Theory of Cognitive Distortions:
Application to Generalised Anxiety Disorder

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SUMMARY *In a previous paper (Compléments pour une théorie des distorsions cognitives, Journal de Thérapie Comportementale et Cognitive, 2007), we did present some elements aimed at contributing to a general theory of cognitive distortions. The latter elements, based on the reference class, the duality and the system of taxa, are applied here to generalised anxiety disorder. This allows to describe, on the one hand, the specific distortions related to generalised anxiety disorder, consistently with recent work emphasising the role played by uncertain situations with regard to future events. On the second hand, these elements allow to define one type of structured reasoning, of inductive nature, which contributes to the formation and maintenance of anxious ideas.*

Keywords: *cognitive therapy, cognitive distortions, generalised anxiety disorder*.

In Franceschi (2007), we set out to introduce several elements intended to contribute to a general theory of cognitive distortions. These elements are based on three basic notions: the reference class, the duality and the system of taxa. With the help of these three elements, we could define within the same conceptual framework the general cognitive distortions such as dichotomous reasoning, the disqualification of one pole, minimisation and maximisation, as well as the requalification in the other pole and the omission of the neutral. In addition, we could describe as specific cognitive distortions: the disqualification of the positive, selective abstraction and catastrophism.

In what follows, we offer to extend this work by applying it in a specific way to generalised anxiety disorder (GAD), in order to allow their use within cognitive therapy. The present study inserts itself in the context of recent work (Butler & Mathews 1983, 1987, Dalgleish et al. 1997), which notably underlined the major role played, in the context of GAD, by indeterminate situations, and especially by uncertain situations relating to future events. Recent developments, emphasising especially the intolerance with regard to indeterminate future situations, echoed this (Dugas et al. 2004, Canterbury et al. 2004, Carleton et al. 2007).

We shall be interested successively in two main forms of reasoning likely to occur in the context of GAD: on the one hand, the cognitive distortions which are specific to GAD; on the other hand, a structured argument relating to GAD and grounded on inductive logic, which is likely to include one or several of the aforementioned cognitive distortions.

Cognitive distortions in the context of generalized anxiety disorder

The conceptual framework defined in Franceschi (2007) is based on three fundamental elements: the duality, the reference class, and the system of taxa, which allow to define the general cognitive distortions. These three notions also allow to describe the specific cognitive distortions which are applicable to GAD. In this context, as we will see it, the reference class for the latter specific cognitive distortions identifies itself with the class of *future events of the patient's life*. Moreover, the duality assimilates itself to the *Positive/Negative* duality. Finally, for the sake of the present discussion, we shall make use of the system of taxa (its choice is more or less arbitrary) described in Franceschi

(2007), which includes 11 taxa, denoted by E_1 to E_{11}, where E_6 denotes the neutral taxon. Such conceptual framework allows then to define the specific cognitive distortions in the context of GAD. We offer to examine them in turn.

Dichotomous reasoning

An instance of dichotomous reasoning related to GAD consists for the patient to only consider future events from the viewpoint of the extreme taxa corresponding to each pole of the Positive/Negative duality. Hence, the patient only considers future events which present either a very positive, or a very negative nature. All other events, being either neutral, positive or negative to a lesser degree, are thus ignored. This type of reasoning can be analysed as an instance of dichotomous reasoning, applied to the class of the events of the patient's future life and to the Positive/Negative duality.

Disqualification of one pole

An instance of the disqualification of one pole related to GAD consists for the patient to only envisage, among future events likely to occur, those which present a negative nature. The patient tends then to be unaware of positive future events that could happen, by considering that they do not count, for this or that reason. In the present context, this type of reasoning can be analysed as an instance of disqualification of one pole, applied to the reference class of the events of the patient's future life and to the Positive/Negative duality, i.e. disqualification of the positive.

Arbitrary focus on a given modality

In GAD, a typical instance of arbitrary focus, consists for the patient to focus on a possible future event, the nature of which turns out to be negative. This can be analysed as focusing on one of the taxa of the Positive/Negative duality, at the level of the class of the future events of the patient's life.

Omission of the neutral

A specific instance for GAD consists for the patient to be completely unaware of possible future events the nature of which is neutral, i.e. those which are neither positive nor negative.

Requalification in the other pole

In the context of GAD, the corresponding cognitive distortion consists in requalifying as negative a possible future event, whereas it should be considered objectively as positive. Such cognitive distortion consists of a requalification in the other pole applied to the reference class of the future events of the patient's life and to the Positive/Negative duality, i.e. requalification in the negative.

