

General

"Don't Touch Your Face!" The Contribution of Habit Reversal in the COVID-19 Pandemic

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The Habit Reversal Training (HRT) is a behavioral procedure for treating the so-called nervous habits, such as nail biting, hair pulling and thumb sucking. In addition to being an established clinical procedure, HRT is also a strategy for behavioral change that can serve the entire community. For this reason, this review aims to explore the studies proposing the use of HRT for the reduction of hand-to-face habits in the context of COVID-19 pandemic. Touching one's nose, mouth and eyes, indeed, is one of the means of virus transmission that many awareness campaigns seek to highlight. After an overview of how HRT works and of the current epidemiological situation, studies supporting Habit Reversal Training for the reduction of risky hand-to-face habits are presented. The possible strategies are then exposed and critically discussed to identify their limitations and propose a new version according to the Relational Frame Theory.

1. INTRODUCTION

In the '70s, a research group led by Azrin began to develop a behavioral procedure called Habit Reversal Training (HRT), focused on the treatment of "nervous habits" such as nail biting, hair pulling, lip biting, stuttering and tics.¹⁻³ The intention of the authors was to build a multicomponent method to intervene on such repetitive, unwanted and almost automatic behaviors, which in some cases came to interfere with the quality of life of the person configuring a proper "habit disorder".⁴

The perspective inaugurated by Azrin and collaborators broke away from the coeval approaches because it made the attempt to conceptualize nervous habits according to the paradigm of operant conditioning, thus defining them as responses acquired through avoidance learning, whose function would be to reduce the tension. However, not all scholars agree with a unified view of the purpose of nervous habits and propose the need to perform a functional analysis on a case-by-case basis.⁵ Although some similarities with compulsion can be identified, in nervous habits usually there are no intrusive thoughts.⁶

HRT is firmly grounded in applied behavior analysis and it should start with a detailed functional analysis.⁷ Then, it involves three main phases of intervention: an awareness

training, which helps the person to identify the target behavior and the tension preceding its release ("premonitory urge"); a training to learn new responses incompatible with the nervous habit, carried out according to a differential reinforcement pattern; and an intensive training, in which the person systematically practices with the help of someone close to him or her, so as to increase the perceived social support.⁸

Over the past few decades, evidence of efficacy related to the application of HRT to various situations of clinical interest has accumulated. Examples include trichotillomania,^{9,10} tics,^{11,12} stuttering,^{13,14} scratching in atopic dermatitis,^{15,16} Tourette Syndrome^{17,18} and Excoriation Disorder.^{19,20} Studies have also been conducted to test its effectiveness in combination with other treatments, such as exposure with response prevention,²¹ Metacognitive Therapy²² and Acceptance and Commitment Therapy.²³ In all the cases just mentioned, HRT enhanced the other interventions and vice versa.

In summary, the impact of Habit Reversal Training in the clinic is significant. But there has been no shortage of applications in everyday life related to daily habits that, in certain situations, become dangerous. This is the case, for example, of the so-called "hand-to-face" behaviors, which in the context of the current health emergency are the focus of many prevention measures. This refers to all those ges-

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tures that are often made for no particular reason, such as rubbing one's eyes, touching one's face, putting fingers in one's mouth, and so on. In the context of the SARS-CoV-2 pandemic, they are of critical importance, and reducing them is the goal of awareness campaigns.

This narrative review, therefore, aims to explore the current applications of Habit Reversal Training in the context of the COVID-19 pandemic, showing how behavioral sciences are not only a clinical tool, but also a mean of change in the broadest sense. Skinner, indeed, already recognized that many difficulties are created or aggravated by human behavior itself, although they arise from biological, physical or other problems: "In short, we need to make vast changes in human behavior, and we cannot make them with the help of nothing more than physics or biology, no matter how hard we try... What we need is a technology of behavior".²⁴

After a quick overview of the prevention measures proposed by the WHO for the current health emergency, we will proceed with the analysis of hand-to-face behaviors and with the discussion of studies that support the effectiveness of HRT in their reduction. Space will also be given to intervention protocols suggested to date and we will conclude with a critical exam of the available evidence.

2. METHODS

The current narrative review was realized by collecting scientific studies on two main topics. The first one was related to the HRT as a general approach to behavioral change. In this case, the literature has been selected by including studies from the 1970s to the present, in order to explore the theoretical background of the HRT and its contemporary clinical applications. The main keywords were "HRT", "Habit Reversal Training", "Nervous habits", "Premonitory urge", "HRT and psychopathology" and "HRT and psychotherapy", while Google Scholar, PubMed, ScienceDirect and University libraries were consulted.

