

## Trabajo Fin de Grado

# Google Translate and Quality Assessment: A Comparative Analysis of Two Different Genres

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## **Abstract**

En los últimos años, el traductor de Google se ha convertido en la herramienta más utilizada para obtener traducciones instantáneas. Varios estudios han comparado la eficacia de este con otros traductores automáticos, demostrando que además de ser el más popular, es el que mejores resultados proporciona. Sin embargo, diversos estudios han comparado su eficacia con la de un traductor humano, demostrando que el traductor automático todavía está lejos de alcanzar la adecuación y la precisión que un profesional puede ofrecer, a pesar de proporcionar traducciones instantáneas que permiten a la persona interesada obtener una idea general del texto origen. Este estudio ahonda en la investigación y la comprobación de la eficacia del traductor de Google, comparando el trabajo realizado por el traductor automático con dos textos pertenecientes al campo de la psiquiatría cuyo género textual difiere. El primero se trata de un documento de información para pacientes, mientras que el segundo es un artículo de revisión. En este trabajo se analizan y evalúan dichas traducciones, con el objetivo de comprobar y comparar cómo afecta la naturaleza de cada texto origen al texto meta proporcionado por Google.

## **Abstract**

In the last years, Google Translate has become the most used tool for getting instant translations. Several studies have compared its effectiveness with other automatic translators, proving that besides being the most popular, it is the one which provides the best results. However, other studies have compared its effectiveness with that of a human translator, proving that the automatic translator is still far from reaching the adequacy and accuracy that a professional may offer, despite providing instant translations which allow the interested person to get a general idea of the source text. This study digs into the investigation and verification of Google Translate's effectiveness, comparing the work made by the automatic translator on two texts which belong to the psychiatry area and whose textual genres differ. The first text is a patient information guide, while the second is a review article. In this work, these translations are analyzed and evaluated with the purpose of verifying and comparing how the nature of each source text affects the target text provided by Google Translate.

## **1. Introduction**

Translation processes have suffered a progressive evolution over recent years, giving birth to Machine Translation, which has been considered an important issue during the last decades, especially with the arrival of computers and the Internet above all. Machine Translation began its development during the Cold War in the US, Russia and Japan. From 1997 onwards, several free machine translation sources began to be created, leaving the necessity of paying for their use thanks to the Babel Fish, a free web-based multilingual translation application developed by Digital Equipment which was replaced in 2012 by Bing Translator (Wikipedia, 2016). Since then, their popularity has not stopped growing to the point that not even professional translators turn to them, but even companies decide to use them instead of paying a translator more than once at least for “gist” purposes (Porta Salvia, 2010). Munday (2001) and Wagner (2002) note that FMTs (Free Machine Translators) are changing the status and visibility of translation studies and this could lead to an increase in the interest in translation by the general public. But despite their common usage to the extent of professional and official translations, not so much investigation has been made upon their accuracy and functionality. Porta Salvia and Hampshire (2010) claim that there is a need for more transparency from the translation industry regarding FMTs. As Porta Salvia (2010, p. 3) says, “improving the quality of FMT is necessary for providers to avoid possible lawsuits”.

Different studies have been made in the FMTs area. Some studies have tried to evaluate different free machine translators according to different sets of characteristics, such as the one titled “Translation and the Internet: Evaluating the Quality of Free Online Machine Translators” carried out by Stephen Hampshire and Carmen Porta Silva (2010). Others have evaluated them by comparing translations of different pairs of languages, such as “An Evaluation of the Accuracy of Online Translation Systems” by Milam Aiken et al (2009). There are even some that have tried to see the accuracy and utility of FMTs in education and the student area, such as “Los traductores automáticos en la enseñanza del inglés” by Laura Lucía Laurenti and María Belén Domínguez (2013). The results of these studies coincide in the placement of Google Translator as one of the most accurate and effective FMTs.

Google Translate is an automatic machine-translation service provided by Google Inc. It translates one written source language to another directly or with English as a medium (Boitet et al. 2009). It offers an instant access to general information about the original texts for moderate quality translation (Anazawa et al., 2013). It was developed by Franz-Josef Och, manager at the Google Automatic Translation Department (Google, 2006). Not only has it been proved to be one of the most accurate FMTs today, but it is also one of the most used, providing a billion translations a day for 200 million users (Shankland, 2013). This could be thanks to the inclusion of more languages, which is up to 103 languages at the moment, but also to its flexibility, as it can be accessed by computers, electronic tablets and mobile phones, even possessing its own App, even having the possibility to access this App without being connected to the Internet. Among its services, it also offers an extension called Google Translation Toolkit for larger texts and the possibility of hearing any words or sentences in any language; people with difficulties can also say the text they want to be translated aloud (Google, 2016).

In relation to the way Google Translate works, it has to be explained that it consists of a statistical machine translator. There are three main types of machine translators: rule based, statistical and hybrid. Rule based are those which use large collections of rules, manually developed over time by human experts mapping structures from the source language to the target language. They can provide fairly good automated translations but they can be quite costly and time consuming, and also can be potential to generate ambiguity and degradation over time. Statistical FMTs are those which use computer algorithms to produce a translation that looks best statistically for millions of permutations. Statistical models consist of words and phrases learned automatically from bilingual parallel sentences, creating a bilingual “database” of translation. This means that the translation they provide is based on the most often used translation and it is instantly chosen as the definitive. They have a very low cost and the rapid turnaround time for constructing and operating them. However, there is a scarcity of suitable data for ‘training’ this data-driven systems. At last, hybrid FMTs combine both rule-based and statistical methods (machinetranslation.net, 2016). As it has been indicated before, Google Translate has so far been a statistical machine translator. However, in November 2016 it was announced that a new mechanism was set to be implemented in order to make Google Translate better: the Neural Machine Translation, an end-to-end system which at

a high level, translates whole sentences at a time, rather than just piece by piece (Turovsky, 2016).

As a result of being the most effective and used FMT, some studies have been realized about its accuracy. In what concerns to the pair of languages, it has been found that Google Translate works generally better with European languages and worse with Asian Languages (Aiken and Balan, 2011). Some of them have compared Google Translate with human translation (Li et al., 2014), while some others have compared how it works with different pairs of languages (Aiken et al., 2009, Kit & Wong, 2008). Findings show that it works better for formal register and worse with idioms, so it can be stated that Google translation is similar to human translation from the perspective of formality. However, they also show that machine translation fails in the accuracy in grammar, complex syntactic, and semantic and pragmatic structures, resulting in nonsensical errors in grammar and meaning processing (Li et al., 2014). This has given proof to not consider it as a reliable source at all in comparison to human translation in terms of clarity and fidelity (clarity is defined by Fiederer and O'Brien (2009) as "the ease with which a reader can understand the translation" while fidelity is defined as "the extent to which the translated text contains the same information as the original"), but at least it has been seen to be the best way to obtain a rapid translation which can supply the main idea or a general meaning of a source text.

Apart from comparing its efficacy with other FMTs and comparing its accuracy with human translation, a lot of research is still necessary to be made in different ways or aspects and a lot of improvement is still to be made. Taking into account the great variety of languages and pairs of translations that it offers, the possibilities are infinite and so, a lot more investigation is still required. But another aspect that has been barely investigated and which can show new ways to improve the accuracy of Google Translate is to compare how it works with different types of source texts. The aim of this dissertation is precisely this, to analyze how Google Translate works with two different types of texts of the same topic but of a different genre.

## 2. Materials

It is important to understand what a textual genre is in order to differentiate between the two texts that have been proposed here. John M. Swales states that “a genre comprises a class of communicative events, the members of which share some set of communicative purposes. These purposes are recognized by the expert members of the parent discourse community and thereby constitute the rationale for the genre. This rationale shapes the schematic structure of the discourse and influences and constrains choice of content and style” (1990, p. 58). It follows that in order to belong to a specific genre, texts must share the same communicative purposes and conventions, being defined and systematized by the members of the community who work with them professionally after some time; these community members may create new specific genres or sub-genres if new patterns or different approaches are created (Møgelbjerg, 2005).

The topic chosen is General Anxiety Disorder, so even the two texts are clinical, but do not belong to the same genre as their approach, their conventions in form and content and their target audience are not the same. The first one, “General Anxiety Disorder” (1853 words) is written by Kenny and Henderson; it has been taken from the web [www.patients.info](http://www.patients.info). It is a patient information guide, addressed to patients, which makes it a key instrument for doctor-patient communication. They usually result from a process of heterofunctional translation (a kind of instrumental translation whose functions and purposes are adapted from the source text –in this case research/ review articles, clinical guides, etc.– to the target text so that its audience are able to understand them), either interlinguistic –between different languages– or intralinguistic –between the same language– (Muñoz Miquel 2012; Ezpeleta Piorno 2012; García-Izquierdo & Montalt 2014), thanks to which they adapt to the cognitive profile of readers, their needs and expectations (Juan Antonio Prieto and Vicent Montalt, 2016). The vocabulary of these texts is kind of specialized but it must take into account that any patient or novice in the area must be able to understand it, as it is explained by Forés (2004).

The other one is an extract from a review article titled “Worry and Generalized Anxiety Disorder: A Review and Theoretical Synthesis of Evidence on Nature, Etiology, Mechanisms and Treatment”, written by Newman et al. A review article is a critical, constructive analysis of the literature in a specific field through summary, classification,

analysis and comparison. It organizes, synthesizes, evaluates and identifies patterns and trends in the literature, as well as detecting research gaps and recommending new research areas. Review articles are addressed to both experts and novice researchers in a specific research area (Philip Mayer, 2009). Due to this fact, they display a rather formal register, with more complex sentences and specialized vocabulary. The reason why it has not been taken entirely is due to its large extension. The text includes 8364 words and my selection amounts to 1517 words. Source texts and target texts can be found in the appendix.

### **3. Methods**

The analysis includes the two source texts: “General Anxiety Disorder” is taken entirely while some extracts have been taken from “Worry and Generalized Anxiety Disorder: A Review and Theoretical Synthesis of Evidence on Nature, Etiology, Mechanisms and Treatment” due to its extension. It also includes their two corresponding target texts provided by Google Translator. The source texts are written in English, while the language selected for the target texts is Spanish. For their comparison, analysis and evaluation, a classification developed for the ENTRAD project carried out by Rosa Lorés and Florén (2008), lecturers at the University of Zaragoza, has been followed. This method classifies errors according to five different categories of the language: pragmatic, semantic, grammatical, orthographic and strategic. Pragmatic errors comprehend those concerning register, style, cultural references, text format and logic connectors; within the semantic group, errors in idioms, lexical combination or lexical selection can be found; grammatical errors include word order, verb tense and preposition usage, concordance and determinants; orthographic errors refer mainly to punctuation and strategic errors concern omission, amplification, reduction or non-sense.

