

## Review Article

# Depression and Psychotherapy: The Importance of a Psychotherapeutic Approach Focused on Logical Reasoning and Functioning

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Many patients who show up with depressive and anxious symptomatology have, or have had, interpersonal conflicts that triggered or contributed to the aggravation of the symptomatology herein explained. Clinical experience has taught us that many people have difficulty in maintaining Faultless Logical Reasoning (FLR) and, even if FLR is present, they have difficulty in maintaining Faultless Logical Functioning (FLF). In clinical practice, psychotherapists saw people that in consequence of their difficulty in FLR/FLF involves in conflicts that brought them interpersonal problems in relationships, in business, work, and in other areas of their life. Consequently, these problems will be followed by anxious and depressive symptomatology. Almost always, this symptomatology is accompanied by intense emotional changes. With this clinical case of a patient with depression, and its treatment, is demonstrated the importance to investigate the capacity of patients to function and think, respectively, with FLF and FLR. This work has proved very exciting because Logic-Based Psychotherapy (LBP) provide pedagogy to think better, to improve emotional processing, introspection, and more profound and rigorous analysis and responses. If the responses of the subject are more logical, it will result in fewer conflicts, less ill will, and fewer disagreements, which will lead to fewer cases of depression.

**Keywords:** Psychotherapy; Logic-based psychotherapy; Logical reasoning; Logical functioning; Interpersonal relationship

## Depression and Psychotherapy

The Importance of a Psychotherapeutic Approach Focused on Logical Reasoning and Functioning.

Depression may have an etiology that is endogenous, organic, reactive, adaptive, toxic, characterial or more than one of the causes herein evoked (e.g. endoreactive) [1].

Those who possess clinical experience know that many patients who show up with depressive and anxious symptomatology have, or have had, interpersonal conflicts that triggered or contributed to the aggravation of the symptomatology herein explained [2].

Many patients who come to us did not react in the most appropriate way to the experienced conflicts, thus justifying the analysis of how they managed their emotions, potentiating them to improve their performance at this level. Therefore, considering that the way people react to situations is a combination of the contexts and current variables, such as attachment characteristics, personality and individual history, people may present greater vulnerability or resilience to mental illness. Mental health constitutes the ability to create flexible attachments, with synergies and reciprocity between ourselves, others and all the surroundings available in the psychosocial system. However, when reciprocity and synergy do not exist, a more rigid pattern of functioning is created. The more rigid this pattern is, the more it increases vulnerability and predisposes to mental disorder. Reasoning is a mechanism of intelligence that integrates

the higher cognitive processes of concept formation and problem solving. It is a discursive and mental logic operation [3]. Faultless Logical Functioning (FLF) involves the analysis of not only the premises, the rules and the conclusions, but also of the circumstances, life experience, personality, events that validate the conclusion, and not only pure logic itself, being necessary to: (a) start from premises that are correct and sufficient in light of the knowledge the individual has and equate other data that may or may not be present; (b) maintain a faultless logical reasoning; c) reach conclusions that are valid and faultless on the logical plan, for which is essential the quality of interpretation; (d) choose the correct conclusion; (e) in the impossibility of choosing the correct conclusion, request information [4,5].

Three types of logical reasoning may be distinguished: deduction, induction, and abduction.

Deduction uses the *rule* and its *premise* to reach a *conclusion* [6,7]. E.g., when it rains, the grass is wet. It rained today. Therefore, the grass is wet. It is common to associate mathematicians to this type of reasoning.

Induction learns the rule from various examples of how the conclusion follows the premise [6,8]. E.g., the grass got wet every time it rained. So, if it rains tomorrow, the grass will get wet. It is common to associate scientists to this type of reasoning.

Abduction means to determine the premise. The conclusion

and the rule are used to defend that the premise could explain the conclusion [6,9,10]. E.g., when it rains the grass gets wet. The grass is wet, therefore it may have rained. This type of reasoning is associated to diagnosticians and detectives.

