Assessing and Restructuring Dysfunctional Cognitions

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1. Introduction

Cognition impacts clinically relevant aspects of day-to-day function, such as emotion, behavior, and interpersonal relationships, and involves structures necessary to support information processing. The exchange of interpersonal information in therapy typically comprises emotional states, behavioral symptoms, expectations for improvement, and experiences and meanings attached to experiences, that may occur according to implicit (non-conscious) and explicit (conscious) levels of awareness on the part of both the client and the therapist (Alford & Beck, 1997).

This chapter has two learning objectives: 1) help the patient to identify and change cognitions in the first and most superficial level of information processing – comprising negative automatic thoughts (ATs), and expressed as consistent errors in patients’ thinking; 2) help the patient to identify and change cognitions in the second and intermediate level of information processing – comprising the underlying assumptions (UAs) or conditional beliefs.

Two other chapters in this book are focused on identifying and restructuring negative core beliefs (CBs) and schemas, conceptualized as the third and deeper level of information processing (Wenzel, 2012; de-Oliveira, 2012).

2. Cognitive model

Cognitions may be assessed on at least three levels (Fig. 1). On a more superficial level of information processing, cognitions are known as ATs. Hollon & Kendall (1980) developed the Automatic Thoughts Questionnaire (ATQ-30), a 30-item questionnaire conceived to measure the frequency of occurrence of ATs, typically expressed as negative self-statements, and associated with depression. In the intermediate level of information processing, cognitions are usually called UAs or conditional beliefs. Weissman & Beck (1978) developed the Dysfunctional Attitude Scale to assess negative attitudes of depressed patients towards self, the outside world, and the future. Finally, in the deepest level of information processing, cognitions are known as CBs or schemas. Beck et al. (2001) proposed the Personality Beliefs Questionnaire, and Young and Brown (1994) developed the Young Schema Questionnaire to assess these beliefs.
It is largely recognized that cognitions and their relation to emotional and behavioral responses are complex phenomena. Fig. 1 illustrates the highly complex interactions between different elements of the cognitive model and the reciprocal influences of each element over the others.

Cognitive model

Fig. 1. Complex interactions between cognitions and responses to cognitions. (Copyright: Irismar Reis de Oliveira; http://trial-basedcognitivetherapy.com)

The full arrows seen in Fig. 1 represent more direct effects and the interrupted arrows represent possible indirect effects in the chain of elements triggered by a situation. This is important, for instance, when the therapist explains why different situations provoke different reactions (interrupted arrow between situation and AT) in different people or in the same people in different situations. Considering this complex model, a diagram that could make these interactions more easily understandable for the client during the therapeutic process would be particularly useful.

3. Case conceptualization

Case conceptualization is a key element in cognitive-behavioral therapy (CBT), and may be defined as a description of a patient’s presenting problems that uses theory to make explanatory inferences about causes and maintaining factors, as well as to inform interventions (Kuyken et al, 2005). However, sharing its components with patients may be a complex and difficult task. As a highly individualized work, it should be collaboratively built with the client, while educating him/her about the cognitive model. While there are numerous case conceptualization diagrams proposed by different authors for different disorders and problems, Judith Beck’s diagram is the most well known and used (J.S. Beck, 1995).

I designed a conceptualization diagram (shown in Figs. 2 and 3) to make the cognitive model easier to be understood by the client during therapy. It was developed for use in
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Trial-Based Cognitive Therapy (de-Oliveira, 2011), but not limited to this approach, as its components are the same ones found in conventional CBT.

Fig. 2. TBCT conceptualization diagram showing an activated negative core belief. (Copyright: Irismar Reis de Oliveira; http://trial-basedcognitivetherapy.com)

In the first level of information processing shown in Fig. 2, a situation appraised by the patient as dangerous (AT box) would elicit anxiety (emotional reaction box) that could paralyze him/her (behavioral and physiological responses box). Arrows returning to the emotional reaction, ATs and situation boxes inform the patient about the circular nature of these interactions (confirmatory bias) that prevent him/her from reappraising the situation and consequently changing the erroneous perceptions it triggered.

