

ANXIETY, DEPRESSION AND TRAITS OF PERSONALITY IN COPD PATIENTS

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ABSTRACT: The present research was performed in order to describe the state-trait anxiety frequencies and the prevalence of depression in COPD patients. Data on psychological evaluation were obtained from The Human Figure Drawing (personality traits), Beck Depression Inventory (BDI) and Trait-State Anxiety Inventory. Data on disease status was obtained through the Pulmonary Function Test (spirometry), Arterial Blood Gases measures, Borg Dyspnea Scale after a 6-minute walk test and clinical information. It was evidenced that the COPD patients had severe emotional control, many emotional difficulties in establishing intense personal relationship with exchange of tenderness and difficulties in expressing their emotions. COPD patients also had a high prevalence of anxiety and depression as personality characteristics, no matter the clinical disease stage.

Key words: Anxiety, COPD psychology, Depression, Psychological Tests.

ANSIEDADE, DEPRESSÃO E TRAÇOS DE PERSONALIDADE EM PACIENTES COM DPOC

RESUMO: O presente estudo teve como objetivos descrever o estado às frequências dos traços e estados de ansiedade e a prevalência de depressão em pacientes de DPOC e verificar a variação desses aspectos de acordo com parâmetros de função pulmonar. Os dados na avaliação psicológica foram obtidos do teste do desenho da figura humana (traços da personalidade), Inventário de depressão Beck (BDI) e do inventário de ansiedade Traço-Estado (IDATE). Os dados do estadiamento da doença foram obtidos com o teste de função pulmonar, medidas dos gases de sangue arterial, escala de dispnéia de Borg após o teste da caminhada de 6 minutos e dados da ficha clínica. Evidenciou-se que os pacientes apresentam um controle emocional severo, muitas dificuldades emocionais para estabelecer relacionamento pessoal intenso e troca de afeto e dificuldades para expressar suas emoções. Os pacientes de DPOC mostraram prevalência elevada da ansiedade e da depressão como uma característica da personalidade, sem interferência significativa do estágio clínico da doença.

Palavras chave: Ansiedade, Depressão, Doença Pulmonar Obstrutiva Crônica, Psicologia da Saúde, Testes psicológicos.

Anxiety and depression are the most common emotional consequences of Chronic Obstructive Pulmonary Disease (COPD); nearly 96% of patients present a high prevalence of anxiety and between 51% and 74% are depressed

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(Agle & Baum, 1977; Borak, Chodosowska, Matuszewski, & Zielinski, 1998; Cox, Hendriks, Binkhorst, & Van Herwaarden, 1992; Dudley, Glaser, Jorgenson, & Logan, 1980; Ede, Yzermans, & Brouwer, 1999; Lambert & Lambert, 1987; Wells, Golding, & Burnam, 1989). Investigations of patients with COPD using Beck's Depression Inventory (BDI) reveal greatly raised mean depression scores, which have been attributed to accentuated hypoxemia and old age (Lambert & Lambert, 1989; Mcsweeney, Grant, Heaton, Adams, & Timms, 1982; Okubadejo, Jones, & Wedzicha, 1996; Prigatano, Wright, & Levin, 1984).

According to certain studies there is a strong relation between psychological factors, especially anxiety, reported levels of dyspnea and age level in the advanced stages of COPD. Young patients present greater levels of anxiety and report more dyspnea (Clark & Cochrane, 1970; Dudley, Sitzman, & Rugg, 1985; Mcsweeney et al., 1980; Prigatano et al., 1984). Older patients report fewer emotional problems (depression, rage and frustration) as they present less suffering in coping with the disease. The increased anxiety and loss of self-esteem are also consequences of the reduction in daily living activities; the reduced levels of sexual, social, professional and recreational activities (common in patients with COPD) is particularly felt by younger patients (Brashar, 1983; Gift & Mccrone, 1993; Morgan, 1983; Wientjes & Grossman, 1994).

Apathy and conformity (depression symptoms) may be considered as products of the incapacity of COPD patients in expressing emotions and their peculiar way in which they seem to live emotionally "bottled up", bound up in defensive mechanisms, denying and repressing their feelings, and living in intense and insurmountable emotional isolation. It may thus be suggested that personality traits, especially the rigid emotional control, are directly involved in chronic diseases and in a more accentuated manner in COPD (Mcsweeney et al., 1982; Pfeffer, 1978).

