02	0.2	.11	.03	-.30	-.25	-.31	.27	.22	-	.72**
PT-PANAS-P	.07	.08	.12	.004	.12	.34	.20	.09	.10	.44*	.72**	-

Note: 2 to 6: cortisol samples; PR-STAI-S: state anxiety pre; PT-STAI-S: state anxiety post; STAI-S-POST: state anxiety post; PR-PANAS-N: negative affect pre; PT-PANAS-N: negative affect post; PR-PANAS-P: positive affect pre; PT-PANAS-P: positive affect post.

* Significant at $p < .05$ level; ** Significant at $p = .01$ level

Relationship between self-efficacy, cortisol levels, state-anxiety (STAI) and Negative and Positive Affect (PANAS) during the experimental task.

We only found a significant negative relationship between self-efficacy and cortisol levels at $t + 45$ ($r = -.52^{**}$) and pre-state anxiety levels ($r = -.53^{**}$)

To examine whether self-efficacy and affect before and after the task could be associated with translation performance scores for the three texts, we conducted Pearson's bivariate correlation analyses between the variables. The results showed a significant positive correlation between negative affect pre-task with the score for meaning in Text 2; a significant negative correlation between positive affect before and after the task with the score for correctness in Text 3 and a significant negative correlation between self-efficacy and the score for accuracy in meaning in Text 3 (see Table 6).

Table 6: Correlations between Negative and Positive affect, Self-efficacy and translation performance for each type of text

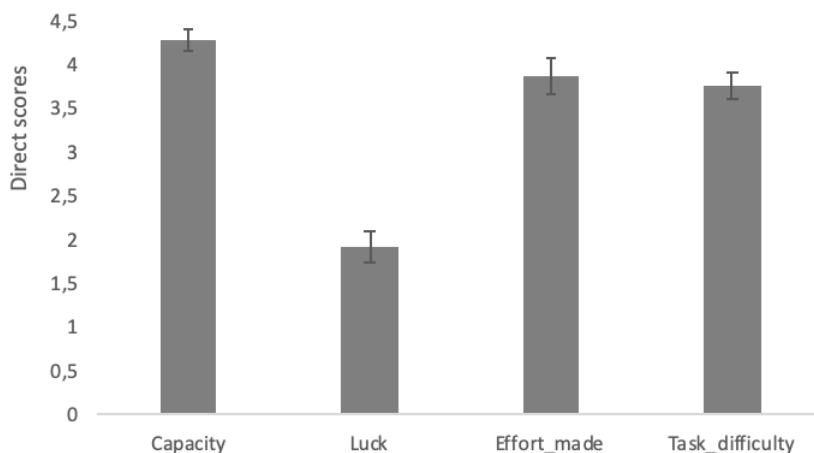
Type of text		PANAS			SELF-EFFICACY	
		NA pre	NA post	PA pre	PA post	
TEXT 1	Total Accuracy	-.22	-.12	.02	-.10	.18
	Meaning	-.05	-.02	.13	-.04	.16
	Pragmatics	-.28	-.13	-.20	-.11	-.03
	Correctness	-.39	-.32	-.14	-.13	.18
	Translated words	-	-	-	-	-
TEXT 2	Total Accuracy	-.22	-.12	.02	-.10	.18
	Meaning	-.05	-.02	.13	-.04	.16
	Pragmatics	-.28	-.13	-.20	-.11	-.03
	Correctness	-.39	-.32	-.14	-.13	.18
	Translated words	-	-	-	-	-
TEXT 3	Total Accuracy	-.20	-.12	-.02	-.08	-.39
	Meaning	-.27	-.08	-.03	.03	-.41*
	Pragmatics	-.06	-.14	.26	.12	-.22
	Correctness	.06	-.001	-.43*	-.42*	.02
	Translated words	-.04	.02	.02	-.12	.23

Note: NA: negative affect; PA: positive affect

* Significant at $p < .05$ level; ** Significant at $p = .01$ level

Result attribution and task perception

The scores obtained in the test on result attribution (see Figure 3) showed that the subjects attributed the result in the task mostly to their capacity ($M=4.28$), effort ($M=3.88$), and its difficulty ($M=3.76$) and less due to luck ($M=1.92$).