Clinical experience has taught us that many people have difficulty in maintaining Faultless Logical Reasoning (FLR) and, even if FLR is present, they have difficulty in maintaining Faultless Logical Functioning (FLF). In other words, we will address the Faultless Logical Reasoning (FLR) associated with the Faultless Logical Functioning (FLF), which implies assessing not only the premises, the rules, and the conclusions, but also the circumstances, life experience, personality, events that validate the conclusion. Working with a Faultless Logic implies: (a) assuming correct and sufficient premises in the light of an individual's knowledge, and identifying other data which might, or might not, be present; (b) keeping a faultless logical reasoning: reaching valid and faultless conclusions at the logical plan, for which the interpretation skill is crucial; (c) choosing the correct conclusion; (d) the inability to choose the correct conclusion, requesting information. The higher the FLF, the higher the subject's probability for a higher and more correct Intelligent Functioning (IF). Difficulties with FLR and FLF are more common among less intelligent individuals, but are also visible among intelligent individuals. Difficulties at this level rise misunderstandings, conflicts, inconsequential achievements, ruptures among people, inappropriate boycotts to other's work or organization, etc.

Psychotherapists are frequently faced with patients who present depressive and anxious symptomology consecutive to problems originated by difficulties experienced by the patient in terms of FLR and, especially, FLF (referring to people with normal intelligence). Almost always, this symptomology is accompanied by intense emotional changes. The psychiatric or psychological consultation presents itself as an important moment to analyze with the patients the difficulties they experienced in terms of FLR and FLF and work with them on possible insufficiencies they may have displayed. And this work can be done even when working with other psychotherapy models. Working on FLF and FLR is a technique that can be used in any type of psychotherapy. The ability to succeed, as psychotherapists, in exploring and potentiating the patient in their FLF awareness, will facilitate the reformulation of the FLR that very often activates and justifies intense emotional changes. Conscious exploration of logical functioning and logical reasoning allows an insight that reduces the intensity of symptoms, thus reducing the risk of maintaining the clinical condition and enhancing their change significantly.

Functioning with faultless logic entails the analysis not only of the premises, the rules, and the conclusions, but also the circumstances, life experience, personality, the events that validate the conclusion, and not only pure logic in itself, and it is essential to: (a) start from premises that are correct and sufficient in light of the knowledge available to the individual, and equating other data that may or may not be present; (b) maintain a faultless logical reasoning; (c) reach conclusions that are valid and faultless on the logical plan, for which is essential the quality of the interpretation; (d) choose the correct conclusion; (e) in the impossibility of choosing the correct conclusion, request information [4].

The greater the FLF is, the lower the probability of the individual

suffering depressive and anxious symptomology and the greater the probability of the individual having a high intelligent and correct functioning. Difficulties in FLR and FLF are more common in less intelligent individuals, but are also present in intelligent individuals.

The FLR and, especially, the FLF are not analyzed for different reasons: inherent to the psychotherapist, inherent to the patient, inherent to the complexity and touchiness of the situation to be approached, as well as the moment that approach should be performed [4].

Psychotherapists, in their clinical work, may explore the patient's reasoning (which they often and wrongly assume as logical and real) and the resulting emotions. Nonetheless, if they do not explore FLF, the patients do not understand the origin of the incorrect or inadequate way they thought and/or functioned.

Therefore, even if psychotherapists are able to accurately assess FLR in psychotherapy, the non-assessment of FLF does not allow and effective or more effective intervention.

The goal of FLF and FLR is to help patients achieve better reasoning and prevent situations that may be a cause of depression, since this technique works with any psychotherapeutic model.

### A clinical case

With the example of a clinical case, the importance of this psychotherapeutic approach will be better explained.

A few years ago, we consulted a woman (hereinafter referred to as Maria) who came to us with depressive and anxious symptomology consecutive to a conflict she had had with the mother (Catherine) of a schoolmate (Anthony) from the same school as her son (Charles). This conflict had transpired to the school and had caused great discomfort in Maria, who was reprimanded by the school's principal.

Maria, 38 years old, married, administrative officer with a high school level education. She consulted a psychotherapist because she was depressed, after having experienced a conflict that will be described below. She had a history of a similar conflict two years prior. She was an intelligent woman, who was hurt by the situation she experienced. During the third consultation, she displayed openness to analyze, in detail, the latest conflict she had experienced.

Maria revealed in the session that Catherine had refused to give Charles a ride on a day in which Maria was walking towards school, on the sidewalk, with Charles, and Catherine was driving slowly, near the sidewalk where Maria and Son were walking. Anthony opened the window to greet Charles, who greeted Anthony and his mother continued without offering a ride to Charles.

When she reached the school, Maria manifested her dissatisfaction to Catherine, considering Maria herself had, more than once, given a ride to Anthony. Maria addressed Catherine in a rough manner, which quickly became very inconvenient, the tempers heated, they got involved in an argument and Maria lost emotional control and control over her verbalizations. Maria was called to the school board who equated expelling Charles from school, but ended up not doing so. This whole situation originated a great malaise in Maria, with the experience of depressive and anxious symptomology.