A mosaic of emotional and personality disturbances must be added to the clinical aspects of pulmonary diseases, and familiarity with these aspects are essential to the success of rehabilitation (Cassileth et al., 1984; Gift, Plaut, & Jacox, 1986; Lahdensuo et al., 1989; Pfeffer, 1978; Willians, 1989a,b).

According to Bauer and Duijsens (1998) disease severity and illness behavior have been associated with trait anxiety, and can predict illness behavior. The personality study of these patients can provide information for health care professionals in helping COPD patients improve their coping skills, as well as to, design more effective rehabilitation programs.

This descriptive study examined a series of cases from a sample of the Brazilian population of COPD patients assessed at a university pulmonary rehabilitation center. Its objectives were as follows: to determine the sample personality characteristics; to describe the frequency of anxiety traits and their states; to describe the occurrence of depressive states; and to verify whether the occurrence of anxiety and depression can be affected by socio-cultural or occupational variables and clinical parameters of the disease (arterial blood

gases, spirometry, staging of the disease), or moreover to the individual perception of the symptoms or to tobacco dependence.

METHOD

Participants

In this study, 30 male patients were referred to the Pulmonary Rehabilitation Center from our university. All patients presented a clinical and functional condition compatible with COPD, according to criteria proposed by the American Thoracic Society (ATS). Female patients were excluded since the vast majority (90%) of patients are male. Illiterate patients were excluded, as psychological evaluation materials are recommended to be self-applied so as to eliminate examiner bias. Patients with a previous history of psychiatric disturbances were also excluded. Thus, 30 patients were selected from the 75 patients registered in the pulmonary rehabilitation program.

Material

The study consisted in the evaluation of results obtained from the following: spirometry using the Med. Graphics MGC-CPX diagnostic system; arterial blood gases obtained from the Copenhagen Radiometer model ABL 330 analyzer; Borg's dyspnea evaluation scale after the 6 minute walking test (Borg, 1982), Beck's depression inventory (BDI) (Beck & Beamesderfer, 1974); anxiety trait and state inventory (ATSI – Biaggio & Natalicio, 1979); the drawing of a human figure (graphic projective test) to study personality aspects (Corman, 1979; Hammer, 1978; Nelson & Gidycz, 1993) and the patient's clinical data (disease's stage, marital status, professional activity, educational level; diagnosis time, and tobacco consumption Borg's dyspnea evaluation Scale is an instrument with 12 items of self related symptoms that identify dyspnea.

Statistical analyses were performed (SPSS 9.0) so as to study the association between the different variables. The rejection level of the null hypothesis was set at $p \leq 0.05$. The drawing of human figure was analyzed according to Van Kolck (1984).

According to Van Kolck, while drawing, patients project their body image, aspirations, preferences, habits and attitudes on the sheet of paper. Although the human figure drawing is not considered an objective method, it has been widely used, specially in countries where there are problems with the translation and validation of other personality assessment instruments, as well as dealing with subjects with low educational levels. The patients are asked to draw a human figure, without specifying the gender of the person to be drawn. The figures were analyzed according to general aspects such as body segments, position and location on the sheet of paper.

After analyzing the 30 patients' drawings, the most commonly observed characteristics were selected and the results expressed as percentage of occurrence. This served as a basis in defining the profile of COPD patients.

RESULTS

Patients mean age was 65.5 years (range 41 to 84). A threshold of 65 years was set for the division of patients into elderly and non-elderly groups, following the guidelines established by WHO for developing countries like Brazil (Andreolli et al., 1994; Kalache, Veras, & Ramos, 1987; Ramos, Veras, & Kalache, 1987; Silberman et al., 1995; Veras, Coutinho, & Ney, 1990; Veras et al., 1987). Thus, 11 (36.7%) of the patients were included in the up to 64-year-old age group and 19 (63.3%) in the greater or equal to 65-year-old age group.

Regarding professional activity, 16 patients (53.3%) declared that they were professionally active and 14 (46.7%) were inactive. The sample's education level was as follows: 14 patients (46.7%) with Brazilian primary education completed (up to 8 years education); 7 (23.3%) with Brazilian secondary education completed (up to 12 years – education); and 9 (30.0%) with university education. Regarding marital status: 27 patients (90.0%) were married, 2 were widowers (6.7%) and 1 was divorced (3.3%).