This diagram might also be useful to make the patient understand that behaviors used in specific situations that elicit less anxiety and consequently yield a sense of immediate relief (e.g., avoidance) may progressively become a safety behavior (arrow directed from the behavioral and physiological responses box from the first to the second level on the right side of the picture). This means that perceptions in the first level may progressively become UAs or rules that are now maintained by the compensatory strategies and safety behaviors (confirmatory bias) seen in the second level. Safety behaviors then assume a modulatory function. Under the influence of the UAs that support such behaviors, first level appraisals (ATs) may be repeatedly confirmed. Also, third level (unconditional) CBs may be activated if UAs are challenged (for example, during exposure), or inactivated if UAs are not challenged (for example, by avoidance).
Having sufficient practice in identifying and changing ATs by replacing them with more functional alternative appraisals, the patient may progressively notice changes in the other levels, for instance, activation of positive CBs. However, restructuring negative CBs (see chapters 2 and 3 in this book.) is considered an important step for more durable results in therapy. Fig. 3 graphically illustrates such changes.

4. Dysfunctional ATs and cognitive distortions

ATs are rapid, evaluative thoughts that do not arise from deliberation or reasoning; as a result, the person is likely to accept them as true, without analysis (J.S. Beck, 1995). It is not uncommon for ATs to be distorted, and result in dysfunctional emotional reactions and behaviors that, in turn, produce more cognitive errors that maintain the vicious circle (level 1 of Fig. 1).

Fig. 3. TBCT conceptualization diagram showing an activated positive core belief. (Copyright: Irismar Reis de Oliveira; http://trial-basedcognitivetherapy.com).

Table 1 includes 15 known cognitive distortions, their definitions and examples (Burns, 1980; Beck, 1976; J.S. Beck 1995; Dryden & Ellis, 2001; Leahy, 2003). Teaching the patient to identify cognitive distortions is an important step to restructure such dysfunctional ATs. This may be done by means of the Intrapersonal Thought Record (IntraTR) described below. It is illustrated with the case of a panic disorder patient.
<table>
<thead>
<tr>
<th>Cognitive distortions</th>
<th>Definitions</th>
<th>Examples</th>
</tr>
</thead>
</table>
| 1. Dichotomous thinking (also called all-or-nothing, black and white, or polarized thinking) | I view a situation, a person or an event only in all-or-nothing terms, fitting them into only two extreme categories instead of on a continuum. | “I made a mistake, therefore I’m a failure”. “I ate more than I planned, so I blew my diet completely”  
**My example:** |
| 2. Fortune telling (also called catastrophizing)                                     | I predict the future in negative terms and believe that what will happen will be so awful that I will not be able to stand it. | “I will fail and this will be unbearable.” “I’ll be so upset that I won’t be able to concentrate for the exam.”  
**My example:** |
| 3. Discounting or disqualifying the positive                                        | I disqualify and discount positive experiences or events insisting that they do not count. | “I passed the exam, but I was just lucky.” “Going to college is not a big deal, anyone can do it.”  
**My example:** |
| 4. Emotional reasoning                                                               | I believe my emotions reflect reality and let them guide my attitudes and judgments. | “I feel she loves me, so it must be true.” “I am terrified of airplanes, so flying must be dangerous.”  
**My example:** |
| 5. Labeling                                                                          | I put a fixed, global label, usually negative, on myself or others.          | “I’m a loser.” “He’s a rotten person.” “She’s a complete jerk.”  
**My example:** |
| 6. Magnification/minimization                                                        | I evaluate myself, others, and situations magnifying the negatives and/or minimizing the positives. | “I got a B. This proves how inferior I am.” “I got an A. It doesn’t mean I’m smart.”  
**My example:** |
| 7. Selective abstraction (also called mental filter and tunnel vision)               | I pay attention to one or a few details and fail to see the whole picture   | “My boss said he liked my presentation, but since he corrected a slide, I know he did not mean it.” “Even though the group said my work was good, one person pointed out an error so I know I will be fired.”  
**My example:** |
| 8. Mind reading                                                                      | I believe that I know the thoughts or intentions of others (or that they know my thoughts or intentions) without having sufficient evidence. | “He’s thinking that I failed”. “She thought I didn’t know the project.” “He knows I do not like to be touched this way.”  
**My example:** |
| 9. Overgeneralization                                                                | I take isolated cases and generalize them widely by means of words such as “always”, “never”, “everyone”, etc. | “Every time I have a day off from work, it rains.” “You only pay attention to me when you want sex.”  
**My example:** |
<table>
<thead>
<tr>
<th></th>
<th>Cognitive Distortion</th>
<th>Definition</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Personalizing</td>
<td>I assume that others’ behaviors and external events concern (or are directed to) myself without considering other plausible explanations.</td>
<td>“I felt disrespected because the cashier did not say thank you to me” (not considering that the cashier did not say thank you to anyone). “My husband left me because I was a bad wife” (not considering that she was his fourth wife). <strong>My example:</strong></td>
</tr>
<tr>
<td>11</td>
<td>Should statements (also “musts”, “oughts”, “have tos”)</td>
<td>I tell myself that events, people’s behaviors, and my own attitudes “should” be the way I expected them to be and not as they really are.</td>
<td>“I should have been a better mother”. “He should have married Ann instead of Mary”. “I shouldn’t have made so many mistakes.” <strong>My example:</strong></td>
</tr>
<tr>
<td>12</td>
<td>Jumping to conclusions</td>
<td>I draw conclusions (negative or positive) from little or no confirmatory evidence.</td>
<td>“As soon as I saw him I knew he had bad intentions.” “He was looking at me, so I concluded immediately he thought I was responsible for the accident”. <strong>My example:</strong></td>
</tr>
<tr>
<td>13</td>
<td>Blaming (others or oneself)</td>
<td>I direct my attention to others as sources of my negative feelings and experiences, failing to consider my own responsibility; or, conversely, I take responsibility for others’ behaviors and attitudes.</td>
<td>‘My parents are the ones to blame for my unhappiness.” “It is my fault that my son married a selfish and uncaring person.” <strong>My example:</strong></td>
</tr>
<tr>
<td>14</td>
<td>What if?</td>
<td>I keep asking myself questions such as “what if something happens?”</td>
<td>“What if my car crashes?” “What if I have a heart attack?” “What if my husband leaves me?” <strong>My example:</strong></td>
</tr>
<tr>
<td>15</td>
<td>Unfair comparisons</td>
<td>I compare myself with others who seem to do better than I do and place myself in a disadvantageous position.</td>
<td>“My father always preferred my elder brother because he is much smarter than I am.” “I am a failure because she is more successful than I am.” <strong>My example:</strong></td>
</tr>
</tbody>
</table>