## Choosing the appropriate model of psychotherapy to treat this patient

In seeking to conduct a psychotherapeutic approach with this patient, there is no psychotherapeutic model focused on the analysis of the components of logical reasoning and logical functioning. It can be said that psychodrama, through the use of the role-playing technique, allows for the analysis of logical reasoning and logical functioning, and that other psychotherapeutic approaches, such as the cognitive-behavioral model, narrative psychotherapy or interpersonal psychotherapy also focus on FLR and FLF, although they are not centered on these components. However, psychodrama does not possess the refinement, accuracy, amplitude and depth of Logic-Based Therapy (LBT). As for the other aforesaid psychotherapies, they are centered on what occurs within the individual in a context of mental pathology (depression, phobic disorder, etc.), whereas LBT occurs regardless of the patient displaying pathology or not. In addition, LBT is relevant even when individuals are, apparently, thinking correctly, since LBT focuses not only on the way individuals think, but also on the way they function. This last aspect is heavily focused not only on what happens inside the individual, but also, and no less importantly, on what occurs in relationships with others and on the way the individual evaluates the behavior of others. In order to function appropriately, the individual has to be able to evaluate the countless alternatives available to him or her and choose the one that is most suited to every moment, person, and situation. This work is not performed as systematically and deeply in any other form of psychotherapy as it is in LBT. Some psychotherapists are concerned in performing work that is similar to what is described here, but are unaware of types of psychotherapy that develop what was explained here.

Since our psychotherapeutic training is eclectic, we thought of the contribution that interpersonal psychotherapy could provide us in clinical practice. If, from a practical standpoint, the disorders do not arise randomly and we end up, almost always, identifying contexts and variables that, when combined, trigger and cause crises and, consequently, disorders, resorting to interpersonal psychotherapy can facilitate this understanding. Frequently, the depressive symptomatology of the patients we consult results from difficulties in the logical reasoning of the patients in one or more situations, and that originate conflicts that will determine depressive symptomatology. Conceiving the hypothesis that the individual reasons logically (interpersonal psychotherapy does not center its focus on this assessment), the greater the discrepancy between logical reasoning and logical functioning, the greater the vulnerability to mental illness. A thorough awareness of the interpersonal variables that do not generate the logical functioning of the individual is crucial to understand how they distorted their functioning from their logical reasoning.

Interpersonal psychotherapy is an approach that is limited in time, mainly focused on one of four problematic areas: interpersonal conflict, grief, role transition, and interpersonal deficits [11-19]. The intervention is always guided towards the current functioning of interpersonal relationships, looking to solve psychiatric symptoms rather than modify personal psychological structures, such as the strength of the ego, defense mechanisms, or personality characteristics [20]. Early experiences and knowledge only serve to potentiate the

change of interpersonal relationships and current social support network [21]. However, interpersonal psychotherapy does not focus its object of analysis on the logical reasoning with which patients got involved in the conflict. Even if the patient narrates a certain interpersonal conflict, and even if psychotherapists can envisage, in light of what the patient narrated, whether the logical reasoning with which he or she operated in that conflict was faultless or not, psychotherapists do not focus attention on the logical functioning with which the patient operated. Because, even if the logical reasoning had apparently been faultless, the logical functioning may have left much to be desired.

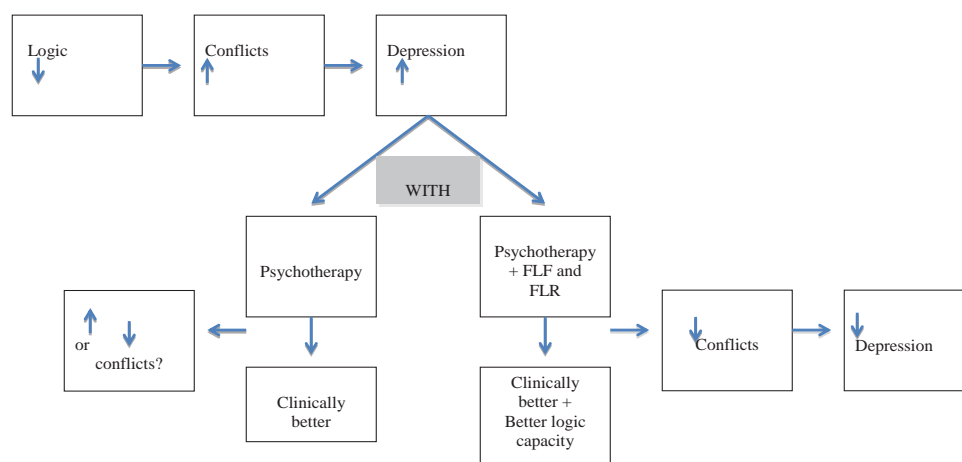
It is possible to understand, with a thorough analysis of the patient's speech throughout the intervention process in interpersonal psychotherapy that emotions become much more clinically significant as the awareness of their insight and interpersonal communication style decreases. The automatic conception with which the individual defines the initial premises for the interpretation of the interpersonal logic regarding the supposedly disturbing experience, will condition the entire journey from the experience to mental illness.