Data relating to sexual activity showed that 20 (66.7%) continued to be sexually active and 10 (33.3%) abstained from sexual life.

At the time of data collection, the mean duration of clinical illness was 8.5 ± 7.1 years – the beginning of the disease was taken to be the moment when the patient first identified one symptom (breathlessness, cough, tiredness or other symptom considered important by the patient).

Mean tobacco consumption was 56.4 pack years (range 5 to 152), with one patient having smoked homemade straw cigarettes for 30 years.

All patients were former smokers, with the mean time since quitting smoking 10.0 ± 9.1 years (range 1 to 30). The use of corticosteroids was equally distributed (50%).

The spirometry showed a mean forced expiratory volume in the first second (FEV_1) of 43% of the predicted and the distribution of patients by stage showed a greater number of patients with moderated and severe DPOC (stage II 33.3% and stage III 36.7%).

Regarding dyspnea perception patients presented a mean Borg scale value of 5.4 ± 2.9 after the 6-minute walking test what may be considered as accentuated dyspnea.

The pH values were normal ($M=7.40$), the mean partial pressure of oxygen in arterial blood (PaO_2) was lower than expected for the age (67.6 ± 13.8 mmHg) and the levels of $PaCO_2$ were shown not to be far from the

normal values (mean of 41.6 ±9.3 mm Hg) with only 20% of them presenting PaCO₂ greater than 45mmHg.

Five patients (16.7%) presented levels of oxygen arterial hemoglobin saturation at rest (SaO₂) less than the limit of 88%.

The evaluation of anxiety, subdivided into anxiety trait (A-trait) and anxiety state (A-state) pointed to greatly raised levels of anxiety trait (66.7% high; 13.3% moderated)

Beck's Depression Inventory results showed that patients in the sample studied presented raised levels of depression (83.3%).

No statistical differences were found among all physiological, disease staging, depression and anxiety besides for depression and A-trait (Table 1, Table 2).

Table 1
Anxiety Trait, Physiological parameters and Depression in COPD patients – ANOVA

	Low		Moderated		High		F	p
	M=14.00	SD=8.97	M=37.60	SD=5.81	M=73.70	SD=13.31		
Anxiety Trait	M	SD	M	SD	M	SD		
AGE	56.60	28.50	68.0	6.59	64.10	11.57	.54	.58
FVC(L)	2.96	.36	2.98	.78	2.38	.91	1.69	.20
FVC%	91.72	15.89	79.5	22.26	76.44	29.68	.64	.53
FEV ₁ (L)	1.16	.25	.99	.16	1.11	.56	.16	.84
FEV ₁ (%)	45.72	12.09	33.64	6.76	45.02	21.63	.77	.47
FEV ₁ FVC	39.06	5.22	36.24	8.93	46.41	10.20	2.98	.06
PH	7.39	.05	7.41	.04	7.40	.04	.49	.61
PaO ₂	73.86	11.36	62.76	15.84	67.20	13.93	.82	.45
PaCO ₂	38.02	4.07	43.10	6.70	42.11	10.74	.44	.64
SaO ₂	94.46	1.45	88.86	10.88	91.03	6.86	.79	.46
BDI	6.00	4.18	19.6	5.81	20.55	7.43	8.83	.001

Note. FVC(L); FVC(%); FEV/FVC; FEV₁(L)FEV₁(%): Spirometric Parameters; pH; PaO₂; PaCO₂; SaO₂: arterial blood gases measures; BDI: Beck Depression Inventory.

Table 2
Beck Depression Inventory and Physiological Parameters – ANOVA

	None/Low		Moderated/High		F	p
	M=4.6	SD=2.30	M=20.64	SD=6.73		
Depression	M	SD	M	SD		
AGE	65.4	5.03	65.48	10.78	.13	.94
FVC(L)	2.92	.42	2.50	.91	2.26	.10
FVC%	89.70	14.28	77.46	28.28	.90	.45
FEV ₁ (L)	1.14	.24	1.09	.51	.40	.75
FEV ₁ (%)	43.92	9.69	43.10	20.54	.11	.94
FEV ₁ FVC	39.10	6.42	44.37	10.52	.86	.47
PH	7.37	.04	7.41	.04	1.15	.34
PaO ₂	76.16	9.96	65.85	13.97	.83	.48
PaCO ₂	40.34	6.43	41.84	9.88	.24	.86
SaO ₂	94.48	1.44	90.59	7.60	.61	.61

Note. FVC(L); FVC(%); FEV/FVC; FEV₁(L)FEV₁(%): Spirometric Parameters; pH; PaO₂; PaCO₂; SaO₂: arterial blood gases measures; BDI: Beck Depression Inventory.