Figure 3: Mean scores on result attribution questionnaire for the four scales**Table 7:** Correlations between self-efficacy and questionnaire on result attribution and perceptions about the task

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1.Self-efficacy	-	-.06	-.46*	.43*	-.33	.13	-.21	.41*	.05	-.27	.10	-.31	.45*	.28
2.Effort	-.06	-	.39*	-.17	.39	.59**	.22	-.11	-.003	.30	.11	.11	-.31	-.15
3.Frustration	-.46*	.39*	-	-.82**	.70**	.48*	.44*	-.75**	-.28	.47*	.07	.15	-.43*	-.35
4.Achievement	.43	-.17	-.82**	-	-.51**	-.38	-.35	.69**	.22	-.37	-.15	-.03	.20	.25
5.Stressful task	-.33	.39	.70**	-.51**	-	.50**	.19	-.36	-.04	.23	-.05	.11	-.42*	-.51**
6.Difficulty	.13	.59**	.48*	-.38	.50**	-	.35	-.25	-.06	.03	.30	.02	-.14	-.10
7.Importance	-.21	.22	.44*	-.35	.19	.35	-	-.54**	-.22	.20	.08	-.11	-.19	-.13
8.Marker-assessment	.41*	-.11	-.75**	.69**	-.36	-.25	-.54**	-	.30	-.50**	-.10	-.30	.23	.21
9.Results	.05	-.003	-.28	.22	-.04	-.06	-.22	.30	-	-.29	.39	.07	.15	.08
10.Achievement expectations	-.27	.30	.47*	-.37	.23	.03	.20	-.50**	-.29	-	-.34	.17	-.15	-.42*
11.Capacity	.10	.11	.07	-.15	-.05	.30	.08	-.10	.39	-.34	-	.12	.24	.32
12. Luck	-.31	.12	.15	-.03	.11	.02	-.11	-.30	.07	.17	.12	-	-.28	.28
13.Effort made	.45*	-.31	-.43*	.20	-.42*	-.14	-.19	.23	.15	-.15	.24	-.28	-	.06
14.Task difficulty	.28	-.15	-.35	.25	-.51**	-.10	-.13	.21	.08	-.42*	.32	.28	.06	-

As shown in Table 7, correlations were made with the self-efficacy score and the scores for translation trainees' result attribution in addition to their perceptions about the task. Correlation analyses yielded that self-efficacy was positively related to scores on perceived task achievement ($r=.43$; $p=.02$) and expected marker assessment ($r=.41$; $p=.04$). In contrast, self-efficacy was found to be negatively associated to frustration about the task ($r=-.46$; $p=.02$). Moreover, correlation analyses yielded only one statistically significant positive association, i.e., self-efficacy was positively related to effort ($r=.45$; $p=.02$), indicating that higher scores on self-efficacy beliefs were associated with higher scores on the effort invested.

Regarding the perception of the task and its relationship with the translation performance scores, as shown in Table 7, the results showed significant correlations only for the Text 3 (the strictest time condition). A positive relationship between accuracy and the scores for perceived frustration ($r=.43$; $p=.03$), stressful task ($r=.39$; $p=.04$), and importance of the task ($r=.42$; $p=.04$), and a significant negative relationship between accuracy and expected marker assessment ($r=-.49$; $p=.01$).

4.6. Discussion

The aim of this study was to explore the impact of perceived self-efficacy on the hormonal (i.e., salivary cortisol response) and emotional (i.e., anxiety, positive and negative affective states) responses to translating under time pressure, as well as on translation performance.

Our first hypothesis predicted that when translating under time pressure students' cortisol response would be higher and their performance would be worse than when translating under no time pressure. Results from the repeated-measures ANOVA did not provide support for our hypothesis about the influence of time pressure on cortisol response because no statistically significant differences in students' cortisol levels were found across the different stages of the experimental task. Moreover, as shown in Figure 1, cortisol response displayed the opposite pattern to an average stress response, with more stringent time constraints resulting in a progressive decrease in cortisol. Thus, cortisol response started to decrease from the moment translation students started to translate, which might be due to an increased attentional response to the translation task. This plausible explanation has been also pointed out by Rojo López, Cifuentes-Férez, and Espín-López (2021) on translating under time pressure and other existing results on translation research which indicate that a decrease in cortisol response seems likely to be caused by attentional focus to the task (Rojo López & Naranjo Sánchez, 2021; Rojo López, Ramos Caro, & Espín López, 2021).