The second topic consisted in the use of behavioral interventions to reduce COVID-19 contagions related to hand-to-face habits. Therefore, studies regarding the means of virus spreading, national and international guidelines, proposals of experts on the use of HRT or other techniques for improving the adherence of population to the public health campaigns were the focus the analysis. The main keywords were "COVID-19 contagion", "COVID-19 prevention", "hand-to-face habits", "HRT and COVID-19", "COVID-19 and behavioral prevention", which were used to retrieve studies published from the 2020 to the present. The same previously mentioned sources of scientific information were used with the additional consultation of official institutional websites of health organizations.

Given the aim and the methodological approach of this narrative review, no ethical permissions were required.

3. COVID-19 AND PREVENTION BEHAVIORS

As widely documented by the Italian National Institute of Health,²⁵ the current pandemic has now reached such grav-

ity that it constitutes a real global health emergency. The severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is the responsible, as it causes the so-called Coronavirus Disease - 2019, abbreviated to COVID-19. The main means of contagion are the respiratory droplets produced by coughing, sneezing or even simply by speaking and exhaling. They not only reach a healthy person, but they can also remain on surfaces and settle on the hands of those who touch them. Subsequently, through contact with eyes, nose or mouth, an infection can be generated. For this reason, the World Health Organization (WHO) has recommended not only the use of masks and the observance of a safety distance, but also the frequent washing of hands and the avoidance of behaviors such as touching face, eyes, mouth and nose.²⁶ Those last can be defined as hand-to-face behaviors.

Kwok, Gralton and McLaws²⁷ monitored some medical students during a lesson, recording an average of 23 hand-to-face behaviors per hour. This risky habit was also found in hospitals among the health professionals, who touched their faces an average of 10 times per hour in a study by Elder, Sawyer, Pallerla, Khaja and Blacker.²⁸ Similar data were also found in the context of other health emergencies such as that from H1N1.²⁹ Given the frequency of these habits and their critical importance in the prevention of SARS-CoV-2 infections, some authors have considered important to investigate which strategies could be most useful for increasing a broad adherence of the population to voluntary self-care behaviors.³⁰

4. HRT AND HAND-TO-FACE HABITS

Learning principles can be used to build healthier behaviors, for instance positive reinforcement has been implemented successfully to create new hand hygiene habits.³¹ However, as noted by Heinicke, Stiede, Miltenberger, and Woods,³² there is still no specific research evaluating the efficacy of HRT in reducing hand-to-face behaviors related to the COVID-19 pandemic. Nevertheless, the same authors state that there are several studies in which HRT reduced habits involving the face, such as nail biting and thumb sucking, confirmed by the meta-analysis of Bate, Malouff, Thorsteinsson, and Bhullar.³³ Although the authors are aware that HRT has never been evaluated with benign behaviors such as resting the head on the palm of a hand, and although HRT is a treatment to be adapted according to the target population (adults, children, persons with disabilities), they are confident enough to propose some operational strategies to implement this procedure in the context of the current emergency.³²

Clerck³⁴ shows the same opinion and advocates the application of behavioral sciences in the context of COVID-19 to promote behaviors more in line with WHO recommendations, proposing HRT as one of the available options. These recommendations derive not only from the observation of daily life and the increase in the number of infections, but especially from the first studies that consider the adherence to WHO prescriptions. Such adherence appears to range from 40% to 70% depending on location, with some preven-

tion behaviors more neglected than others (such as proper use of masks) and a decrease in compliance as the period of restriction continues.^{35–37}

In light of the preceding empirical evidence, intervention on hand-to-face habits would be critically important. The behavioral sciences are called to intervene in the process leading to the formation of such behaviors and their maintenance, with guidance from years of evidence-based clinical applications.³⁸

5. PROPOSALS

Although the topic is extremely recent, two proposals for modifying hand-to-face habits in the context of COVID-19 emergency have already been made in the literature.

Heinicke et al.³² propose a proper HRT training adapted to reduce hand-to-face behaviors at risk of infection. First, people's awareness must be increased by inviting them to accurately describe the target behavior and the situations in which it occurs, so that they gain better control of the eliciting stimuli. Then, they should proceed with systematic self-monitoring to identify the target behavior as it appears. To this end, it is helpful to intentionally simulate the habit within the situations in which its emission is most likely and stopping it just before touching the face. Video-taping to increase awareness is a possible complementary supportive strategy. At this point, an incompatible response must be identified in order to make it impossible to touch one's face as soon as the target behavior is about to be emitted. It must be simple to perform, socially acceptable and topographically different from the target habit. The person should practice in small steps to make the incompatible behavior increasingly automatic, first by performing it intentionally, then by simulating the target habit interrupted by the incompatible behavior. The practice should be conducted at home and in everyday situations, providing for its maintenance the presence of nearby people who socially reinforce the new response.