The classification of these errors has also been grouped as errors in content and errors in form. The term content refers to what is written in a text, it is defined as the substantive information or creative material viewed in contrast to its actual or potential manner of presentation, while form refers to how a text is written, that is, the structure, pattern or organization of a text (cfr. Lorente Longares, 2015).

Within errors in content there can be found pragmatic errors concerning style, register and cultural references and semantic errors concerning idioms, lexical selection and



lexical combination. Errors in form involve grammatical errors and orthographic errors. Strategic errors do not belong to a single category but rather they can be seen in both groups, finding any other kind of these errors in content and form as a result.

There are also other words and structures marked which cannot be necessarily considered errors at all because they are not incorrect in form nor in content but the translation given by Google does not fit very well and have been underlined to indicate that there is room for improvement and there could be found a more suitable translation than the one offered by Google.

Another remarkable aspect is that on many occasions, a strategic error can lead to another kind of error. In these cases, they have been classified as the errors which they originate instead of marking them as strategic errors.

In order to establish a parallelism between both texts and get a general view of the different errors found in each one, so that it can be compared and appreciated which ones are repeated and which ones only appear in both of them, both texts will be commented at the same time instead of analyzing them separately. In this way, it will be easier and more comfortable to see the outcome of the two texts given by Google Translate and to synthesize them later on. As the new Neural Machine Translation was introduced in November and this analysis was carried out before, it will be not taken into account for this study.

#### **4. Study**

The study is going to be divided into two sections: first, a qualitative analysis, in which the most remarkable examples of each text are going to be explained and contrasted, and second, a quantitative analysis where the total number of errors is going to be compared. The key for the different texts is going to be ST (1) to refer to the text “General Anxiety Disorder” and ST (2) to refer to the text “Worry and Generalized Anxiety Disorder: A Review and Theoretical Synthesis of Evidence on Nature, Etiology, Mechanisms and Treatment”. Therefore, the translation of the ST (1) will be indicated as TT (1) and the translation of the ST (2) will be indicated as TT (2).

## 4.1. Qualitative analysis: results and discussion

### 4.1.1. Errors in content

As it has already been stated, in this category there will be included those errors which belong to the pragmatic and semantic categories. There are different errors concerning different features in each category.

#### Pragmatic errors

Pragmatic errors include register, style, dialect, idiolect and frequency of use; cultural referents and cultural equivalents; generic conventions and logical connectors. There is an example of the first kind here:

ST (2): Ainsworth and colleagues (1978) [...]

TT (2): Ainsworth y sus colegas (1978) [...]

The ST here is referring to working colleagues as it is one of the conventions when you quote multiple authors, but instead TT interprets it as if it were talking about some friends. However, there are also occasions where the vocabulary chosen is too colloquial or too vague, as in this example:

ST (1): [...] drugs makes things worse in the long term [...]

TT (1): [...] las drogas empeora las cosas en el largo plazo [...]

In Spanish, “cosas” is a very general and colloquial word which functions in many occasions as an umbrella term, usually giving room for more suitable words, as may be “situación” here.

Mistranslations of logical connectors can also be found in the translation offered by Google, as in this example:

ST (2): Contrary to greatly changing [...]

TT (2): Contrariamente a cambiar en gran medida [...]

The sense that the TT provides is completely different to that of the ST because of the translation of the word “contrary”. The ST presents two different cases in contrast, while the TT breaks this relationship and does not establish any link between these cases.

### **Semantic errors**

Semantic errors include idiomatic expressions and sayings; collocations and errors in lexical selection. The most common in this text are errors in lexical selection, although there can be found examples of any kind. In what concerns errors in collocations, here are two examples:

ST (1): When you are anxious you feel fearful and tense.

TT (1): Cuando usted está ansioso se siente temeroso y tensa.

The translation made by Google Translator has a different sense in Spanish, using it as a synonym of being impatient or excited. The correct translation would be “tiene ansiedad”. Then, although Google Translator can distinguish when the verb “to be” must be translated as “ser” o “estar”, it never substitutes it for other verbs which may fit better depending on the attribute which accompanies them. This example fails with both words, but in the next example, only one of them is not correct:

ST (1): - Fast breathing

TT (1): - Respiración rápida

The literal translation of “fast” is rápida. However, if we are talking about breathing, “agitada” usually is the word which accompanies it.

Another example that can be found in the second text is:

ST (2): It is possible that individuals with temperamental styles [...]

TT (2): Es posible que los individuos con estilos temperamentales [...]

Google Translate makes a calque here and this results in a semantic error as in Spanish we would never put “estilos” combined with a word as “temperamentales”; it would

sound more natural with a phrase such as “estilos de comportamiento”. One remarkable error in lexical selection that can be found many times in the text is this:

ST (1): There are various conditions (disorders) where anxiety is a main symptom.

TT (1): Hay varias condiciones (trastornos) donde la ansiedad es un síntoma principal.

Although the source texts talk about “conditions”, it does not refer to what we understand by “condiciones” in Spanish here, as it is talking about disorders, as indicated in brackets. The second text also shows examples of this:

ST (2): [...] (the central feature of GAD) [...]

TT (2): [...] (el rasgo central del TAG) [...]

“Feature” has more than one meaning in Spanish and “rasgo” here is not correct as it has a more “peculiar” touch and the text here is dealing with the main characteristic of GAD. Another important aspect is that Google Translator does not always provide the same translation for identical sequences or the same word, as in this example:

ST (1): Cognitive behavioural therapy (CBT)

Cognitive Behavioural Therapy (CBT) is [...]

TT (1): La terapia cognitiva conductual (TCC)

Terapia cognitivo-conductual (TCC) es [...]

Not only does it sometimes put a hyphen and sometimes not, but the relationship it makes in the sequence also varies. In the first line, the word “cognitiva” concurs with “terapia”, while in the second line, it is part of “conductual”, creating a compound. The correct one would be the second option. It is remarkable that this kind of errors persist no matter if you introduce the whole paragraph or separate between sentences.

#### **4.1.2. Errors in form**

As stated before, this category includes grammatical and orthographic errors.

## Grammatical errors

Grammatical errors have to do with word order, use of verbs, agreement, use of prepositions and determiners and pronouns. Grammatical errors are very common in both texts, finding examples of any kind.

Errors in word order are quite common, sometimes changing the meaning of the sentence:

ST (1): - Persists when a stressful situation has gone [...]

TT (1): - Cuando persiste una situación de estrés se ha ido [...]

Both the source text and the target text present an adverbial clause but Google Translate transforms the relationship with the main clause and ends up making no sense. This kind of errors can also be appreciated in the second text, as in this example:

ST (2): However, in a recent prospective study [...]

TT (2): Sin embargo, en un reciente estudio prospectivo [...]

Google Translate places the adjective before the noun just as it is the most common construction in English. However, Spanish usually does the contrary, so “reciente” should be put here right after “prospectivo” and not before. Here the sentence does not lose its sense after all, but this kind of errors can turn a sentence unintelligible, as it happens here:

ST (2): [...] able to cope with resulting negative emotional contrasts [...]

TT (2): [...] capaces de hacer frente a la resultante contrastes emocionales negativos [...]

There is a combination of errors here that are the result of a wrong word order. Instead of placing “resultante” at the end and in plural in order to agree with “contrastos”, the noun it really complements, an article is placed for no reason and “resultante” is then turned into a noun instead of an adjective.

Verb tenses are not always respected by Google Translate, sometimes there are even pairs of verbs and both of them are not correctly translated:

ST (1): [...] symptoms of GAD cause you distress and affect your day-to-day activities [...]

TT (1): [...] los síntomas de trastorno de ansiedad que causa malestar y afectar sus actividades del día a día [...]

Apart from adding a conjunction that breaks the sense of the sentence, none of the verbs is correctly conjugated, and they are not even in the same tense, having the second in its infinitive form. There are also errors of this kind in the second text:

ST (2): It was theorized that children who experienced this rejection avoided relationships [...]

TT (2): Se teorizó que los niños que han experimentado este rechazo evitarse las relaciones [...]

The source text shows a verb in the past tense while Google Translate gives an infinitive form.

Errors in prepositions, determiners, pronouns and agreement are highly common, finding all kinds of examples:

ST (1): In addition, you release stress hormones (such as adrenaline) into the bloodstream when you are anxious [...]

TT (1): Además, se libera hormonas del estrés (como la adrenalina) en el torrente sanguíneo [...]

The preposition here is incorrect, as it changes the meaning of the process that is explained. The correct preposition here would be “al”. Here is another example:

ST (1): Also, to help your thought patterns to be more realistic and helpful.

TT (1): Además, para ayudar a sus patrones de pensamiento para ser más realista y útil.

This example not only shows an incorrect translation of a preposition but it also shows a lack of agreement in the two adjectives, as they must agree with “patrones” and not with “pensamiento”, as it seems Google Translate has interpreted. Here is an example of a mistake related to prepositions in the second text:

ST (2): [...] compensatory mechanisms associated with fear of emotional contrasts.

TT (2): [...] mecanismos de compensación relacionados con el miedo de contrastes emocionales.

Here the preposition is translated literally and what is required would be something like “a los” instead.

Determiners and pronouns are incorrect many times; determiners are placed where they are not needed or, conversely, they are not placed when they are required, as happens in these examples:

ST (1): Generalised anxiety disorder is a condition [...]

TT (1): Trastorno de ansiedad generalizada es una condición [...]

Here a preposition would be required in Spanish. However:

ST (1):

- Chest pain.
- Headaches.
- Fast breathing

TT (1):

- Dolor de pecho.
- Los dolores de cabeza.
- Respiración rápida.

As what is written here is an enumeration of symptoms, no article is needed. It is remarkable that the rest of the elements have no article, but Google Translate still puts one here. These errors are also very common in the other text, as in this example:

ST (2): [...] leading children to respond with anger, resistance, anxiety, and ambivalent behavior upon a reunion.