As far as the relation between cortisol levels and translation performance,

correlation analyses provided only partial support to our hypothesis. Generally, higher cortisol levels were associated with less accuracy only in the case of pre-task cortisol levels (t_0) which emerged as predictor of lower meaning and total accuracy in the condition with no time constraints (Text 1). It seems that translation trainees who entered the experimental session more stressed were more likely to do it worse when translating Text 1, indicating a detrimental effect of stress in performance, even in the absence of time constraints. This result fits well with data supporting the negative effect of stress on task performance (e.g., Lukasik et al. 2019).

In contrast, in the most stringent time condition (Text 3), a positive relation is found between high cortisol levels and accuracy, namely, those trainees who scored higher for correctness under this condition displayed the highest cortisol responses in the last stage of the experiment ($t+45$, recovery stage), suggesting a beneficial effect of stress on grammatical and orthotypographic aspects of the target text in the most stressful condition.

Our second hypothesis postulated that higher levels of self-efficacy would be associated with trainees' lower cortisol levels and state anxiety responses under time pressure (i.e., Text 2 and Text 3). Results from the correlation analysis partially confirmed our hypothesis for the expected relations between self-efficacy, cortisol response and state anxiety. Data revealed that trainees with higher levels of self-efficacy showed lower levels of cortisol at the end of the experiment ($t+45$) and lower levels of pre-task state anxiety, suggesting that self-efficacy could be a protective factor against stress induced by time pressure. These data provide support for Bandura's (1977) claims that self-efficacy beliefs may affect people's anxiety in relation to a task and, as a consequence, performance. Nevertheless, no statistically significant results were found for cortisol levels after the translation of texts 1, 2 or 3; in other words, there is not any relation between self-efficacy and cortisol levels after translating the texts, suggesting that focusing on accomplishing the translation tasks could help to reduce stress (Rojo López, Cifuentes-Férez, & Espín-López, 2021) and, thus, aligning with previous findings of the potential impact of attentional focus on the translation tasks (Rojo López & Naranjo Sánchez, 2021; Rojo López, Ramos Caro, & Espín López, 2021).

Our third hypothesis predicted that due to time pressure, after finishing the translation tasks, positive affect scores would be lower whereas negative affect and state anxiety scores would be higher. Despite the fact that state anxiety scores increased after the translation tasks, our data only revealed statistically significant differences between pre- and post-task scores for positive affect, with lower scores after finishing the tasks than before starting them. Our data indicate that translation trainees' negative affect did not change much after translating against the clock, but post-task positive affect

significantly decreased, indicating that translating under time pressure did affect trainees. Our hypothesis was, therefore, corroborated only for positive affect.

Regarding our fourth hypothesis which predicted that higher levels of self-efficacy would be associated with better performance in the translation tasks under time constraints (i.e., Text 2 and Text 3). Correlation analyses showed a significant negative relation between self-efficacy and accuracy in meaning for Text 3 (most stringent time constraints), suggesting a negative effect of trainees' self-efficacy on their translation performance under strict time constraints. It could be likely that trainees with higher self-efficacy beliefs overestimated their capabilities and made more mistakes in terms of the transfer of meaning than those who had a lower self-efficacy and performed significantly better in transference of meaning. This result is consistent with other findings pertaining to the related construct of self-esteem, which have also been pointed out to have a negative impact on translation performance in terms of spelling and punctuation errors (Cifuentes-Férez & Meseguer Cutillas, 2018; Rojo López, Cifuentes-Férez, & Espín-López, 2021). In addition, data showed a positive relation between pre-task negative affect and higher accuracy in terms of meaning in the moderate time condition (Text 2), suggesting that negative affect might have a positive impact on translation performance under given circumstances. Moreover, in line with the previously mentioned research, our data revealed a negative correlation between both pre- and post-task positive affect and correctness (spelling and punctuation errors) in the most stringent time condition (Text 3), suggesting that feeling too positive may hinder performance on spelling and punctuation.