Focusing another psychotherapeutic model, in particular, Client-Centered Psychotherapy by Carl Rogers, and resorting to the metaphor of the existence of a "real-self" and an "ideal-self", this author argued that the greater the discrepancy between the two "selves", the greater the risk of illness and clinical symptomatology [22]. In this context, what we propose in this psychotherapeutic approach (LBT) is that, the greater the difference between the very often automatic functioning and the awareness the individual possesses regarding their functioning, the greater the risk of mental illness. In addition, however, the individual is often unaware that the rationale with which they are analyzing their behavior is not the most appropriate. Thus, they do not have the correct awareness of how they should have functioned and reasoned.

Cognitive-Behavioral Therapy is a psychotherapeutic model that was clearly insufficient to help us. Indeed, CBT would help us to assess whether, in the context of the depressive and anxious symptomatology, there had been a dichotomous (internal) thought, some cognitive distortion, minimization, errors of thought, maximization, among other errors [23-31]. However, by focusing too much on correcting errors of thought without the main focus on current experiences and interpersonal relationships, including type of communication and, fundamentally, the words specifically verbalized by the parties (and not only prosody, pitch, mode, intensity and frequency), CBT is unable to adequately assess logical reasoning and logical functioning. The lack of information resulting from this process of CBT does not allow further analysis and psychotherapeutic success (Figure 1).

Regarding Narrative Psychotherapy (NP), it is known for involving the rewriting or the retelling of the conversations [32]. As these reports suggest, the stories are central for the understanding of narrative forms of work [33-39]. Nevertheless, the narrative of the individual does not always correspond to what actually happened in detail and even if NP seeks to remake logical reasoning, it is not concerned with exploring logical functioning and does not provide all the possible help for the analysis of the situation.

It can be rebutted that the role-playing technique, used in Psychodrama and CBT, among other psychotherapies, is sufficiently



**Figure 1:** Relationships between constructs.

accurate, refined, ample, and profound as the LBT. However, LBT requires a psychotherapist that is creative and has a detective sq component, in order to construct logical alternatives to the patient's own logic, and not simply role-playing.

Therefore, the working hypothesis, given the clinical case presented, is that the best psychotherapeutic model for Maria is the cognitive behavioral model, with the Logic-Based Psychotherapy technique, assuming that Maria will benefit on both cognitive and behavioral levels by improving her logical reasoning, as well as her logical functioning. She will, thus, start to operate with fewer conflicts and with fewer propensities for depression, throughout her life.

### Applying the logic-based psychotherapy

This approach is based on the logic with which the patient had operated, or not, none of these models integrated the therapeutic work we intended to do with the patient. Therefore, we added this new type of approach (in the third session) - we shall see, below, that it is not always possible to conduct this psychotherapeutic work.

When she came to the session, Maria believed, and was deeply convinced of it, that Catherine did not want to take Charles (her son) in the car because she considered herself superior and did not like her. She did not defend that Catherine did not want Anthony to accompany Charles, but, simply, that by taking son in the car she would also have to take Maria, and thus, did not give son a ride.

Apparently, there may not have been any error in logical reasoning, therefore we focused on the issue of faultless logical functioning.

FLF entails maintaining FLR, but also having a faultless analysis not only of the premises, the rules, and the conclusions, but also the circumstances, life experience, personality, the events that validate the conclusion, and not only pure logic in itself, and it is essential to: (a) start from premises that are correct and sufficient in light of the knowledge available to the individual, and equating other data that may or may not be present; (b) maintain a faultless logical reasoning; (c) reach conclusions that are valid and faultless on the logical plan, for which is essential the quality of the interpretation; (d) choose the correct conclusion; (e) in the impossibility of choosing the correct

conclusion, request information.