Minimisation or maximisation

A specific instance of minimisation applied to GAD consists for the patient to consider some possible future events as less positive than they truly are in reality. With maximisation, the patient considers some possible future events as more negative than they objectively are.

Primary, secondary and tertiary anxiogenous arguments

At this stage, it is worth also considering a certain type of reasoning, likely to be met in GAD, which can include several instances of the aforementioned cognitive distortions. This type of reasoning presents an anxiogenous nature, because it leads the patient to predict that a future event of negative nature is going to occur. Such reasoning is underlain by a structure which presents an *inductive* nature. Before analysing in detail the different steps of the corresponding reasoning, it is worth describing preliminarily its internal structure. The latter is the following (in what follows, the symbol $\therefore$ denotes the conclusion):

(1)	the event E_1 of negative nature did occur to me	premiss
(2)	the event E_2 of negative nature did occur to me	premiss
(3)	the event E_3 of negative nature did occur to me	premiss
(...)		premiss
(10)	the event E_{10} of negative nature did occur to me	premiss

(11)	∴ all events that occur to me are of negative nature	from (1)-(10)
(12)	∴ « I am always unlucky », « I am ill-fated »	from (11)
(13)	the future event E_{11} of negative nature may occur	premiss
(14)	∴ the future event E_{11} of negative nature will occur	from (11), (13)

The essence of such reasoning is of a logically inductive nature. The patient enumerates then some events of his/her past or present life, the nature of which he/she considers as negative. He/she reaches then by generalisation the conclusion according to which all events that which occur to him/her are negative. From this generalisation, he/she infers a prediction relating to a future event, likely to happen, which he/she considers as negative. The patient is thus led to the anxiogenous conclusion that an event of negative nature is going to occur.

In such reasoning, it is worth pointing out that the reference class identifies itself with the class of *past, present and future events*, of the patient's life. Typically, in this type of reasoning, the generalisation is grounded on present or past events, while a future event is the object of the corresponding inductive prediction. This is different from the reference class applicable to the cognitive distortions mentioned above, where the reference class identifies itself exclusively with the *future events* of the patient's life.

At this stage, it proves to be necessary to identify the fallacious steps in the patient's reasoning, to allow their use in cognitive therapy of GAD. To this end, we can differentiate several steps in the structure of the corresponding reasoning. It proves indeed that some steps are valid arguments (an argument is valid when its conclusion is true if its premises are true), while others are invalid. For this purpose, it is worth drawing within this type of reasoning, a distinction between primary, secondary or ternary anxiogenous arguments.

Primary anxiogenous arguments

The first step in the type of aforementioned reasoning, consists for the patient to think to a past negative event, in the following way:

| (1) | the event E_1 of negative nature did occur to me |

It is however possible to describe more accurately the corresponding cognitive process, under the form of an argument that we can term a primary anxiogenous argument, the structure of which is the following:

(1a)	the event E_1 did occur to me	
(1b)	the event E_1 was of negative nature	
(1)	∴ the event E_1 of negative nature did occur to me	from (1a), (1b)

By such cognitive process, the patient is led to the conclusion that some negative event did occur to him/her. This type of argument proves to be entirely valid inasmuch as the event in question presents well, objectively, a negative nature. However, it can also turn out to be invalid, if the event in question presents, objectively, a positive (or neutral) nature. What is then defective in this type of reasoning, is the fact that premise (1b) turns then out to be false. Such can notably be the case for example if the patient makes use of a cognitive distortion such as requalification in the negative. In such case, the patient considers then as negative an event the nature of which is objectively positive.

Secondary anxiogenous arguments

Anxiogenous secondary arguments are constituted, at the level of the above-mentioned reasoning, of the part that takes into account the instances (1)-(10) and proceeds then by *generalisation*. The patient counts thus some instances of events that did occur to him/her, the nature of which he/she considers as negative, and concludes that all events that did occur to him/her were negative, in the following way:

(1)	the event E_1 of negative nature did occur to me	
(2)	the event E_2 of negative nature did occur to me	
(...)		
(10)	the event E_{10} of negative nature did occur to me	
(11)	∴ all events that occur to me are of negative nature	from (1)-(10)

Such generalisation *may* constitute a fully *valid* argument. For the resulting generalisation constitutes a fully correct inductive reasoning, if the premises (1)-(10) are true. However, such type of reasoning is most often defective from two different viewpoints, thus distorting the conclusion which results from it. Above all, as we have did just see it, some past events of positive nature can have been counted among the number of negative events, by the effect of a *requalification in the negative*. In that case, the enumeration of instances includes then some false premises, thus invalidating the resulting generalisation. Secondly, some past or present positive (or neutral) events can have been omitted in the corresponding enumeration. Such omission can result from the use of some cognitive distortions, such as *disqualification of the positive*. In such case, the relevant class of reference consisting in present and past events of the patient's life is only taken into account in a partial or erroneous way. The corresponding reasoning remains then logically valid, but proves to be incorrect, since it takes into account only partly the relevant instances within the reference class, that of the present and past events of the patient's life.