Table 1. Cognitive distortions, definitions and examples. (Copyright: Irismar Reis de Oliveira; http://trial-basedcognitivetherapy.com).
4.1 Intrapersonal thought record

A premise of CBT is that exaggerated or biased cognitions often maintain or exacerbate stressful states such as depression, anxiety, and anger (Leahy, 2003).

Beck et al. (1979) developed the Dysfunctional Thought Record (DTR) as a worksheet to help patients respond to ATs more effectively, thereby modifying negative mood states. This approach is useful for many patients who use the DTR consistently. However, for some patients, the alternative thoughts generated through the DTR and intended to be perceived as adaptive and rational may still lack credibility (de-Oliveira, 2008). To address this issue, Greenberger & Padesky (1995) expanded the original 5-column DTR designed by Beck et al. (1979) to seven columns. The two additional columns were evidence columns, allowing the patient to include evidence that does and does not support the ATs, enabling the patient to develop more balanced thoughts, and thus improve associated emotional reactions and behaviors.

I devised the IntraTR in order to make the restructuring of ATs easier for the patient, and to allow him/her to connect the ATs to the conceptualization diagram shown in Figs. 2 and 3. The following case vignette of a panic disorder patient illustrates how the IntraTR and the conceptualization diagram can be used together in order to restructure dysfunctional ATs (de-Oliveira, 2011b).