Harvey et al.³⁸ propose an eight-step plan based on behavioral science to intervene in the habit-forming process, with the aim of promoting the reduction of risky behaviors and the development of anti-contagion habits. Public health campaigns must accurately specify the preventive behaviors to be adopted, and people must set out to achieve them by following clear, measurable goals. This is perhaps the most critical step, because committing to a goal is cognitively expensive. For this reason, these goals will need to be affordable, set publicly, and embraced as a group. Next comes the creation of a detailed plan to achieve them. Again, communication campaigns are critical in this phase, as they can describe the best behavioral plans to avoid infection (e.g., preparing a shopping list to stay as little as possible in an enclosed place such as the supermarket). They can also be leveraged to help people reframe some dysfunctional beliefs about the pandemic, such as the negative health effect of masks worn for an extended period of time. The use of contextual cues, such as the presence of sanitizer dispensers at the entrance of public places, stimulates the desired prevention behavior by increasing adher-

ence to prescriptions. Repetition of new behaviors allows their stable acquisition and transformation into habit, but the authors also emphasize the importance of providing a pattern of intermittent reinforcement to prevent the extinction process. These reinforcements can consist in social approval or in the creation of bonuses granted to those who scrupulously follow the rules. The final step is the automation of the behavior and therefore its transformation into a habit, a goal as important as ambitious because - as stated by the researchers themselves - change is difficult.

In the first proposal, the focus is on the behavior of the individual that can be modified through an adapted HRT program; in the second, the focus is on the communicative/social management of the emergency, which cannot neglect the process through which habits are formed and changed. A useful reference for framing the overall process of change is Prochaska and DiClemente's Transtheoretical Model,³⁹ which involves multiple steps before reaching the final desired transformation: precontemplation stage, contemplation stage, preparation stage, action stage, and maintenance stage. According to Clerck,³⁴ in the context of a pandemic, it is precisely maintenance that presents the greatest difficulties, a fact confirmed by the empirical research cited above, according to which the longer the period of emergency lasts, the more adherence to prescriptions is reduced.

Hence the need for a serious reflection on the contribution that behavioral sciences can give in the current epidemiological context, as the contagion, despite being mediated by biological mechanisms, depends on the habits of people, in terms of use of personal protective equipment, maintenance of safety distance and reduction of hand-to-face behaviors.

6. DISCUSSION AND CONCLUSIONS

This review examined studies that support HRT as a procedure to reduce hand-to-face habits in the context of COVID-19 pandemic. HRT is already widely established in the clinical setting and is shown to be effective in many cases where habitual hand-to-face contact is involved. Although there are still no studies that have examined its contribution in the specificity of the emergency, there are sufficient data to hypothesize its use, so that some authors have already proposed protocols to follow.

A possible limitation of the literature proposed so far is that it focuses only on the topography of the habits to be modified, but not on their function. As already mentioned at the beginning of the review, in fact, some scholars believe that the function of a habit is not always the same. Some have the purpose of reducing tension, others rely on positive self-reinforcement such as sensory feedback from the action itself. Proposing an HRT program without knowing the function of the habit may be futile, as the incompatible behavior may not effectively replace the target behavior.

Another limitation is related to the fact that the HRT literature does not seem to have devoted sufficient space to prevention behaviors from a rule-governed behavior per-

spective. In a recent reflection by Moderato,⁴⁰ it was pointed out that measures capable of containing the spread of SARS-CoV-2 do not guarantee immediate tangible reinforcement. Moreover, the succession of heavy restrictions can induce in the population reactance phenomena, which further reduces the adherence to the rules of prevention. The solution, from the point of view of Relational Frame Theory,⁴¹ can only consist in connecting the modification of habits with augmentals, higher motivations linked, for example, to the well-being of the community. Working on people's perception of belonging, on their sense of affiliation and on their values is a strategy that must necessarily be combined with effective behavioral procedures, such as HRT.

From these reflections a further awareness arises, namely that the prevention of SARS-CoV-2 infection should be managed from a comprehensive perspective that brings together Medicine, Social Psychology, Behavioral Sciences and Communication Sciences. HRT could certainly be an important piece, but not sufficient on its own to solve an emergency that involves social identities, health policies and economic pressures.

The contribution of psychology could guide many prevention campaigns in the awareness that contagion is mediated by behavior, which can be modified under certain conditions and according to specific procedures. Proposing

detailed and effective strategies without naive simplifications turns out to be the highest challenge to which psychological sciences are called to respond in this historical conjuncture so complex and uncertain.

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Conceptualization, S. V.; methodology, C. P., G. A. P. and C. S. G.; writing - original draft preparation, S. V., G. A. P., and C. S. G.; writing-review and editing, P. C., S. C.; supervision, P. C., C. P., and S. C.

CONFLICTS OF INTEREST

The Authors do not have any conflicts of interest to declare.

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