TT (2): [...] lo que lleva a los niños a responder con la ira, la resistencia, la ansiedad y el comportamiento ambivalente en una reunión.

Although Google Translate succeeds in placing an article to each element in the enumeration, it is a mistake to place an article here, as the article gives a sense of personification to words that refer to behavior. However, the most representative example of this second text in relation to the use of articles is this:

ST (2): [...] lifetime GAD prevalence was 14.2% and past-year prevalence was 4.2%.. [...]

TT (2): [...] la prevalencia del trastorno de ansiedad por vida fue de 14,2% y la prevalencia en el año anterior fue del 4,2% [...]

English does not require any links when talking about percentages, but Spanish needs not only a preposition, as it is translated in the first percentage of the sentence, but also an article, as it can be seen in the second. That is the only time where it puts a preposition plus an article, the rest are left just with a preposition.

There is also lack of agreement between adjectives and the noun they complement, as in here:

ST (1): Some of the physical symptoms of anxiety (detailed above) may come and go.

TT (1): Algunos de los síntomas físicos de la ansiedad (detallado anteriormente) puede ir y venir.

“Detailed” here refers to “symptoms” so the output should be in plural (note that the same happens with the verb “puede”, which should be in plural). Looking at other



examples, it seems that Google Translate does not work very efficiently with agreement when subject and verb or noun and complement are distanced. This lack of agreement seems to be very common, appearing also in multiple times in the second text:

ST (2): [...] retrospectively assessed prevalence rates [...]

TT (2): [...] las tasas de prevalencia evaluados retrospectivamente [...]

“Tasas” is a feminine noun, so as “evaluados” is describing that noun, it should also be written in feminine (even we have the mark of the article in feminine that leaves no doubt about it). A final example which may be quite interesting:

ST (2): Women are more likely than men to be diagnosed with GAD [...]

TT (2): Las mujeres son más propensas que los hombres a ser diagnosticados con TAG [...]

“Diagnosed” here is referring to women, so the translation should agree with it and be written in feminine, but instead, the agreement is made with “men” and is left in masculine. This can be another example of how Google Translate works worse when the adjective and the noun it is describing are not placed one right after the other.

### **Orthographic errors**

Within orthographic errors are included errors in punctuation, spelling and use of capital and small letters. Probably this should be the category where fewer errors are found, as the Machine Translator only has to follow the linguistic rules of the target language, but instead it still commits a considerable amount of errors.

Errors in punctuation are the most common ones. Some of them still may work although the signs used in English are not the same used in Spanish, but there are others that make no sense at all. For example:

ST (1): Your genetic 'makeup' may be important [...]

TT (1): Su genética 'maquillaje' puede ser importante [...]

Spanish uses a different type of commas, but Google Translate takes the ones used in English and leaves them like that. Another punctuation mark that is never written correctly in none of the two texts is the forward slash. Here is an example:

ST (2): Children with ambivalent/resistant attachment [...]

TT (2): Los niños con apego ambivalente / resistente [...]

In this example it appears with a space between the two words, but as it is said in the Ortografía RAE 2010, when the forward slash is used to express division, it must be written with no space between the words or signs it connects. Some kind of errors also show that Google Translate may not be kept constantly updated, as it is demonstrated here:

ST (2): [...] (lifetime prevalence rates 5.3% versus 2.8%; Vesga-López et al. 2008) [...]

TT (2): [...] (tasas de prevalencia de vida de 5,3% frente al 2,8%; Vesga-López et al., 2008) [...]

Percentages must be written with a space between the number and the symbol, as it is said in the Ortografía RAE 2010: “para la expresión de porcentajes debe utilizarse la fórmula *por ciento* o el símbolo correspondiente a esta locución (%), separado por un espacio de la cifra a la que acompaña”. It must be appreciated that the last version of the RAE comes from 2010, so it might be the case that Google Translate does not count with very recent texts or that it just calques the source language again. However, all kind of errors can be found which make no sense at all, as in here:

ST (1): Feeling restless, on edge<sub>2</sub>[...]

TT (1): Sentirse inquieto, en el borde<sub>22</sub>[...]

As it can be seen, Google Translate puts two commas for no reason, as there is no situation in which this may occur. The same case can be found in the second text:

ST (2): [...] unexpected behaviors from their parents.

TT (2): [...] comportamientos inesperados de sus padres .

The dot is not written next to the last word for no reason. These errors are quite uncommon, but punctuation marks are a very basic feature of a language and it never really should commit any mistakes here.

Although there cannot be found any errors in spelling, there are many errors with capital letters, such as these:

ST (1): Anxiety management courses

TT (1): cursos de gestión de la ansiedad

A capital letter would be required here as this is the title of a section of the text. However, there is an even more striking example here:

ST (1): TALKING TREATMENTS AND OTHER TREATMENTS NOT USING MEDICATION

TT (1): HABLAR DE TRATAMIENTOS Y otros tratamientos no usar la medicación

As it can be appreciated, the source text keeps the capital letters for the whole title while the target text suddenly changes to small letters. The second text also shows examples of this, although they are not so common:

ST (2): Generalized anxiety disorder (GAD) has been labeled [...]

TT (2): trastorno de ansiedad generalizada (TAG) ha sido etiquetado [...]

Not only there is a lack of an article here, but the first word lacks a capital letter. In this case this is not a title but the beginning of a section right after a title, so it can be seen that Google Translate commits mistakes no matter if it is a title or a sentence from a paragraph. Errors which concern the use of dashes are also very illustrative about how Google Translate tends to calque the source language instead of apply the rules and conventions of the target language, as in this example:

ST (1): [...] offered ideas about how to help yourself (self-help) [...]

TT (1): [...] ideas sobre cómo ayudarse a sí mismo (auto-ayuda) [...]

Contrary to English, Spanish does not make use of dashes to form compound words, but instead writes both words together without any space or dash in-between.

### **Strategic errors**

Strategic errors involve omission, overtranslation, reduction, calque and nonsense. It is difficult to establish a difference between a strategic error and another kind, as in many cases, a semantic or pragmatic error is the result of a bad strategy in translation. Then, a great quantity of errors have been considered strategic as they concern different categories.

Although there are no examples of omission as such, there are occasions in which an amplification would be required in order to understand better some terms, in special some acronyms, as this:

ST (1): CBT plus an antidepressant medicine [...]

TT (1): TCC más un medicamento antidepresivo [...]

Despite the fact that the acronym has been written and treated before in the text, it is the first time it appears as an acronym, so its complete meaning should be written between parentheses so that it is completely clear. In the second text this also occurs but even to a greater extent:

ST (2): [...] are thought to have increased SNS activity or decreased PNS activity [...]

TT (2): [...] se cree que han aumentado la actividad del SNS o disminución de la actividad PNS [...]

This case is very similar but, contrary to the previous example, the acronyms are not even explained before, so they should be written in order to be understood.

Furthermore, there is the possibility that they are not conveyed in the same way in Spanish.

On many occasions it is difficult to tell the kind of error in the target text with precision, but the most common errors are calques and non-sense. Sometimes Google Translate does not hit right the meaning of a word in English in relation to the context as it just gives the more common translation according to its statistical status. Here is an example:

ST (1): It usually first develops in your 20s [...]

TT (1): [...] primero se desarrolla en los años 20 [...]

The same case can be found in the second text:

ST (2): Attachment has been considered a relational emotion regulation system [...]

TT (2): Adjunto se ha considerado un sistema de regulación de la emoción relacional [...]

It makes no sense to translate “attachment” as an adjective here when it functions as a noun in the source text. This reveals that Google Translate does not usually take into account grammatical categories. Other examples also show that Google Translate does not work very well with extensive chunks or syntactic units, as it can be appreciated here:

ST (1): There are also websites offering online self-help advice [...]

TT (1): También hay sitios web que ofrecen en línea de auto-ayuda consejos [...]

The translation of this phrase is not incorrect because of the selection of words but because of its order. Instead of organizing the whole unit, it keeps it in the same order making a calque.

It seems that Google Translate does not work well when a more flexible and less similar translation is required, as in this example:

ST (1): Your genetic 'makeup' [...]

TT (1): Su genética 'maquillaje' [...]

This word makes no sense and even creates more confusion when it is supposed to do the contrary, a literal translation here does not bring a good result.

## **Improvements**

Within this category there are going to be included all the examples where a better selection of words or a better general translation could have been provided. As the great majority of these examples belong to the semantic or grammatical categories, no distinction has been made between the categories that are defined by the ENTRAD system, because as it has already been stated, they do not constitute an error at all. Then, it will be explained why they could be improved.

One remarkable and visible aspect about Google Translate is that it rarely omits any word, translating lexical units word by word. This can work sometimes but on other occasions, the translations are too literal, as in this example:

ST (1): Other treatment options [...]

TT (1): Otras opciones de tratamiento [...]

In this case, an omission could have been made leaving just “otros tratamientos”.

This also happens in the second text, where the selected word is not incorrect at all but could have been explained more thoroughly:

ST (2): [...] individuals with GAD are more hyperreactive to threat [...]

TT (2): [...] individuos con trastorno de ansiedad son más hiperreactivas a la amenaza [...]

“Amenaza” in Spanish has strong connotations of danger and here it seems to be generalized when it is talking about the people who suffer GAD, so it would be better to hedge these connotations with another word or amplify them.

Another consequence of the word-by-word translation is that some words are repeated on many occasions. There is no problem with this in English, but in Spanish sometimes the repetition of words may sound redundant, as in this case:

ST (1): [...] antidepressant medicines and sometimes other types of medicines.

TT (1): [...] medicamentos antidepresivos y algunas veces otros tipos de medicamentos.

As it can be seen, the word “medicamentos” appears two times in the same sentence, resulting kind of redundant. Omitting it would have been a better option, leaving just “de otros tipos”. Another example of repetitions of words can be found here:

ST (2): [...] in response to inconsistent parental responses.

TT (2): [...] en respuesta a las respuestas de los padres inconsistentes.

There are a lot of words which could replace “respuestas” in order to avoid redundancy here, this word can have different meanings in Spanish and there are also some synonyms that may work better. This also may happen with modal verbs which sometimes are not well translated, as in here:

ST (2): It is possible that individuals with temperamental styles characterized by high physiological arousal in response to novel stimuli may be especially likely [...]

TT (2): Es posible que los individuos con estilos temperamentales caracterizados por alta excitación fisiológica en respuesta a estímulos nuevos pueden ser especialmente propensos [...]