4.1.1 Case illustration

Sean, aged 35, had a 10-year history of frequent panic attacks with increasingly severe agoraphobia. SSRIs and benzodiazepines reduced his panic attacks’ intensity and frequency, but his agoraphobia worsened, and for 3 years Sean had rarely left home alone. His fear of travelling even when accompanied limited his professional and personal life (his fiancée lived 200 miles away). Sean had 10 treatment sessions over 3 months. In session 1, he learned that fear and anxiety were normal, was introduced to the cognitive model (level 1 of the conceptualization diagram), and did interoceptive exposure by hyperventilating.

Sean was asked to learn about the cognitive distortions as homework. He received from the therapist a sheet (Table 1) containing names (column 1), definitions (column 2) and examples (column 3) of cognitive distortions. Also, Sean was asked to write down his own examples of cognitive distortions during the week in the space identified as “My example” in column 3 of Table 1. Identifying his own examples prepared Sean to be introduced to the Cognitive Distortions Questionnaire (CD-Quest) and the IntraTR, to be explored in session 2. In session 2, Sean completed the CD-Quest and an IntraTR in order to restructure his catastrophic ATs (e.g. “I’ll lose control and go mad”). In session 3, Sean filled in 2 more IntraTRs. The CD-Quest was filled in weekly during the whole therapy process.

Fig. 4 illustrates Sean’s conceptualization diagram, and Fig. 5 is the IntraTR filled in by Sean in session 2. In a situation in which he was preparing himself to go to work, he noticed his heart racing (situation box). Sean had the AT “I will have an attack again” (AT box), and felt anxious (emotional reaction box). Consequently, Sean decided not to go to
work (behavioral and physiological response box). The therapist asked Sean to examine the cognitive distortions sheet (Table 1) in order to identify possible thinking errors and fill in item 1 of the IntraTR (Fig. 5). Sean came up with fortune telling and catastrophizing. Items 2 and 3 of the IntraTR helped Sean to uncover the evidence supporting and not supporting the AT. Sean was then asked to find out any advantages of behaving according to the AT (item 4). The answer was “No, because it makes me feel vulnerable.” The therapist asked Sean how he could test the credibility of the AT (item 5) and the answer was: “Expose myself more.” Sean was then stimulated to bring an alternative, more adaptive, hypothesis to replace the AT, one which could better explain the situation. Sean said: “This is just my heart racing. My amygdala is again hyperactive,” was considered a more plausible and credible explanation, which he believed 70%. His anxiety fell to 40%, and he became able to go to work. After this work, Sean believed the AT (item 7) only 30%, and felt much better (item 8).*

Fig. 4. Sean’s TBCT conceptualization diagram filled in at the beginning of treatment. (Copyright: Irismar Reis de Oliveira; http://trial-basedcognitivetherapy.com).

*Sean’s complete treatment may be assessed in the Common Language for Psychotherapy (CLP) procedures website (Trial-based cognitive therapy: http://www.commonlanguagepsychotherapy.org).
4.2 CD-Quest

The Cognitive Distortions Questionnaire (CD-Quest) was developed as an operational instrument, to be routinely used by patients to facilitate perceptions of the link between cognitive errors and their consequent emotional states, as well as dysfunctional behaviors (de-Oliveira et al. 2011). Also, it was designed to help therapists quantitatively assess and follow the clinical evolution of patients by means of its scores. It comprises 15 items that assess known cognitive distortions in two dimensions. The scores may range from 0 to 75.

In the first study conducted by our group (de-Oliveira et al. 2011), the initial psychometric properties of the CD-Quest in its Brazilian Portuguese version in a sample of university students were assessed. Medical and psychology students \( n = 184; \, \text{age} = 21.8 \pm 3.37 \) were evaluated using the following instruments: CD-Quest, Beck Depression Inventory (BDI), Beck Anxiety Inventory (BAI), and the Automatic Thoughts Questionnaire (ATQ). These self-report instruments were applied collectively in classrooms. The CD-Quest showed good internal consistency (0.83 - 0.86) and concurrent validity with BDI (0.65), BAI (0.51), and ATQ (0.65). Furthermore, it was able to discriminate between groups possessing depressive (BDI \( \geq 12 \)) and anxious (BAI \( \geq 11 \)) indicators from those not possessing such indicators (\( p < .001 \)). An exploratory factor analysis by means of principal components analysis with varimax rotation showed the presence of four factors that together explained 56.6% of data.
The factors consisted of the following types of cognitive distortions: (a) Factor I: dichotomous thinking, selective abstraction, personalizing, should statements, what if…, unfair comparisons; (b) Factor II: emotional reasoning, labeling, mind reading, jumping to conclusions; (c) Factor III: fortune telling, discounting positives, magnification / minimization; and (d) Factor IV: overgeneralizing, blaming. It was concluded that the CD-Quest was characterized by good psychometric properties, justifying the need for larger studies designed to determine its predictive validity, expand its construct validity, and measure the degree to which it is a useful measure of change achieved by patients in cognitive behavioral therapy.