Our fifth hypothesis stated that higher levels of self-efficacy will be associated with trainees' attribution of results to their capacity and effort. Correlation analysis revealed that trainees with higher self-efficacy scores were more likely to attribute their results to their effort made, but no statistically significant correlation was found between scores for self-efficacy beliefs and result attribution to their capacity. However, as shown in Figure 3, it can be observed that trainees mostly attribute their results to their capacity, then to effort made and task difficulty, assigning the lowest scores to luck. Additionally, we were interested in exploring the role of self-efficacy beliefs in trainees' perceptions after the translation tasks. Our data indicated, on the one hand, that translation students with higher scores on self-efficacy felt they performed well in the tasks, expected higher scores in the marker assessment and higher achievement and felt less frustrated. On the other, those with lower self-efficacy beliefs felt they did worse in the tasks, expected lower achievement, felt more frustrated and consider the tasks to be more stressful. These findings in terms of trainees' perceptions on the tasks are in conflict with actual translation performance since those trainees who felt more frustrated, thought the task was more stressful and considered the task of

greater importance are the ones who obtained higher accuracy scores in Text 3, that is, under the strictest time condition. These results reveal intriguing differences between trainees' perception and actual real performance which are of great importance for translator training.

5. Conclusions

Results from this investigation provides evidence for both positive and negative effects of trainees' self-efficacy in translation performance against the clock. On the one hand, its effects on pre-task state anxiety and on cortisol responses after finishing the tasks indicate that self-efficacy could be considered a protective factor against stress and anxiety. On the other, its negative effects on performance under the most stringent time condition suggest in line with extant literature that psychological constructs related to the self, such as self-efficacy seem to be good predictors of lower accuracy under the most stringent time condition. In contrast, under the same time condition, our data suggest a beneficial effect of high cortisol responses on accuracy, namely, trainees who maintained higher cortisol levels, managed to produce better target texts under the most stressful situation. Results also suggest that the way translation trainees feel and think about their performance in translation does not seem to correspond to their actual objective performance. Nevertheless, the present study is exploratory in this regard and further research needs to be conducted to elucidate which other constructs related to the self might influence on these divergences between feelings, thoughts and actual translation performance.

As far as future research is concerned, there are some limitations that should be addressed. First of all, the study should be replicated with larger samples of participants, as well as professional translators. It would be interesting to investigate the effects of different levels of translation competence and expertise. Second, as stated above, other related self-constructs, such as self-esteem or self-concept should be included in future studies to test their effects on performance and trainees' thoughts, feelings and perceptions. Third, although three comparable narrative texts in terms of readability were used as stimuli, it is still possible that any text differences had an effect in performance as readability does not mean that texts have similar translation difficulty. Additionally, it would be interesting to use other text types or even positive and negative emotional texts of the same text type so as to shed light on the effect of text types and of valence when translating under time constraints. Fourth, it is observed that trainees had high cortisol levels when they entered the experimental room. Experimental anxiety, therefore, should be addressed in future research so as to reduce it by starting with some sort of relaxation phase such as sitting comfortably, closing their eyes and listening to relaxing music for a couple of minutes. Last, further research is needed to elucidate whether overall cortisol response was due to stress induced by time constraints or to the attentional focus on the translation task.

Potential applications of the main findings of this study may be found in translator training and in the workplace. Nowadays, the internet, technological changes to translation such as machine translation have significantly altered translation industry. Professional translators are expected to meet tight deadlines and quality of work and so are translation trainees in a lesser extent. Stress caused by time pressure can be temporary or it can continue over a long term, affecting, thus, hormones, mood, and all aspects of translators' health and well-being. Translation trainees and professionals can benefit from awareness of the impact of time pressure on translation performance and of the protective role of self-efficacy against stress and anxiety. Furthermore, being aware of the potential negative effect of high self-efficacy on performance can be helpful for both trainees and professionals so that their high self-efficacy beliefs do not work against them. Finally, it can be of great help to both translation teachers and employers in order to maximize their students and staff's abilities and minimise their weaknesses.

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