Thus, in order for Maria to explore the possibilities that would have allowed her to, in the described circumstance, maintain a FLF, we conducted work with the patient which consisted in: (a) preserving reasoning in which the different discursive components maintained faultless logic; (b) formulating as many hypotheses as possible, in light of the circumstances and the place, that justify the behavior of Anthony; (c) examining the circumstances in which the facts occurred; (d) choosing the proper interpretation, even if the faultless logic leads to different logical conclusions; (e) analyzing how the approach made by the patient had occurred and identify alternatives.

With Maria we equated that she may have had, at the time Anthony greeted Charles, multiple thoughts regarding Anthony, namely, and among others: 1) Anthony was being nice; 2) Anthony was showing off and demonstrating that he went to school by car whereas Charles had to walk; 3) Anthony was showing off and making fun of Charles because Charles was poorer and went to school in a car less frequently; 4) Anthony would have liked Charles to go in the car with him; 5) Anthony would not want Charles to go in the car with him; 6) Anthony would have liked Charles to go in the car with him, but since he knew that Catherine did not want to take Maria and Charles, he simply greeted Charles without calling him to the car or asking him if he wanted a ride; 7) Anthony would have liked Charles to go with him in the car but not Charles's mother; 8) Anthony would have liked Charles to go in the car with him but since he knew that Catherine would not want it, so as to not take Maria, he simply greeted Charles without calling him to the car or asking him if he wanted a ride.

Maria explained that, in her mind, on that day, was the belief that Anthony was a friend of Charles and liked him, and that it was out of sympathy that he had greeted Charles and would have like to take Charles in the car with him. As for Anthony knowing whether his mother (Catherine) would have wanted to take Maria in the car, Maria was not categorical in this belief (that Anthony knew that Catherine did not want to take Maria in the car).

Subsequently, we centered attention on the relationship between Maria and Catherine and on the thoughts Maria had on that

day regarding Catherine, equating, among other hypotheses, the following: 1) Catherine does not like Charles and, thus, did not offer Charles a ride; 2) Catherine does not like Maria and, thus, did not offer Charles a ride because she knew that, by giving Charles a ride, she would have to give Maria a ride; 3) Catherine does not like Maria nor Charles and, thus, did not offer Maria and Charles a ride; 4) Catherine did not offer a ride to Maria and Charles because she knew that Anthony did not really like Charles; 5) Catherine did not offer a ride to Maria and Charles because, although she knows Anthony likes Charles, Catherine does not like Maria.

Maria was convinced, when she arrived at the school, that Catherine had not given Maria and Charles a ride because, although she knew Anthony liked Charles, Catherine did not like Maria.

We also equated other parameters with the patient: 1) Catherine's driving speed on that day and Maria stated that it was slow, attributing the fact that Catherine always drives very slowly; 2) the weather was good, it was not raining, and the temperature was enjoyable; 3) we asked if there was a traffic light nearby and Maria stated that there was a traffic light about 80 meters from the place where they had crossed paths and that Catherine stopped at the traffic light right after passing by them, without however, (Maria and Charles) having reached the car; 4) Maria agreed that there was heavy traffic on the street; 5) it was a two-way street but only one lane in each direction; 6) the school was 300 meters away from the place Anthony had greeted Charles; 7) there were 10 minutes until classes would start, more than enough time for Maria and Charles to get to school on time; 8) it was the first time that the episode had happened.

With the patient, we elaborated another set of possibilities, other than the one Maria had identified, for Catherine not having stopped the car and given a ride to Charles and Maria: (a) the street had heavy traffic and it would have been complicated to stop; (b) the distance (300 meters) was very short and Catherine may have considered that it was not worth it to give Maria and Charles a ride; (c) Catherine may have had a personal problem and did not want to show it (e.g., she could have argued with her husband, and had been crying, and did not want Maria to notice); (d) other possibilities not equated.

As the exploration of this vast set of possibilities was developing, Maria agreed that she had been very hasty and inadequate in her reaction towards Catherine, admitting that she had been far from functioning with faultless logic. In addition, she had reacted very violently, in addition to her reaction assuming that she did not confer Catherine the right to possibly dislike Maria and/or Charles, or not want to take them in the car. And Catherine had every right to not do so, without Maria having the right to respond so violently. In view of this finding, Maria would have only had to draw her conclusions and act accordingly, but politely.

Maria agreed, but we did not stop here. We asked Maria to reproduce, as faithfully as possible, her dialogue with Catherine when she reached the school. It is as follows:

Maria (to Catherine) - You passed us so slowly that we thought you were going to give us a ride.