5. UAs and safety behaviors

Behavioral experiments are amongst the most powerful strategies for bringing about change in CBT (Bennett-Levy et al. 2004), and provide a meeting ground for communication between knowledge derived from the rational mind and emotional mind (Padesky, 2004). Behavioral experiments are especially used to change UAs. These cognitions are expressed as conditional beliefs such as “If I go out alone, then I will have a heart attack and may die.” Consequently, he or she usually avoids feared situations. In session 4 (see case illustration above), Sean was helped to go over his conceptualization diagram (Fig. 4), and understand that exposing himself to feared situations (for example, going out alone to work) was necessary to overcome unpleasant emotions and behaviors. Consensual Role-Play (CRP), a 7-step decision-making method, was proposed by the therapist to facilitate Sean’s behavioral experiments (e.g. go out alone), and to challenge his safety behaviors (e.g. avoidance).

Fig. 6 shows how therapist and patients can increase the chance of the patient confronting situations made difficult by UAs and repeatedly reinforced safety behaviors. For example, Sean was encouraged to list advantages and disadvantages of coming alone to the therapy session (step 1). Then, he was helped by the therapist to confront the dissonance between “reason” and “emotion” (Padesky, 2004). For instance, Sean gave a 70% weight to advantages of going out alone (versus 30% for disadvantages) according to reason, but 90% weight to disadvantages of going out alone (versus 10% for advantages) according to emotion (step 2). By means of the empty chair approach (Greenberg, 2011), the therapist asked Sean to reach a consensus between “reason” and “emotion” in a 15-minute dialogue (step 3). After this step, the therapist asked Sean to assess the weight of advantages vs. disadvantages, coming to a consensus between rational and emotional perspectives. Sean was able to give an 80% weight for the advantages of going out alone vs. 20% weight for the disadvantages of going out alone (step 4). Next, after a debriefing of what Sean learned from this analysis (step 5), the therapist asked him if he was ready to make a decision: the answer was “yes,” and Sean decided that he was able to try going out alone as an experiment (step 6). In order to increase the chances of success, the therapist helped Sean organize an action plan (Greenberger & Padesky, 1995), so that not only could Sean organize what to do, but he could also anticipate obstacles and find their solutions (step 7).

Another strategy that may help patients to increase the chances of doing behavioral experiments is providing a hierarchy of symptoms to which they are supposed to be exposed in order to obtain symptom remission. After collecting a detailed list of symptoms
(e.g., OCD or social phobia symptoms), in which the patient scores each one according to the hierarchy shown in Fig. 7, the therapist informs him/her that there will be no focus on blue symptoms, but he/she will choose 2 or 3 green symptoms to practice exposure as homework during the week. In general, the therapist uses CRP to help patients accept to expose themselves to yellow symptoms, usually during therapy sessions. These are symptoms patients resist to confront when they are alone, and CRP seems to make this challenge acceptable, at least in the therapist's presence. The therapist explains to the patient that he/she will NEVER need to challenge red symptoms. This information tends to make the patient more willing to comply with the technique because there is no pressure to confront the most anxiety provoking items. Therapist and patient keep track of individual and global symptom scores weekly. The patients notice that the scores continue to decrease (both those which he/she exposed him/herself to and those which he/she did not expose him/herself to). Patients are very surprised to realize that even red symptoms scores decrease, making exposure acceptable because they gradually become yellow or green. Showing the patient a global score chart helps him/her track weekly progress and notice scores change. The symptoms list to be filled out weekly is presented to the patient in a way that past scores are hidden, so that he/she will not be influenced by past symptoms scores.