There are occasions on which modal verbs can be replaced by other options than the verb “poder” according to their connotations, but here it probably should be simply omitted, as it is explicitly stated from the beginning that there is a possibility, so it ends up being redundant again.

The tendency of translating verbs literally works well sometimes and can serve as a rapid and easy option to get the idea of the text, but Spanish has collocations that the translator tends to overlook, as in this example:

ST (1): If you have GAD you have a lot of anxiety [...]

TT (1): Si usted tiene TAG tiene una gran cantidad de ansiedad [...]

Not only does it repeat the verb “tiene” two times in a row, but none of them is completely correct, as in Spanish we use verbs such as “padecer” o “sufrir” when talking about illnesses and diseases. The same case happens with other verbs such as “develop”, which appears many times and in all of them is not completely correct. Here is an example:

ST (1): GAD develops in about 1 in 50 people at some stage in life.

TT (1): TAG se desarrolla en aproximadamente 1 de cada 50 personas en algún momento de su vida.

As the text is talking about a disorder, “desarrollarse” is not the most suitable option in Spanish, but rather, “originarse” or “producirse”.

At last, there are examples in which in contrast to what has been shown until now, an amplification or some kind of adding should be needed in order to provide a more coherent translation, as in this example:

ST (1): [...] may make you more prone to anxiety [...]

TT (1): [...] pueden hacerlo más propenso a la ansiedad [...]

As anxiety is a disorder and it is an uncountable noun, the article does not fit completely, it would be more advisable to place a verb such as “tener” instead.

#### **4.2 Quantitative analysis: results and discussion**

In order to complement the qualitative analysis exposed previously and allow the reader to get a more precise view of the current status of Google Translate and the way it



works with different kinds of texts, the complete amount of errors is going to be counted and classified according to the ENTRAD system explained before.

<b>TT 1</b>	<b>COUNT</b>	<b>PER 1000 WORDS</b>
<b>Pragmatic</b>	4	2.2
<b>Semantic</b>	54	29.1
<b>Grammatical</b>	72	38.9
<b>Orthographic</b>	20	10.8
<b>Strategic</b>	31	16.7
<b>Improvements</b>	21	11.3
<b>Total</b>	202	109

<b>TT 2</b>	<b>COUNT</b>	<b>PER 1000 WORDS</b>
<b>Pragmatic</b>	2	1.3
<b>Semantic</b>	24	15.8
<b>Grammatical</b>	56	36.9
<b>Orthographic</b>	24	15.8
<b>Strategic</b>	38	25
<b>Improvements</b>	13	8.6
<b>Total</b>	157	103.5

As it can be observed, the total quantity of errors/ improvements per 1000 words does not vary much between one text and the other. In both texts the grammatical category shows a high quantity of errors; some improvements have also been reported. However, there are certain differences which can be appreciated. First, TT 1 shows far more semantic errors than TT 2, whereas in TT 2, strategic errors are also much more frequent than in TT 1. Further, orthographic errors are also quite more frequent in the review article. Finally, although the frequency is not high, TT 1 shows twice as many pragmatic errors as TT 2.

The reason for grammatical, semantic and strategic errors to be the most numerous is no other than the fact that Google Translate tends to translate word by word and make

a lot of calques without taking into account the context, the content, the kind of text it is translating and the audience to whom it is addressed, as it has been explained previously.

Then, the patient information guide shows many more errors in content (semantic and pragmatic) than the review article. This can be a result of the nature of the patient information guide, as its register tends to be neutral; non-experts have to be able to comprehend it, so the terms and the vocabulary are not as specific as they are in a review article, which is mainly written by experts and for experts. Thus there seems to be a number of calques and non-standard collocations in the Google translations. As well as finding a more specific vocabulary (often noun compounds) in a review article, the sentences are also more complex. This results in a greater quantity of strategic errors. As we have seen these strategic errors on many occasions blend a combination of different errors and tend to end up making a sentence with no sense.

## **5. Conclusions**

The popularity of Google Translate has not stopped growing in the last years, not only in the academic area but also in the working and business fields. Its advantages are very visible: an immense amount of possible combinations of languages, a very easy usage along with a series of conveniences for using it anytime anywhere with a great facility, not to mention that it is completely free. However, as well as having a lot of advantages, there is a series of flaws that still need a hard work and improvement if it really wants to serve as a competent translator. This study has tried to approach the efficacy of Google Translate by comparing how it works with two different types of text, a patient information guide and a review article, translating from English to Spanish.

As it has been observed in the analysis carried out before, there still are a great quantity of errors which coincide with those pointed out by the studies previously mentioned and which are a consequence of the fact that Google Translator has been a statistical FMT until very recently and provides translations which are too literal. However, it must be remarked that even if the quantity of the total of errors does not differ too much between each text, the frequency between the kinds of errors is not the same. The patient information guide shows more errors in content (pragmatic and semantic)

than the review article, which in contrast shows more errors in form (grammatical, orthographic and strategic).

This analysis may serve as a proof of different factors and aspects: first, that even if Google Translate does not really distinguish between different types of text and applies the same operations to any kind of translations no matter their form and their content, the nature of the texts affects the translation as they contain vocabulary and structures which need alternatives and proposals different to a literal translation; second, that at least in this case, Google Translate does not really apply very often the rules of the target language and it rather calques the source language, probably due to the fact that at the moment of this study it still was a statistical FMT and as so, it lacked a series of linguistic and stylistic rules characteristic of rule-based FMTs; and third, that there is still a lack of specific vocabulary and collocations and that there is a need to distinguish when some words or expressions can or must be translated literally and when they cannot.

The final conclusion that can be drawn is that there is still a lot of work to be done in this area of translation, both in the investigation and research field and in the Free Machine Translator itself. The progress reached until now is undeniable but it still is far from the translation a human being could provide and should not be used for more than just getting the main idea of a text, without any distinction on its nature, its register or its target audience.

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## Appendix

Key:

- Pragmatic errors
- Semantic errors
- Grammatical errors
- Orthographic errors
- Strategic errors
- Improvements

Source Text: “General Anxiety Disorder” (Kenny & Henderson)	Target text 1
<p>Generalised anxiety disorder is a condition where you have excessive anxiety on most days. You are most likely to be offered ideas about how to help yourself (self-help) and/or psychological treatment in the first instance. Other treatment options include antidepressant medicines and sometimes other types of medicines.</p> <p><b>What is anxiety?</b> When you are anxious you feel fearful and tense. In addition you may also have one or more unpleasant physical symptoms. These may be:</p> <ul style="list-style-type: none"> <li>- A fast heart rate.</li> <li>- The sensation of having a 'thumping heart' (palpitations).</li> <li>- Feeling sick (nausea).</li> <li>- Shaking (tremor).</li> <li>- Sweating.</li> <li>- Dry mouth.</li> <li>- Chest pain.</li> <li>- Headaches.</li> <li>- Fast breathing.</li> </ul> <p>The physical symptoms are partly caused by the brain which sends lots of messages down nerves to various parts of the body when we are anxious. The nerve messages tend to make the heart, lungs and other parts of the body work faster. In addition, you release stress hormones (such as adrenaline) into the bloodstream</p>	<p><b>Trastorno de ansiedad generalizada</b> es una <b>condición</b> donde <b>usted</b> tiene ansiedad excesiva en la mayoría de los días. Lo más probable es que se ofrecerán ideas sobre cómo ayudarse a sí mismo (autoayuda) y / o tratamiento psicológico en <b>la</b> primera instancia. Otras <b>opciones de tratamiento incluyen</b> medicamentos antidepressivos y algunas veces otros tipos <b>de medicamentos</b>.</p> <p><b>¿Qué es la ansiedad?</b> Cuando <b>usted</b> <b>está ansioso</b> se siente temeroso y <b>tensa</b>. <b>Además también</b> puede tener uno o más síntomas físicos desagradables. Estos pueden ser:</p> <ul style="list-style-type: none"> <li>- Una frecuencia cardíaca rápida.</li> <li>- La sensación de tener un <b>"corazón golpeteo"</b> (palpitaciones).</li> <li>- Sensación de mareo (náuseas).</li> <li>- Agitación (temblores).</li> <li>- Transpiración.</li> <li>- <b>Boca seca</b>.</li> <li>- Dolor de pecho.</li> <li>- <b>Los dolores de cabeza</b>.</li> <li>- Respiración <b>rápida</b>.</li> </ul> <p>Los síntomas físicos son causados en parte <b>por el cerebro envía</b> una gran cantidad de mensajes <b>abajo nervios</b> a diferentes partes del cuerpo cuando <b>estamos ansiosos</b>. Los <b>mensajes nerviosos</b> tienden a hacer que el corazón, los pulmones y otras partes del cuerpo <b>trabajan</b> más rápido. Además, se <b>libera</b></p>

when you are anxious. These can also act on the heart, muscles and other parts of the body to cause symptoms.

Anxiety is normal in stressful situations and can even be helpful. For example, most people will be anxious when threatened by an aggressive person. The burst of adrenaline and nerve impulses which we have in response to stressful situations can encourage a 'fight or flight' response. Some people are more prone to normal anxieties. For example, some people are more anxious than others before examinations. Anxiety is abnormal if it:

- Is out of proportion to the stressful situation; or
- Persists when a stressful situation has gone, or if the stress is minor; or
- Appears for no apparent reason when there is no stressful situation.

### **What are anxiety disorders?**

There are various conditions (disorders) where anxiety is a main symptom. This leaflet is about generalised anxiety disorder (GAD). See separate leaflets for other types of anxiety disorders (eg, social anxiety disorder, panic attack and panic disorder, phobias, acute stress reaction, post-traumatic stress disorder, etc).

### **What is generalised anxiety disorder (GAD)?**

If you have GAD you have a lot of anxiety (feeling fearful, worried and tense) on most days. The condition persists long-term. Some of the physical symptoms of anxiety (detailed above) may come and go. Your anxiety tends to

hormonas del estrés (como la adrenalina) en el torrente sanguíneo cuando se está ansioso. Estos también pueden actuar sobre el corazón, los músculos y otras partes del cuerpo para causar síntomas.