The most common features found in the drawings of the male human figure can be seen in Table 3.

Table 3

Common features in the human figure drawing in COPD patients

Incomplete figure	Vertical position
Location in the upper left quadrant	Standing figure
Figure without movement	Profile
Absence of ground line	Absence of transparency
Head size between $\frac{1}{4}$ and $\frac{1}{2}$	Short hair
Omission of facial details	Small eyes, in outline
Big nose	Big mouth
Without beard or mustache	Big ears
Long and thick neck	Omission or distortion of trunk
Short and thin arms	Omission of hands
Omission of legs	Omission of feet
Omission of clothes	

From the analysis and interpretation of the personality's common traits of COPD patients it may be stated that:

- The patients portrayed and identified themselves in line with their own gender, which guarantees that the drawings express not only what they think of themselves but also how they see themselves;
- They presented feelings of intense inadequacy, lack of confidence and inferiority which impair their interpersonal contact;
- Their interpersonal relationships were also impaired by their excessive impulse control and expressions of feelings, as well as by the display of feelings of rejection in regards to those around them, mixed with a strong need for affirmation in the sexual sphere;
- There was a certain tendency to underestimate physical features, i.e. a clear division between body and feeling. As a result, they did not present themselves as integrated people within themselves or within the environment;
- They presented a strong resistance to the acceptance of orders or recommendations, thus indicating the predominance of a certain individualistic character;
- They displayed a predominance of rational functioning, to the detriment of affective display, accompanied by depressive tendencies and feelings of insecurity;
- The respiratory difficulty was clearly displayed in the accentuation of the organs involved in respiration, demonstrating the accuracy of the projection tests in the psychosomatic clinic. One of the 30 drawings is reproduced in Figure 1.



Figure 1. Drawing of the human figure, patient aged 82 years, widower, COPD stage I

DISCUSSION

The main objective of our study was to clarify the psychological dimension of patients suffering from chronic obstructive pulmonary disease, rather than to build up a profile of the pulmonary patient, as there is no single pathway towards illness. Each person reacts in an individual manner, corresponding to his personality and to his life history.

The study of personality allowed us to verify that, similar to their pulmonary function impairment, the patients presented difficulties in sharing, establishing relationships and expressing their feelings. Similarly, we may consider that they suffer from an “affective obstruction”.

The normal processes of inhalation and exhalation not only determinate the physiological movements of intake and elimination of oxygen and carbon dioxide, respectively but, likewise, the affective processes in interpersonal relationships and the representation of desires. This is exactly what appears to happen in COPD patients. Their interpersonal relationships display the same “obstructive” pattern as their respiratory difficulty. They are incapable of exchanging affection; they hold back their emotions and feel resentful about contacting others. They are also incapable of giving and receiving, an attitude, which is fundamental towards establishing productive and healthy relationships.

These facts are in accordance with studies, which confirm that social isolation and “emotional stunting” are expressive traits of the personalities of patients with COPD (Greenberg, Ryan, & Boulier 1985; Pedinelli et al., 1987; Prigatano et al., 1984; Rutter, 1977).

The need for affirmation in the sexual function and the resistance in accepting orders demonstrates a certain authoritarian character, probably sustained by feelings of insecurity and inferiority.

The interpersonal relationships are not only impoverished in quantity but also in quality. The relational tendency amongst the patients examined was towards superficiality, caution and distancing.

Although the majority of patients described themselves as sexually active, they demonstrated having difficulties in this area due specifically to intrapsychic conflicts and conjugal relationships which did not appear to depend on the stage of the disease.

Their perception of the world and the people who surround them is vague, with a certain tendency towards manipulation and control, as a defense against their own impulses and feelings.