Catherine - I thought it wasn't worth the effort.

Maria (irate) - If you thought that, you thought very wrong. And

from here she proceeded with and improper register.

Without the reproduction of this dialogue, we never would have fully understood what had happened.

Maria interpreted that Catherine had said that giving a ride to Maria and Charles was not worth the effort that Catherine would have, in the sense that Maria and Charles are insignificant people or that the friendship of Maria and Charles was insignificant to Catherine and, probably, also to Anthony. But there was at least one more possible interpretation: Catherine meant that the distance between their meeting point and the school was so short that it was not worth the effort of stopping and disturbing the traffic. With the reaction she had, Maria was prevented from understanding what Catherine actually meant by that sentence.

Indeed, Catherine said something afterwards, but Maria did not hear her, since she became too disturbed.

Maria performed interpretive scarcity which may be due to an absence of intelligence; prejudice; lack of knowledge; a dogmatic posture; cognitive distortions; errors of thought, such as catastrophizing, "all or nothing" thinking, overgeneralization, selective abstraction, magnifying, minimizing, mind reading, personalization, focus on the negative, emotional reasoning [40], but, in the case of Maria, it was due to a projective mechanism of the paranoid type (non-psychotic), where Maria assigned to Catherine unpleasant psychological contents that may not have been in Catherine's mind; but that were also due to the fact that Maria did not have a FLF that would have allowed her to obtain more information. By functioning with such interpretive rigidity, the individual will fixate on a register that we will refer to as rigid thinking (which has nothing to do with the rigidity of thought observed in psychotics). Towards this interpretive scarcity that often becomes rigidified, contributes another error of the individual: not capturing (internally) what the other says to him or her. This non-capturing may result in: (a) the individual listens to what the other says but devalues, a priori, everything the other may say and focuses on potentially more controversial aspects or those that may be object of challenge; (b) the individual hears what the other says but does not pay them any attention; (c) the individual partially hears what the other says, involuntarily or purposely distorting the content heard; (d) the individual becomes impregnated with an emotional charge so intense that he or she hears, but does not dissect or, even, distorts what was heard; (e) the individual hears and adequately interprets, but does not adjust that the same sentence may have a different interpretation.

## Discussion

Interpretive scarcity and rigid thinking originated in Maria what will be referred to as immurement in a curved tunnel of thought, which did not allow Maria to operate with FLF and imprisoned her in a (limited, insufficiently ample) cognitive and affective experience that was both suffered and induced suffering in herself and in the other, not occurring to her the insight which would allow her to perceive her insufficient logical functioning. Logic-Based Therapy may, and should, be the light that allows one to see broader horizons.

This patient was very receptive to the psychotherapeutic work focused on logical reasoning and functioning. The case that brought her to the consultation was addressed but also other cases

she experienced, which provided her with a better knowledge of herself and teachings that she deemed very important. A total of eleven sessions was performed with this patient during a period of a year. She improved her abilities in terms of logical reasoning and functioning, which led to better interpersonal relationships and an improvement of her emotional processing. She became more aware of her reasoning and functioning, more intellectually rigorous, more likely to formulate alternative hypotheses to explain another's behavior, more likely to request information which would allow her to reach conclusions with more rigor, more socially competent, less hasty in her analyses and in her behaviors.

If this work is not conducted, individuals will repeat the same errors, because they do not realize that the FLF and/or FLR were not correct. On the other hand, errors in this field are often so unnoticeable that if one is not extremely thorough and does not reproduce what patients said, it is impossible to understand the true cause of conflict, instead, one only understands the interpretation of the patient, causing psychotherapists to never identify the logic/functioning problem of the patient.

This approach results in a more effective psychotherapeutic intervention, which translates into a reduction of clinical symptoms due to the awareness of the reasoning and functioning with which the individual operated, allowing a smaller bias in the perception of reality, particularly, in terms of the interpersonal and contextual variables that triggered the current clinical condition. With the improvement of FLR and FLF, psychotherapists are also able to provide the patient with an insight they did not have, and reduce emotional burden. If the responses of the subject are more logical, it will result in fewer conflicts, less ill will, and fewer disagreements, which will lead to fewer cases of depression.

## Approach Limitations

More research in this area is warranted. In order to apply this technique, it is essential that (1) patients have an intelligence level that allows them to explore and deepen their thoughts and how they operated in a certain context. In addition, (2) patients need to have a free attitude to analyze the situation accurately, and (3) patients must have sufficient confidence in the psychotherapist and the ability to confront what displeases them.

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