**Fig. 6. Consensual role-play (CRP) as a decision-making approach (Copyright: Irismar Reis de Oliveira; http://trial-basedcognitivetherapy.com).**
Patient’s name: ......................................................................................................................................

Please, choose the scores (0-5) corresponding to what you would feel if you were to expose yourself to each item below.

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<thead>
<tr>
<th>Session</th>
<th>Date</th>
<th>01</th>
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<th>04</th>
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<th>16</th>
<th>17</th>
<th>18</th>
<th>19</th>
<th>20</th>
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</thead>
<tbody>
<tr>
<td>Go to the supermarket</td>
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<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
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<tr>
<td>Go out</td>
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<td>Touch objects coming from street</td>
<td>5</td>
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<td>Touch people</td>
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<tr>
<td>Be touched by people</td>
<td>5</td>
<td>5</td>
<td>5</td>
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<td>5</td>
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<td>Touch money</td>
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<tr>
<td>Eat with hands</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
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<td>0</td>
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<tr>
<td>Not washing hands</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>4</td>
<td>2</td>
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<td>Touch telephone</td>
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<td>Touch door knob</td>
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<tr>
<td>Not discard towel after bath</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<tr>
<td>Work with computer</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
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**TOTAL SCORE**

(= sum of individual items)

| 85 | 80 | 73 | 67 | 61 | 53 | 39 |

**Number of exposures you do not allow yourself to do (reds and yellows)**

| 14 | 14 | 12 | 11 | 10 | 9 | 7 |

Table 2. Scores of OCD symptoms according to the Color Coded Symptom Hierarchy card in a patient.

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Assessing and Restructuring Dysfunctional Cognitions

<table>
<thead>
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<th>Score</th>
<th>Description</th>
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<tbody>
<tr>
<td>0</td>
<td>Exposure is comfortable or indifferent.</td>
</tr>
<tr>
<td>1</td>
<td>Exposure is slightly uncomfortable.</td>
</tr>
<tr>
<td>2</td>
<td>Exposure is clearly uncomfortable.</td>
</tr>
<tr>
<td>3</td>
<td>Exposure is very uncomfortable.</td>
</tr>
<tr>
<td>4</td>
<td>Exposure is so distressful that I do it only if really necessary.</td>
</tr>
<tr>
<td>5</td>
<td>Exposure is so distressful that I cannot imagine myself doing it.</td>
</tr>
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</table>

Fig. 7. Color coded symptoms hierarchy card to facilitate exposure implementation (Copyright: Irismar Reis de Oliveira; http://trial-basedcognitivetherapy.com).

6. Conclusion

Restructuring dysfunctional ATs is an important step in changing such superficial, but not least important, cognitions. However, because ATs are determined by the activation of negative core beliefs, restructuring and changing these beliefs is the most significant step for the patient. These procedures are shown in chapters 2 (Wenzel, 2012) and 3 (de-Oliveira, 2012) in this book. The present chapter illustrates how to introduce the cognitive model to the patients by means of a conceptualization diagram, using the IntraTR to help patients change ATs, and the CD-Quest to assess and challenge cognitive distortions. Finally, I introduced the CRP, and the color coded symptoms hierarchy card, strategies shaped to help patients make decisions involving the confrontation of safety behaviors, and consequently facilitating the modification of dysfunctional UAs.

7. References


Cognitive-behavioral therapy (CBT) is the fastest growing and the best empirically validated psychotherapeutic approach. Written by international experts, this book intends to bring CBT to as many mental health professionals as possible. Section 1 introduces basic and conceptual aspects. The reader is informed on how to assess and restructure cognitions, focusing on automatic thoughts and underlying assumptions as well as the main techniques developed to modify core beliefs. Section 2 of this book covers the cognitive therapy of some important psychiatric disorders, providing reviews of the recent developments of CBT for depression, bipolar disorder and obsessive-compulsive disorder. It also provides the latest advances in the CBT for somatoform disorders as well as a new learning model of body dysmorphic disorder. Two chapters on addiction close this book, providing a thorough review of the recent phenomenon of Internet addiction and its treatment, concluding with the CBT for substance abuse.

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