As we see it finally, the patient proceeds then to a reconstruction of the relevant reference class which proves to be erroneous, due to the use of the following specific cognitive distortions: *requalification in the negative* and *disqualification of the positive* (and possibly, *omission of the neutral*). The corresponding type of reasoning is illustrated on the figure below:
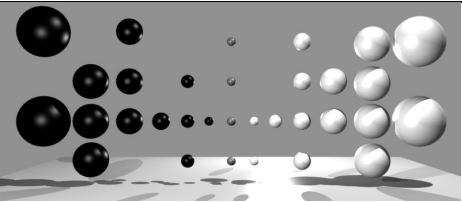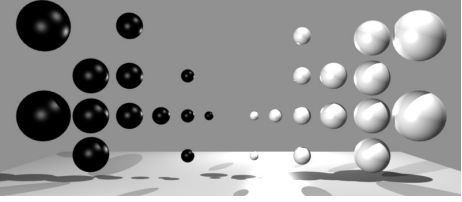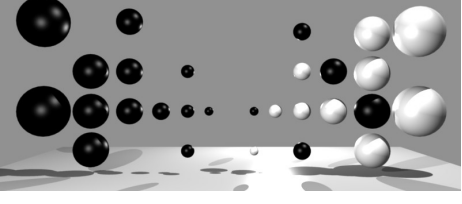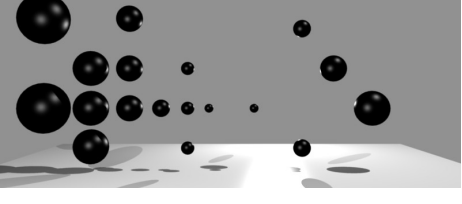

	A series of events of the patient's life, seen (objectively) from the optimal system of taxa
	After omission of the neutral
	After requalification in the negative
	After disqualification of the positive Conclusion: «All events that occur to me are negative »

Figure 1. Incorrect construction of the reference class for induction, after *omission of the neutral*, *requalification in the negative*, and then *disqualification of the positive*

Such mechanism, as we did see it, illustrates how the *formation* of anxious ideas is made. However; a mechanism of the same nature is also likely to contribute to their *maintenance*. For once the generalisation (11) according to which all events which occur to the patient are of negative nature, has been established by means of the above reasoning, its maintenance is made as soon as an event occurs which confirms this latter generalisation. When a new negative event indeed happens, the patient concludes from it that it confirms generalisation (11). Such mechanism, at the stage of the maintenance of anxious ideas, constitutes a *confirmation bias*. For the patient only counts those events of negative nature related to him/her that *confirm* indeed the generalisation (11), but without taking

into account those events of positive nature which occur to him/her and that would then *disconfirm* the idea according to which all events which occur to him/her are of negative nature.

Ternary anxiogenous arguments

Lastly, it is worth mentioning the role played by ternary anxiogenous arguments which consist, at the level of the aforementioned reasoning, in the following sequence:

(11) ∴ all events that occur to me are of negative nature
(12) ∴ « I am always unlucky », « I am ill-fated »

It consists here of an argument which follows the conclusion of the secondary anxiogenous argument (11), and which, by an additional step (12), aims at interpreting it, at making sense of it. The patient interprets here the fact that the events which occur to him/her are negative, due to the fact that he/she is unlucky, ill-fated.

As we did see it, the interest of drawing a distinction between three types of arguments resides in the fact that each of them has a specific function: the primary stage proceeds by enumerating the instances, the secondary stage operates by generalisation, and the ternary stage, lastly, proceeds by interpretation (Franceschi 2008).

The present study, as we see it, extends recent work (Butler and Mathews on 1987, Dalgleish et al. 1997) emphasising the role played, in GAD, by anticipations concerning indeterminate situations related to future events. In this context, the specific cognitive distortions as well as a reasoning of an inductive structure, contribute then to the vicious circle (Sgard et al. 2006), which results from the process of formation and maintenance of the anxious state.

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