They have a trend to shun reality, viewing the world "in profile", and perhaps this explains their insistence in maintaining behaviors that are harmful to themselves. Few admit to their sick or deficient health condition.

Projective drawings indicate symptoms of organic origin, corresponding to the fundamental difficulties of the individuals (Knoplich, Tosi, Pelegri, & Ramadan, 1988; Neder, 1993).

Our results confirm the above, as the areas of conflict are predominantly located (either by emphasis or by omission) in the organs which symbolize their deficiency, the thorax and airways (see example of drawing).

The observed high levels of anxiety (80%) and depression disturbances (83,3%) associations ($p < 0.004$) reaffirms the fact that "pure" emotional manifestations of anxiety and depression are very unusual and they manifest themselves as concomitant symptoms. Our findings agree with previous studies based on the same evaluation instruments (Agle & Baun, 1977; Borak, Sliwinski, Tobiasz, Górecka, & Zielinski, 1996; Lahdensuo et al., 1989; Wells et al., 1989) or other tools for assessing anxiety and depression (Dekhuijzen, Beek, Folgering, & Van Herwaarden, 1990; Engström et al., 1995; Okubadejo et al., 1996).

The sample rates of anxiety and depression are very high when compared to the prevalence of anxiety and depression in the population of Brazil of the same age group. In the normal elderly population, depression occurs for the first time in 10% of population over 60 years old, reaching up to 40% in cases where physical illness is associated (Almeida, Lafer, & Miguel Filho, 1990). The prevalence of psychiatric disturbances amongst patients admitted in general wards, with an average age of 47.5 years, is 27% for anxiety and 33% for depression (Botega, Bio, Zomignani, Garcia Jr., & Pereira, 1995). The average of depression prevalence rate for the elderly Brazilian population is from 23% to 30% approximately (Veras & Coutinho, 1991).

From our results and the aforementioned studies it may be concluded that COPD patients show a much greater depression prevalence than either the healthy population or those suffering from other illnesses, other than COPD.

Generally, high prevalence of depressive states is found to be associated with a wide variety of factors. Amongst the population at large, aging leads to a

slowing down of the individual's physical and psychological processes. The reduction in sexual activity, lack of occupation, and especially the altered notions of time and space are considered by some authors to be factors, which favor an increase in depression.

According to our results, no association that would lead towards any of these hypotheses was found.

In COPD patients besides the above mentioned factors, increasing depression rates are also frequently associated to the degree of pulmonary function impairment, to low rates of PaO₂ or even to an increase in PaCO₂ (Clark & Cochrane, 1970; Dudley et al., 1980; Prigatano et al., 1984). In our study, we did not find any correlation between the prevalence of depression and any other factor, with the exception for the positive correlation with anxiety traits, as stated before.

Depression in COPD is usually described as a reactive depression which is a way of reacting to a set of stressing factors, especially the loss of family and social roles. The incapacity to carry out daily living activities makes the patient very dependent, even with regards to personal hygiene and, in this case, the depression would be the emotional consequence of this incapacity.

Depression in COPD patients may also be temporary, a result of diagnosis or side effects to medication (Ede et al., 1999).

The reactive depression may precede or be triggered by a variety of life events and its intensity and duration depend on the value which the individual places on the event. It ought to be transitory and occasional but should it last for long periods, it may be indicative of a condition of clinical depression.

It is not uncommon for a patient who suffers from a serious or limiting organic disease to develop a reactive depression and the greater the physical compromise and duration, the worse the reactive depression. Nonetheless, we did not find any association between depression prevalence and the length of time of symptoms related to pulmonary function impairment or perceived dyspnea, in this sample.

Regarding smoking duration and quantity (pack-years), our results showed that there is no correlation between these variables and the results of high prevalence of anxiety and depression. Some have shown that smokers present depression in higher frequency than non-smokers. However, this fact seems to be more related to factors linked to the individual's personality than to smoking itself. On the other hand, patients with a past history of depression have greater difficulty in quitting smoking and it is known that depression maybe a contributing factor for the onset of smoking. Besides, the risk of depression amongst smokers is twice as great as non-smokers (Payne et al., 1991; Timmreck & Randolph, 1993; Thornton, Lee, & Fry, 1994; Parrot, 1995; Rowe, Fleming, Barry, Manwell, & Kropp, 1995).