La ansiedad es normal en situaciones de estrés e incluso puede ser útil. Por ejemplo, la mayoría de la gente va a estar ansioso cuando se ven amenazados por una persona agresiva. La explosión de adrenalina y los impulsos nerviosos que tenemos en respuesta a situaciones de estrés puede estimular una respuesta de "lucha o huida". Algunas personas son más propensas a las ansiedades normales. Por ejemplo, algunas personas son más ansiosos que otros antes de los exámenes. La ansiedad es anormal si:

- Está fuera de proporción con la situación estresante; o
- Cuando persiste una situación de estrés se ha ido, o si la tensión es menor de edad; o
- Aparece sin razón aparente cuando no existe una situación estresante.

### **¿Cuáles son los trastornos de ansiedad?**

Hay varias condiciones (trastornos) donde la ansiedad es un síntoma principal. En este folleto se trata el trastorno de ansiedad generalizada (TAG). Ver folletos separados para otros tipos de trastornos de ansiedad (por ejemplo, trastorno de ansiedad social, ataque de pánico y trastorno de pánico, fobias, reacción de estrés agudo, trastorno de estrés postraumático, etc.).

### **¿Qué es el trastorno de ansiedad generalizada (TAG)?**

Si usted tiene TAG tiene una gran cantidad de ansiedad (sentirse temeroso, preocupado y tenso) casi todos los días. La condición persiste a largo plazo. Algunos de los síntomas físicos de la ansiedad (detailed anteriormente) puede



be about various stresses at home or work, often about quite minor things. Sometimes you do not know why you are anxious.

It can be difficult to tell the difference between normal mild anxiety in someone with an anxious personality and someone with GAD. As a rule, symptoms of GAD cause you distress and affect your day-to-day activities. In addition, you will usually have some of the following symptoms:

- Feeling restless, on edge, irritable, muscle tension, or keyed up a lot of the time.
- Tiring easily.
- Difficulty concentrating and your mind going blank quite often.
- Poor sleep (insomnia). Usually it is difficulty in getting off to sleep.

You do not have GAD if your anxiety is about one specific thing. For example, if your anxiety is usually caused by fear of one thing then you are more likely to have a phobia.

#### **Who develops generalised anxiety disorder (GAD)?**

GAD develops in about 1 in 50 people at some stage in life. Twice as many women as men are affected. It usually first develops in your 20s but is frequently being recognised in older people.

What causes generalised anxiety disorder (GAD)?

The cause is not clear. The condition often develops for no apparent reason.

ir y venir. La ansiedad tiende a ser de varios tipos de estrés en el hogar o en el trabajo, a menudo sobre las cosas bastante menores. A veces uno no sabe por qué está ansioso.

Puede ser difícil decir la diferencia entre la ansiedad leve normales en una persona con una personalidad ansiosa y alguien con trastorno de ansiedad. Por regla general, los síntomas de trastorno de ansiedad que causa malestar y afectar sus actividades del día a día. Además, por lo general tendrá algunos de los siguientes síntomas:

- Sentirse inquieto, en el borde,, tensión muscular irritable o introducido una gran parte del tiempo.
- Cansarse fácilmente.
- Dificultad para concentrarse y su mente en blanco con bastante frecuencia.
- La falta de sueño (insomnio). Por lo general, es la dificultad para conseguir el sueño.

No es necesario que el TAG si la ansiedad es una cosa específica. Por ejemplo, si la ansiedad es causada generalmente por miedo a una cosa, entonces es más probable que tenga una fobia.

#### **Que desarrolla el trastorno de ansiedad generalizada (TAG)?**

TAG se desarrolla en aproximadamente 1 de cada 50 personas en algún momento de su vida. El doble de mujeres que a los hombres se ven afectados. Por lo general, primero se desarrolla en los años 20, pero con frecuencia se reconoce en las personas mayores.

¿Qué causa el trastorno de ansiedad generalizada (TAG)?

La causa no está clara. La condición se desarrolla a menudo sin razón aparente.

<p>Various factors may play a part. For example:</p> <p>Your genetic 'makeup' may be important (the material inherited from your parents which controls various aspects of your body). Some people have a tendency to have an anxious personality, which can run in families.</p> <p>Childhood traumas such as abuse or death of a parent, may make you more prone to anxiety when you become older. A major stress in life may trigger the condition. For example, a family crisis or a major civilian trauma such as a toxic chemical spill. But the symptoms then persist when any trigger has gone. Common minor stresses in life, which you may otherwise have easily coped with, may then keep the symptoms going once the condition has been triggered. Some people who have other mental health problems such as depression or schizophrenia may also develop GAD.</p> <p><b>How is generalised anxiety disorder (GAD) diagnosed?</b></p> <p>If the typical symptoms develop and persist then a doctor can usually be confident that you have GAD. Current guidelines (ICD-10) suggest the diagnosis should be made if you have had your symptoms for six months but it is sometimes difficult to tell if you have GAD, panic disorder, depression, or a mixture of these conditions.</p> <p>Some of the physical symptoms of anxiety can be caused by physical problems which can be confused with anxiety. So, sometimes other conditions may need to be ruled out. For example:</p>	<p>Varios factores pueden desempeñar un papel. Por ejemplo:</p> <p>Su genética 'maquillaje' puede ser importante (el material heredado de sus padres, que controla varios aspectos de su cuerpo). Algunas personas tienen una tendencia a tener una personalidad ansiosa, que puede ser hereditaria. traumas de la infancia, como el abuso o la muerte de uno de los padres, pueden hacerlo más propenso a la ansiedad cuando se aumenta la edad.</p> <p>Un gran estrés en la vida puede desencadenar la enfermedad. Por ejemplo, una crisis familiar o un traumatismo importante civiles tales como un derrame de sustancias químicas tóxicas. Sin embargo, los síntomas persisten a continuación, cuando cualquiera de disparo ha ido. tensiones menores comunes en la vida, que de lo contrario puede haber hecho frente a fácilmente, pueden luego mantener los síntomas de ir una vez que la condición se ha disparado.</p> <p>Algunas personas que tienen otros problemas de salud mental, como la depresión o la esquizofrenia pueden también desarrollar el TAG.</p> <p><b>¿Cómo está el trastorno de ansiedad generalizada (TAG) se diagnostica?</b></p> <p>Si los síntomas típicos y persisten a continuación, un médico puede estar seguro de que usted tiene TAG. Las guías actuales (CIE-10) sugieren que el diagnóstico debe ser realizado si ha tenido síntomas durante seis meses, pero a veces es difícil saber si usted tiene trastorno de ansiedad, trastorno de pánico, depresión, o una mezcla de estas condiciones.</p> <p>Algunos de los síntomas físicos de la ansiedad puede ser causada por problemas físicos que pueden confundirse con ansiedad. Por lo tanto, a veces puede ser necesario descartar otras afecciones. Por ejemplo:</p>
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- Drinking a lot of caffeine (in tea, coffee and cola).
- The side-effect of some prescribed medicines. For example, selective serotonin reuptake inhibitor (SSRI) antidepressants.
- An overactive thyroid gland.
- Taking some street drugs.
- Certain heart conditions which cause the sensation of having a 'thumping heart' (palpitations) - uncommon.
- Low blood sugar level (rare).
- Tumours which make too much adrenaline and other similar hormones (very rare).

**What are the treatment options?  
TALKING TREATMENTS AND  
OTHER TREATMENTS NOT USING  
MEDICATION**

Cognitive behavioural therapy (CBT)  
Cognitive Behavioural Therapy (CBT) is probably the most effective treatment. It probably works for over half of people with generalised anxiety disorder (GAD) to reduce symptoms and improve quality of life.

- Cognitive therapy is based on the idea that certain ways of thinking can trigger or fuel certain mental health problems such as anxiety. The therapist helps you to understand your current thought patterns - in particular, to identify any harmful, unhelpful and false ideas or thoughts which you have that can make you anxious. The aim is then to change your ways of thinking to avoid these ideas. Also, to help your thought patterns to be

- Beber una gran cantidad de cafeína (en el té, café y cola).
- El efecto secundario de algunos medicamentos prescritos. Por ejemplo, los inhibidores selectivos de la recaptación de serotonina (ISRS).
- Una glándula tiroides hiperactiva.
- Tomando algunas drogas de la calle.
- Ciertas enfermedades del corazón que causan la sensación de tener un "corazón golpeteo" (palpitaciones) - no muy comunes.
- nivel de azúcar en la sangre bajo (poco frecuente).
- Los tumores que hacen demasiada adrenalina y otras hormonas similares (muy raro).

**¿Cuáles son las opciones de  
tratamiento?  
HABLAR DE TRATAMIENTOS Y  
otros tratamientos no usar la  
medicación**

La terapia cognitiva conductual (TCC)  
Terapia cognitivo-conductual (TCC) es probablemente el tratamiento más efectivo. Probablemente trabaja para más de la mitad de las personas con trastorno de ansiedad generalizada (TAG) para reducir los síntomas y mejorar la calidad de vida.

- La terapia cognitiva se basa en la idea de que ciertas formas de pensar pueden desencadenar otros problemas de salud mental como la ansiedad de combustible. El terapeuta le ayuda a comprender sus patrones de pensamiento actuales - en particular, para identificar las ideas o pensamientos dañinos, inútiles y falsos que tienes que puede causarle ansiedad. El objetivo es entonces de cambiar sus formas de

<p>more realistic and helpful. Therapy is usually done in weekly sessions of about 50 minutes each, for several weeks. You have to take an active part and are given homework between sessions. For example, you may be asked to keep a diary of your thoughts which occur when you become anxious or develop physical symptoms of anxiety.</p> <ul style="list-style-type: none"> <li>- Behavioural therapy aims to change any behaviours which are harmful or not helpful. For example, with phobias your behaviour or response to the feared object is harmful and the therapist aims to help you to change this. Various techniques are used, depending on the condition and circumstances. As with cognitive therapy, several sessions are needed for a course of therapy.</li> <li>- CBT is a mixture of the two where you may benefit from changing both thoughts and behaviours. (Note: cognitive and behavioural therapies do not look into the events of the past. They deal with and aim to change, your current thought processes and/or behaviours.)</li> </ul> <p><b>Counselling</b> In particular, counselling that focuses on problem-solving skills may help some people.</p> <p><b>Anxiety management courses</b></p>	<p>pensar para evitar estas ideas. Además, <b>para</b> ayudar a sus patrones de pensamiento <b>para</b> ser más <b>realista y útil</b>. La terapia se realiza generalmente en sesiones semanales de 50 minutos cada una, durante varias semanas. Usted tiene que <b>tomar una parte activa</b> y se le da <b>la tarea</b> entre sesiones. Por ejemplo, se le puede pedir que lleve un diario de <b>sus pensamientos, que se produce</b> cuando se siente ansioso o presenta síntomas físicos de <b>la</b> ansiedad.</p> <ul style="list-style-type: none"> <li>- La terapia conductual tiene como objetivo cambiar las conductas que son perjudiciales o no útiles. Por ejemplo, con las fobias su comportamiento o respuesta al objeto temido es perjudicial y el terapeuta tiene como objetivo ayudar a cambiar esto. Se utilizan varias técnicas, dependiendo de la <b>condición</b> y las circunstancias. Al igual que con la terapia cognitiva, se necesitan varias sesiones para <b>un curso de la terapia</b>.</li> <li>- La <b>TCC</b> es una mezcla de <b>los</b> dos, donde usted puede beneficiarse de cambiar <b>ambos</b> pensamientos y comportamientos. (Nota: las terapias cognitivas y conductuales no <b>se ven en</b> los acontecimientos del pasado <b>que tratan y tratar de cambiar</b> sus procesos <b>y / o</b> comportamientos de pensamiento actuales.)</li> </ul> <p><b>Asesoramiento</b> En particular, el asesoramiento que se centra en las habilidades de resolución de problemas puede ayudar a algunas personas.</p> <p><b> cursos de gestión de la ansiedad</b></p>
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These may be an option if they are available in your area. Some people prefer to be in a group course rather than have individual therapy or counselling. The courses may include learning how to relax, problem-solving skills, coping strategies and group support.

### **Self-help**

You can get leaflets, books, CDs, DVDs and downloads on relaxation and combating stress. They teach simple deep-breathing techniques and other measures to relieve stress and help you to relax. They may ease anxiety symptoms. There are also websites offering online self-help advice, treatment and support on the internet. - eg Fearfighter© (see below). See separate leaflet called Stress and Tips on How to Avoid It.

### **MEDICATION**

#### **Antidepressant medicines**

These are commonly used to treat depression but also help reduce the symptoms of anxiety even if you are not depressed. Research trials suggest that antidepressants can ease symptoms in over half of people with GAD. They work by interfering with brain chemicals (neurotransmitters) such as serotonin which may be involved in causing anxiety symptoms.

- Antidepressants do not work straightaway. It takes 2-4 weeks before their effect builds up. A common problem is that some people stop the medicine after a week or so, as they feel that it is doing no good. You need to give them time to work.

Estos pueden ser una opción si están disponibles en su área. Algunas personas prefieren estar en un curso de grupo en lugar de tener la terapia individual o asesoramiento. Los cursos pueden incluir aprender a relajarse, habilidades de resolución de problemas, estrategias y apoyo del grupo de afrontamiento.

### **Esfuerzo personal**

Puede obtener folletos, libros, CDs, DVDs y descargas en la relajación y combatir el estrés. Ellos enseñan técnicas de respiración profunda simples y otras medidas para aliviar el estrés y ayudarle a relajarse. Ellos pueden aliviar los síntomas de ansiedad. También hay sitios web que ofrecen en línea de auto-ayuda consejos, tratamiento y apoyo en el Internet. - Por ejemplo Fearfighter © (ver más abajo). Ver folleto titulado El estrés y consejos sobre cómo evitarlo separada.

### **MEDICACIÓN**

#### **Los medicamentos antidepresivos**

Estos se utilizan comúnmente para tratar la depresión, pero también ayudar a reducir los síntomas de ansiedad, incluso si no está deprimido. ensayos de investigación sugieren que los antidepresivos pueden aliviar los síntomas en más de la mitad de las personas con TAG. Ellos trabajan por interferir con los químicos del cerebro (neurotransmisores) tales como la serotonina que pueden estar implicados en la causa de los síntomas de ansiedad.

- Los antidepresivos no funcionan inmediatamente. Tarda 2-4 semanas antes de que su efecto se acumula. Un problema común es que algunas personas dejan el medicamento después de una semana o así, ya que consideran que se está haciendo ningún bien. Es necesario darles tiempo para trabajar.

- Antidepressants are not tranquillisers and are not usually addictive. There are several types of antidepressants, each with various pros and cons. For example, they differ in their possible side-effects. However, SSRI antidepressants are the ones most commonly used for anxiety disorders. The two SSRIs licensed to treat GAD are escitalopram and paroxetine. Other antidepressants that have been found to help include venlafaxine and duloxetine.
- Note: after first starting an antidepressant, in some people the anxiety symptoms become worse for a few days before they start to improve.

### Tranquillisers

Benzodiazepines, such as diazepam, used to be the most commonly prescribed medicines for anxiety. They usually work well to ease symptoms. The problem is, they are addictive and can lose their effect if you take them for more than a few weeks. They may also make you drowsy. Therefore, they are not used much now for persistent anxiety conditions such as GAD. A short course of up to 2-4 weeks may be an option now and then to help you over a particularly bad spell.

### Buspirone

Buspirone is another option to treat GAD. It is an anti-anxiety medicine but different to the benzodiazepines. It is not clear how it works but it is known to affect serotonin, a brain chemical which may be involved in causing anxiety symptoms. It causes less drowsiness than

- Los antidepresivos no son tranquilizantes y regularmente no son adictivos. Hay varios tipos de antidepresivos, cada uno con diferentes ventajas y desventajas. Por ejemplo, difieren en sus posibles efectos secundarios. Sin embargo, los antidepresivos ISRS son los más comúnmente utilizados para los trastornos de ansiedad. Los dos ISRS con licencia para el tratamiento del TAG son escitalopram y la paroxetina. Otros antidepresivos que se han encontrado para ayudar a la venlafaxina y la duloxetina.
- Nota: después de iniciar por primera vez un antidepresivo, en algunas personas los síntomas de ansiedad empeoran por unos pocos días antes de que comiencen a mejorar.

### Los tranquilizantes

Las benzodiazepinas, como el diazepam, solían ser los medicamentos más comúnmente recetados para la ansiedad. Por lo general funcionan bien para aliviar los síntomas. El problema es que son adictivos y pueden perder su efecto si se toman durante más de unas pocas semanas. También pueden causar somnolencia. Por lo tanto, no se utilizan mucho ahora para condiciones de ansiedad persistentes como GAD. Un curso corto de hasta 2-4 semanas puede ser una opción de vez en cuando para ayudarle a través de una particular mala racha.

### La buspirona

La buspirona es otra opción para el tratamiento del TAG. Es un medicamento contra la ansiedad, pero diferente a las benzodiazepinas. No está claro cómo funciona, pero se sabe que afectan a la serotonina, un químico cerebral que puede estar implicado en la causa de los

<p>benzodiazepines but is also addictive and it should only be used for a short time.</p> <p><b>Pregabalin</b>  Pregabalin is a medicine used for several conditions (principally epilepsy). It has been found useful in GAD. It tends to be considered for GAD if the other treatments mentioned above have been unhelpful.</p> <p><b>Beta-blocker medicines</b>  Beta-blockers, such as propranolol, tend to work better in acute (short-lived) anxiety rather than in GAD and so are not usually considered appropriate treatment here.</p> <p><b>A combination of treatments</b>  CBT plus an antidepressant medicine may work better in some cases than either treatment alone.</p> <p><b>What is the outlook (prognosis)?</b>  Although generalised anxiety disorder (GAD) gets better in some people, in others it tends to come and go. Some people need to take medicines for a long time but are otherwise able to lead perfectly normal lives.</p> <p>Symptoms may flare up and become worse for a while during periods of major life stresses. For example, if you lose your job or split up with your partner.</p> <p>People with GAD are more likely than average to smoke heavily, drink too much alcohol and take street drugs. Each of these things may ease anxiety symptoms in the short term. However, addiction to nicotine, alcohol or drugs</p>	<p>síntomas de ansiedad. Esto causa menos somnolencia que las benzodiazepinas, pero también es adictivo y que sólo debe ser utilizado por un corto tiempo.</p> <p><b>La pregabalina</b>  La pregabalina es un medicamento utilizado para varias condiciones (principalmente la epilepsia). Se ha encontrado útil en el GAD. Tiende a ser considerado para el TAG si los otros tratamientos mencionados anteriormente han sido inútiles.</p> <p><b>medicamentos beta-bloqueadores</b>  Los betabloqueadores, como el propranolol, tienden a trabajar mejor en la ansiedad aguda (de corta duración) en lugar de en el TAG y por lo tanto no se consideran generalmente el tratamiento apropiado en este caso.</p> <p><b>Una combinación de tratamientos</b>  TCC más un medicamento antidepresivo pueden funcionar mejor en algunos casos que en cualquiera de los tratamientos por sí solo.</p> <p><b>Cuál es la perspectiva (pronóstico)?</b>  Aunque el trastorno de ansiedad generalizada (TAG) se pone mejor en algunas personas, en otros se tiende a aparecer y desaparecer. Algunas personas necesitan tomar medicamentos durante mucho tiempo, pero por lo demás son capaces de llevar una vida perfectamente normal.</p> <p>Los síntomas pueden reactivarse y llegar a ser peor por un tiempo en periodos de grandes estresantes de la vida. Por ejemplo, si usted pierde su trabajo o se separó de su pareja.</p> <p>Las personas con trastorno de ansiedad son más propensos que el promedio para fumar mucho, beber demasiado alcohol y tomar drogas de la calle. Cada una de estas cosas puede aliviar los síntomas de ansiedad en el corto plazo. Sin embargo,</p>
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<p>makes things worse in the long term and can greatly affect your general health and well-being.</p>	<p>la adicción a la nicotina, el alcohol o las drogas empeora las cosas en el largo plazo y puede afectar en gran medida su salud general y el bienestar.</p>
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<p>Source text 2: “Worry and Generalized Anxiety Disorder: A Review and Theoretical Synthesis of Evidence on Nature, Etiology, Mechanisms and Treatment” (Newman et al.)</p>	<p>Target text 2</p>
<p><b>Defining and Delineating The Boundaries of Generalized Anxiety Disorder</b>  Generalized anxiety disorder (GAD) has been labeled the basic disorder in psychopathology (Barlow 1988) due to findings that its fundamental characteristics may reflect central processes of all emotional disorders. For instance, GAD at time 1 increases the likelihood of first onsets of mood disorders, panic disorder, posttraumatic stress disorder, and substance abuse disorders at time 2 (Ruscio et al. 2007). GAD is also frequently comorbid with other disorders, showing 12-month combined Axis I and Axis II comorbidity rates as high as 89.8% (Grant et al. 2005b). In addition, worry (the central feature of GAD) has been found to be a dimensional construct associated with depression, anxiety, and stress symptoms to an equal degree, leading some researchers to suggest that worry is an important core transdiagnostic process that cuts across current Diagnostic and Statistical Manual of Mental Disorders (DSM)-IV diagnostic boundaries (Kertz et al. 2012). Therefore, a better understanding of GAD and worry may help to inform our knowledge of other psychological problems in addition to</p>	<p><b>La definición y se definan los límites de trastorno de ansiedad generalizada</b>  trastorno de ansiedad generalizada (TAG) ha sido etiquetado como el trastorno básico en la psicopatología (Barlow 1988), debido a que los resultados de sus características fundamentales pueden reflejar procesos centrales de todos los trastornos emocionales. Por ejemplo, el TAG en el momento 1 aumenta la probabilidad de primeros inicios de los trastornos del estado de ánimo, trastorno de pánico, trastorno de estrés postraumático y trastornos de abuso de sustancias en el tiempo 2 (Ruscio et al., 2007). GAD es también frecuentemente comórbido con otros trastornos, mostrando de 12 meses tasas de comorbilidad del Eje I y Eje II combinados de hasta el 89,8% (Grant et al., 2005b). Además, la preocupación (el rasgo central del TAG) se ha encontrado para ser una construcción tridimensional asociado con la depresión, la ansiedad y los síntomas de estrés en igual grado, llevando a algunos investigadores a sugerir que la preocupación es un importante proceso transdiagnóstico central que atraviesa actual Manual diagnóstico y estadístico de los Trastornos mentales (DSM) -IV límites</p>