Reactive depression in those who have quit smoking (all our patient were ex-smokers), is related to nicotine deprivation, which is transitory and

disappears as soon as the period of abstinence ends (Acri & Grunberg, 1992). The high number of COPD patients with high scores in BDI as in this study seems to be demonstrating that the depression manifested in patients with COPD is not only reactive. It is very possible that these patients should be included amongst the cases of clinical depression, as the mean length of time since quitting smoking (7.5 years) is much greater than the period of abstinence. This possibility is reinforced by findings that indicate a depressive personality with serious difficulties in expressing emotions.

The emotional changes and the high prevalence of affective disturbances in patients with COPD are, for some authors, explained by corticosteroid therapy that may induce neurovegetative and psychiatric disorders as well as collateral effects (Ismail & Wessely, 1995; Patten, Williams, & Love, 1995a,b). However, Gift, Wood, and Cahil (1989) point to an association between depressive symptoms and the use of corticosteroids. Others report depression appearance as an adverse effect to the exposure to corticosteroids in only 0.3%, considering that this issue should be taken up in future investigations (Ismail & Wessely, 1995; Patten et al., 1995a,b). In this sense our results are in close agreement, as we did observe a significant association between the high prevalence of anxiety and depression and the use of corticosteroids. Hence, we suggest that a more specific study be undertaken so as to further research this issue.

In this sense, the expression of this difficulty is not only the high prevalence of depression but also the anxiety as well.

In this study we found that 80% of the patients had personality characteristics loaded with anxiety traits.

The anxiety is a manifestation of conflicts between subconscious impulses and repressive norms, i.e. conflicts between the imaginary world and real experience, between the desire to be something and the reality that impedes this realization. Resulting from confusion and lack of direction in the achievement of objectives, anxiety may occur at a greater or lesser intensity, driven by achievement or immobilization. This is a basic reaction, natural to human beings when facing danger or the unknown.

Such being the case we may consider that, up to a certain point, anxiety is normal and inevitable. However, high levels of anxiety must be considered as manifestations of a neurotic personality, the sign of a conflict that needs to be resolved. Anxiety disturbances or neuroses may be present in a variety of life circumstances: stressing situations caused by illness, use of drugs, or during a course of medication.

Moore and Zebb (1999) found high prevalence of panic in COPD patients (high levels of anxiety, depression, and agoraphobic cognitions), and this panic symptom may reflect the increased pulmonary symptoms.

The high prevalence of anxiety found in the present study may be evaluated for all these aspects. It resulted from the stress of the physical incapacities imposed by the lack of pulmonary capability, increased by the fear, not always

real, of dyspnea or death by asphyxia and, as described above, it was also an expression of life conflicts.

High levels of anxiety are also found in patients with greater hypocapnia (Kisman et al., 1983; Okubadejo et al., 1996). However, we did not find any statistically significant correlation between the levels of anxiety and the pulmonary function parameters, arterial blood gases or even in the perception of dyspnea, although the patients studied had presented levels of PaO₂ below normal.

It has been shown that smokers are much more anxious than non-smokers. The anxiety, itself, or the intention to reduce it, may be the triggering factor for starting smoking (Acri & Grunberg, 1992; Parrot, 1995; Thornton et al., 1994). However, these reports also indicate that quitting smoking does not reduce anxiety, but on the contrary, nicotine abstinence is a condition of stress, which may lead to an increase in anxiety for a period of 3 to 6 months (Hughes, 1993; Parrot, 1995). Our results indicate that the anxiety manifested by the participants (all former smokers) was no longer related to the lack of nicotine, since the average period since quitting smoking was greater than 6 months, and no statistically significant correlation was found between these two variables.

In fact, this situation appears to occur before onset of illness, as the same results are described in the evaluation of smokers and former smokers.

In summary, our results allow us to conclude that COPD patients experience common feelings of lack of confidence and inferiority, accompanied by difficulties in having affectionate relationships, with intense impediments in the expression of affection and emotion. The frequency of anxiety traits and states is high, as well as the occurrence of depressive states.

In addition, affective-emotional disorders presented by COPD patients seem to be a characteristic way of being. In other words, these are individual characteristics and, thus must not only be considered as the result of the physiological parameters which determine their disease.

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