providing information about GAD as a stand-alone disorder.

### Clinical Features

Contrary to greatly changing age-of-onset estimates, retrospectively assessed prevalence rates have not changed substantially across revisions of the DSM. Lifetime prevalence of GAD is estimated at about 5.7%, and 12-month prevalence is 3.1% (Kessler & Wang 2008). However, in a recent prospective study, lifetime prevalence rates across all psychological disorders were doubled on average (e.g., lifetime GAD prevalence was 14.2% and past-year prevalence was 4.2%), suggesting that retrospective assessments may greatly underestimate diagnostic prevalence (Moffitt et al. 2010).

Women are more likely than men to be diagnosed with GAD (lifetime prevalence rates 5.3% versus 2.8%; Vesga-López et al. 2008), and 12-month prevalence rates are higher in white and Native American individuals but lower in Black, Asian, and Hispanic persons (Grant et al. 2005b).

### Mechanisms of the Psychopathology of Generalized Anxiety Disorder

Over the past two decades, an abundance of empirical studies have investigated a wide range of cognitive, affective, and neurobiological mechanisms associated with GAD. As suggested below, many of these mechanisms point to the central role of hyperreactivity and a fear of

de diagnóstico (Kertz et al. 2012). Por lo tanto, una mejor comprensión de GAD y la preocupación puede ayudar a informar a nuestro conocimiento de otros problemas psicológicos, además de proporcionar información acerca de GAD como un trastorno autónomo.

### Características clínicas

Contrariamente a cambiar en gran medida las estimaciones de la edad de aparición, las tasas de prevalencia evaluados retrospectivamente no han cambiado sustancialmente a través de revisiones del DSM. La prevalencia de vida del TAG se estima en alrededor de 5,7%, y la prevalencia de 12 meses es de 3,1% (Kessler y Wang 2008). Sin embargo, en un reciente estudio prospectivo, las tasas de prevalencia de por vida en todos los trastornos psicológicos se duplicaron en promedio (por ejemplo, la prevalencia del trastorno de ansiedad por vida fue de 14,2% y la prevalencia en el año anterior fue del 4,2%), lo que sugiere que las evaluaciones retrospectivas pueden subestimar considerablemente la prevalencia de diagnóstico (Moffitt et al., 2010).

Las mujeres son más propensas que los hombres a ser diagnosticados con TAG (tasas de prevalencia de vida de 5,3% frente al 2,8%; Vesga-López et al., 2008), y 12 meses de las tasas de prevalencia son más altas en los individuos blancos y americanos nativos, pero menor en Negro, Asiática y las personas hispanas (Grant et al. 2005b).

### Mecanismos de la psicopatología del trastorno de ansiedad generalizada

Durante las últimas dos décadas, una gran cantidad de estudios empíricos han investigado una amplia gama de habilidades cognitivas, afectivas y mecanismos neurobiológicos asociados con el TAG. Como se sugiere más adelante, muchos de estos mecanismos

negative emotional shifts as well as the use of worry to prevent emotional contrasts that are perceived as unmanageable.

In summary, emotional and neurobiological evidence supports the notion that individuals with GAD are more hyperreactive to threat and less able to cope with resulting negative emotional contrasts than those without GAD. Such evidence also points to worry as a compensatory mechanism that creates and prolongs negative emotionality, thereby reducing contrasting emotional experiences. In the next section, we review developmental, temperamental, and interpersonal risk factors associated with GAD—risk factors that may lead individuals to develop emotional sensitivities and corresponding compensatory mechanisms associated with fear of emotional contrasts.

### **Risk Factors for the Development of GAD**

#### **Environmental**

The development of GAD is associated with unexpected negative life events (Nordahl et al. 2010), maltreatment (Moffitt et al. 2007), and loss (Kendler et al. 2003). Such adverse events can lead people to question their worldviews—that life is predictable and good things happen to good people. Even the presence of a one-time negative life event may lead individuals to become continuously anxious as a means to prepare for other potentially unpredictable events.

In addition to one-time events, as outlined below, those with GAD have

apuntan al papel central de la hiperreactividad y el miedo a los cambios emocionales negativos, así como el uso de preocupación para evitar contrastes emocionales que son percibidas como inmanejable.

En resumen, la evidencia neurobiológica emocional y apoya la idea de que los individuos con trastorno de ansiedad son más hiperreactivas a la amenaza y menos capaces de hacer frente a la resultante contrastes emocionales negativos que aquellos sin el TAG. Tal evidencia también indica que preocuparse como un mecanismo de compensación que crea y prolonga la emocionalidad negativa, reduciendo de esta manera contrastante experiencias emocionales. En la siguiente sección, se revisan los factores de riesgo del desarrollo, temperamentales, e interpersonales asociados con factores de riesgo GAD que pueden llevar a las personas a desarrollar sensibilidades emocionales y los correspondientes mecanismos de compensación relacionados con el miedo de contrastes emocionales.

### **Los factores de riesgo para el desarrollo del TAG**

#### **Ambiental**

El desarrollo del trastorno de ansiedad se asocia con acontecimientos vitales negativos inesperados (Nordahl et al., 2010), malos tratos (Moffitt et al., 2007), y la pérdida (Kendler et al., 2003). Este tipo de acontecimientos adversos pueden llevar a la gente a cuestionar su visión del mundo, que la vida es predecible y cosas buenas pasan a gente buena. Incluso la presencia de un evento de vida negativo de una sola vez puede llevar a los individuos a ser continuamente ansioso como un medio para prepararse para otros eventos potencialmente impredecibles.

Además de los eventos de una sola vez, como veremos a continuación, las

increased likelihood of negative experiences that are more chronic in nature, including ongoing abuse, parental rejection, inconsistent parenting, and parental invalidation (Cougles et al. 2010, Moffitt et al. 2007). This may contribute to continuous negative affect being more comfortable than the shift from a euthymic state to a negative one.

### **Attachment and parenting style**

Attachment has been considered a relational emotion regulation system (Bowlby 1973), and insecure attachment may be a potential risk factor in the development of GAD. Accordingly, insecure attachment and dysregulation of emotions, such as anxiety, go hand in hand as potentially important developmental risk factors.

Bowlby (1973) suggested that child anxiety stemmed from concern over parental availability. Ainsworth and colleagues (1978) identified two anxious, insecure attachment styles—*anxious-avoidant* and *ambivalent/resistant* styles. Anxious-avoidant infants were rejected by their mothers and avoided them upon reunion. It was theorized that children who experienced this rejection avoided relationships because of the anxiety experienced within them. Those with ambivalent/resistant attachment styles had inconsistent or intrusive parents, leading children to respond with anger, resistance, anxiety, and ambivalent behavior upon a reunion. Children with ambivalent/resistant attachment would likely experience fluctuations in affect in response to inconsistent parental responses. In line with the Contrast Avoidance model, children's uncertainty regarding whether their needs would be met, and the distress over resulting affective fluctuations, may lead those with ambivalent/resistant attachment to

personas con trastorno de ansiedad han aumentado la probabilidad de experiencias negativas que son **más de naturaleza crónica**, incluyendo el abuso continuo, rechazo de los padres, **padres inconsistentes**, y la nulidad de los padres (Cougles et al., 2010, Moffitt et al., 2007). Esto puede **contribuir a afectar negativa continua siendo más cómodo que el cambio de un estado eutímico a una negativa.**

### **estilo de apego y la crianza de los hijos**

**Adjunto** se ha considerado un sistema de regulación de la emoción relacional (Bowlby 1973), y el apego inseguro puede ser un factor de riesgo potencial en el desarrollo del TAG. En consecuencia, el apego inseguro y la desregulación de las emociones, como la ansiedad, van de la mano como **potencialmente importantes** factores de riesgo de desarrollo.

Bowlby (1973) sugirió que la **ansiedad del niño** surgió de la preocupación por la disponibilidad de los padres. Ainsworth y **sus colegas** (1978) identificaron dos estilos de apego inseguro, **ansioso estilos-ansioso-avoidante y ambivalentes / resistentes**. **bebés ansioso-avoidante fueron rechazados por sus madres y les desaconseja la reunión.** Se teorizó que los niños que han experimentado este rechazo **evitar las** relaciones debido a la ansiedad experimentada dentro de ellos. Las personas con estilos de apego ambivalente / resistentes tenían padres **inconsistentes** o **intrusivos**, lo que lleva a los niños a responder con **la ira, la resistencia, la ansiedad y el** comportamiento ambivalente en una reunión. Los niños con apego ambivalente / resistente probablemente **sufiría** las fluctuaciones **en los afectará** en respuesta a las **respuestas** de los padres inconsistentes. En línea con el modelo de **evitación contraste**, la incertidumbre de los niños con respecto a si se satisfacen sus necesidades, y la

experience intrapersonal negativity continuously as a means to prepare for unexpected behaviors from their parents.

### Temperament

Temperament—innate, early differences in biological, behavioral, and emotional responsiveness to environmental stimuli—is related to GAD in young children (Rothbart 2007). Interestingly, such temperamental dispositions as behavioral inhibition may lead to difficulties in tolerating affective shifts. Children with behaviorally inhibited temperament, characterized by a low threshold to novelty, are thought to have increased SNS activity or decreased PNS activity, resulting in restraint, distress, and avoidance when exposed to novel stimuli (Kagan & Snidman 1999). As such, these children may experience large affective shifts between euthymic states and negative states, leading these contrasts to be quite uncomfortable and distressing. It is possible that individuals with temperamental styles characterized by high physiological arousal in response to novel stimuli may be especially likely to experience negative contrast avoidance. In fact, in a longitudinal study, the tendency to become aroused easily in mid-childhood was a pathway by which childhood risk factors predicted the development of GAD symptoms (Karevold et al. 2009).

### Interpersonal Factors in GAD

Related to temperament, personality disorders and maladaptive interpersonal

angustia por las fluctuaciones afectivas resultantes, pueden llevar aquellos con apego ambivalente / resistente a experimentar la negatividad intrapersonal continua como medio para prepararse para comportamientos inesperados de sus padres .

### Temperamento

-Temperamento innato, primeras diferencias en la capacidad de respuesta biológica, conductual y emocional a los estímulos ambientales, se relaciona con el TAG en los niños pequeños (Rothbart 2007). Curiosamente, este tipo de disposiciones temperamentales como la inhibición del comportamiento pueden dar lugar a dificultades en tolerar los cambios afectivos. Los niños con temperamento conductualmente inhibidos, que se caracterizan por un bajo umbral para la novedad, se cree que han aumentado la actividad del SNS o disminución de la actividad PNS, lo que resulta en la moderación, la angustia, y la evitación cuando se expone a estímulos nuevos (Kagan y Snidman 1999). Como tal, estos niños pueden experimentar grandes cambios afectivos entre los estados eutímicos y estados negativos, lo que lleva estos contrastes a ser bastante incómoda y angustiante. Es posible que los individuos con estilos temperamentales caracterizados por alta excitación fisiológica en respuesta a estímulos nuevos pueden ser especialmente propensos a experimentar la evitación de contraste negativo. De hecho, en un estudio longitudinal, la tendencia a excitarse fácilmente a mediados de la infancia era una vía por la que la infancia factores de riesgo predijeron el desarrollo de síntomas de TAG (Karevold et al., 2009).

### Factores Interpersonales en GAD

Relacionados con el temperamento, los trastornos de la personalidad y los

processes have been associated with adult GAD (Newman & Erickson 2010). Such dysfunctional interpersonal processes may play a key role in the onset or maintenance of GAD via biased interpersonal cognitions and problematic behaviors (Newman & Erickson 2010).

With respect to problematic social cognition, interpersonal concerns are the most common worry topic (Roemer et al. 1997). Individuals with GAD are also exquisitely sensitive to interpersonal threats, as evidenced by self-reports of hypervigilance and sensitivity (Nisita et al. 1990). Objective measures have also confirmed biased attention toward threatening faces (Mogg et al. 2000). Further, GAD analogues exhibited bias toward perceiving others as attacking, ignoring, and controlling in a first-meeting encounter (Erickson & Pincus 2005). Worry also predicts perceiving coldness in others' interpersonal behavior during hypothetical scenarios, even when accounting for commonly comorbid symptoms of social anxiety and depression (Erickson et al. 2010). This hypervigilance and sensitivity may serve to maintain a negative affective state in order to prevent individuals with GAD from experiencing a startling negative affective shift associated with a negative interpersonal experience.

#### **Treatment for Generalized Anxiety Disorder**

Meta-analyses suggest that as the only empirically supported therapy for GAD, CBT reduces acute symptoms with maintenance sustained up to two years following treatment (Borkovec & Ruscio 2001). CBT packages are generally superior to nonspecific therapies and

procesos interpersonales desadaptativos se han asociado con GAD adultos (Newman & Erickson 2010). Tales procesos interpersonales disfuncionales pueden jugar un papel clave en el inicio o mantenimiento del TAG a través de cogniciones interpersonales sesgadas y comportamientos problemáticos (Newman & Erickson 2010).

Con respecto a la cognición social problemática, las preocupaciones interpersonales son el tema de preocupación más común (Roemer et al., 1997). Las personas con TAG también son exquisitamente sensibles a las amenazas interpersonales, como lo demuestran los autoinformes de hipervigilancia y sensibilidad (Nisita et al., 1990). Las medidas objetivas también han confirmado una atención sesgada hacia las caras amenazadoras (Mogg et al., 2000). Además, los análogos de GAD mostraron sesgo hacia percibir a otros como atacando, ignorando y controlando en un encuentro de primera reunión (Erickson & Pincus 2005). La preocupación también predice la percepción de la frialdad en el comportamiento interpersonal de los demás durante los escenarios hipotéticos, incluso cuando se consideran síntomas comúnmente comórbidos de ansiedad social y depresión (Erickson et al., 2010). Esta hipervigilancia y sensibilidad puede servir para mantener un estado afectivo negativo para evitar que individuos con TAG experimenten un sorprendente cambio afectivo negativo asociado con una experiencia interpersonal negativa.

#### **Tratamiento para el trastorno de ansiedad generalizada**

Los metanálisis sugieren que, como única terapia empíricamente soportada para el TAG, la TCC reduce los síntomas agudos con mantenimiento sostenido hasta dos años después del tratamiento (Borkovec & Ruscio 2001). Los paquetes de TCC son generalmente superiores a las

wait-list control conditions (Borkovec & Ruscio 2001). The positive impact of CBT also includes a reduction of most comorbid anxiety disorders, particularly when CBT has successfully reduced GAD symptoms (Newman et al. 2010).

In addition to psychotherapy approaches, psychopharmacological treatments have been recommended. Several different classes of drugs are currently used to address GAD symptoms, including antidepressants, benzodiazepines, and anticonvulsants, and most have demonstrated efficacy in placebo-controlled trials. Within classes of medications for GAD, the consensus across different guidelines is that selective serotonin reuptake inhibitor (SSRI) and serotonin-norepinephrine reuptake inhibitor (SNRI) antidepressants should be considered the first line of treatment (Katzman et al. 2011). Nonetheless, despite some notable benefits, there are also drawbacks and limitations to medications (for a review of various medications and their impacts, see Newman et al. 2012), and there is no clear support for an additive effect when combined with CBT (Bond et al. 2002, Crits-Christoph et al. 2011).

### Conclusion

With its high level of prevalence and long course, GAD has been associated with substantial costs not only for the individual but also for families and society. Related to this disorder are elevated risks of comorbidity, medical problems, marital discord, and occupational difficulties. Considerable research has been conducted on diverse processes and risk factors potentially involved in the etiology and maintenance

terapias no específicas y las condiciones de control de lista de espera (Borkovec & Ruscio 2001). El impacto positivo de la TCC también incluye una reducción de la mayoría de los trastornos de ansiedad comórbidos, particularmente cuando la TCC ha reducido con éxito los síntomas de GAD (Newman et al., 2010).

Además de los enfoques de psicoterapia, se han recomendado tratamientos psicofarmacológicos. Actualmente se usan varias clases de fármacos para tratar los síntomas de GAD, incluyendo antidepressivos, benzodiazepinas y anticonvulsivos, y la mayoría han demostrado eficacia en ensayos controlados con placebo. Dentro de las clases de medicamentos para GAD, el consenso entre las diferentes guías es que los inhibidores selectivos de la recaptación de serotonina (ISRS) y los antidepressivos serotonina-norepinefrina (SNRI) deben ser considerados como la primera línea de tratamiento (Katzman et al., 2011). No obstante, a pesar de algunos beneficios notables, también hay inconvenientes y limitaciones a los medicamentos (para una revisión de varios medicamentos y sus impactos, véase Newman et al., 2012), y no hay un claro apoyo para un efecto aditivo cuando se combina con CBT (Bond et al., 2002, Crits-Christoph et al., 2011).

### Conclusión

Con su alto nivel de prevalencia y largo curso, el GAD se ha asociado con costos sustanciales no sólo para el individuo, sino también para las familias y la sociedad. Relacionados con este trastorno están elevados los riesgos de comorbilidad, problemas médicos, discordia marital y dificultades ocupacionales. Se han realizado considerables investigaciones sobre diversos procesos y factores de riesgo

<p>of GAD and, as argued in this review, the role of several of these maladaptive mechanisms can be explained, at least in part, by a new conceptualization of this disorder. Integrating empirical findings from different research domains, the Contrast Avoidance model proposes that (a) GAD is characterized by emotional hyperreactivity and discomfort with contrasting emotions (manifested through or associated with affective, cognitive, and neurobiological processes); (b) such difficulty with sharp negative emotional shifts is caused or maintained by biological, developmental, temperamental, and interpersonal vulnerabilities; (c) rather than avoid negative emotionality, worry evokes and sustains negative affect; (d) those with GAD use worry to shift their intrapersonal experiences toward negativity in an attempt to preclude sharp increases in negative emotion.</p>	<p>potencialmente implicados en la etiología y el mantenimiento del TAG y, como se argumenta en esta revisión, el papel de varios de estos mecanismos desadaptativos puede explicarse, al menos en parte, por una nueva conceptualización de Este trastorno. El modelo de evitación de contraste propone que (a) el TAG se caracteriza por hiperreactividad emocional y malestar con emociones contrastantes (manifestadas a través de procesos afectivos, cognitivos y neurobiológicos o asociadas a ellos); (B) tal dificultad con cambios negativos agudos es causada o mantenida por vulnerabilidades biológicas, de desarrollo, temperamentales e interpersonales; (C) en lugar de evitar la emotividad negativa, la preocupación evoca y sostiene el afecto negativo; (D) los que tienen GAD se preocupan de cambiar sus experiencias intrapersonales hacia la negatividad en un intento de evitar un aumento brusco de la emoción negativa.</p>
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