

研究報告

A Study of the Emotional Labor on the Care Workers and Finger Plethysmograms

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Abstract— The finger plethysmograms of a number of staff working in a special nursing home for the elderly were measured three times a day, and the chaotic information gained was analyzed using a non linear analysis method. As a result, the differences were found in the value of the Lyapunov exponent in the fingertip pulse waves as information regarding vital signs reflecting the level of mental revitalization, the value of autonomic balance, the degree to which an individual is unable to shake off something that happened and worrying about the gap between personal emotions and what is expected of an individual as a professional in the case of Emotional Labor. The five following patterns became clear: 1.The Tense Group, 2.The Fatigued Group, 3.The Stable Group, 4.The Easygoing Group, 5.The Others' Group. As in the stable group, we were able to determine on the biological information level that deep actors with high emotional control skills have stable LLE and automatic nerve balance which positively influences them both physically and mentally. On the contrary, as in the case of the tense group, we were able to determine that surface actors with low emotional control skills have low LLE figures, showing that their levels of mental activity is low, their automatic nerve balance is not as it should be and their level of tension is high. It can be said that the improvement of emotional control skills is vital for not only the residents of social welfare facilities for the elderly, but also for the staff members themselves.

Keywords-pulse waves; non linear analysis; Lyapunov exponent; autonomic balance; care workers; emotional labor

1.Introduction

Arlie Russell Hochschild defines Emotional Labor as the effort to seem to feel and to try to actually feel the “right” feeling for the job, and to try to induce the “right” feeling in certain others. For care workers who are required to carry out Emotional Labor, there exist rules fitting to the job regarding the appropriate display of personal emotions and the holding in check of inappropriate emotions, and these are known as Feeling Rules.

Hochschild sets forth two methods for controlling one's emotions. One is Surface Acting and the other is Deep Acting.

Surface Acting involves feeling what you feel inside, but changing your outward appearance. There is a detachment between the merely surface facial expressions and gestures and what the individual is actually feeling. This detachment, in some cases, causes a high degree of mental stress.

Deep Acting involves you intentionally changing yourself deep within yourself to become an actor, producing the appropriate emotions and expressing them with your facial expressions and gestures. Deep Acting involves less of a gap between the individual's emotions and the emotional expressions displayed and causes less mental stress.

In this way, emotional control skills significantly relate to the mental stress of the care worker, but this is a labor which is not visibly apparent.

Consequently, by analyzing the results of a questionnaire to ascertain care workers' subjective appraisals of their own emotional control and the results of analyzing the chaos information shown by their finger plethysmograms using the method of nonlinear analysis, this paper will examine the relation between the emotional control skills of the care

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worker and their mental stress.

2. Calculation of the Lyapunov exponent

Figure 1 shows the flow diagram showing the procedure from the measurement of pulse waves to calculation of the Lyapunov exponent [1]. To construct the attractor, we set a delay time and the number of embedding dimensions according to Tarkens theory. We used four embedding dimensions and a delay time of 50 msec. The figure on the right illustrates the method of embedding in three-dimensional phase space. Although effective information can be obtained from the shape of the four-dimensional attractor, we calculated the Lyapunov exponent, which is an index of trajectory instability and has a chaotic characteristic. (Figure 1) By measuring the fingertip pulse waves for one minute, 43 Lyapunov exponents are obtained. We compared each condition using an average of these values [2] [3].

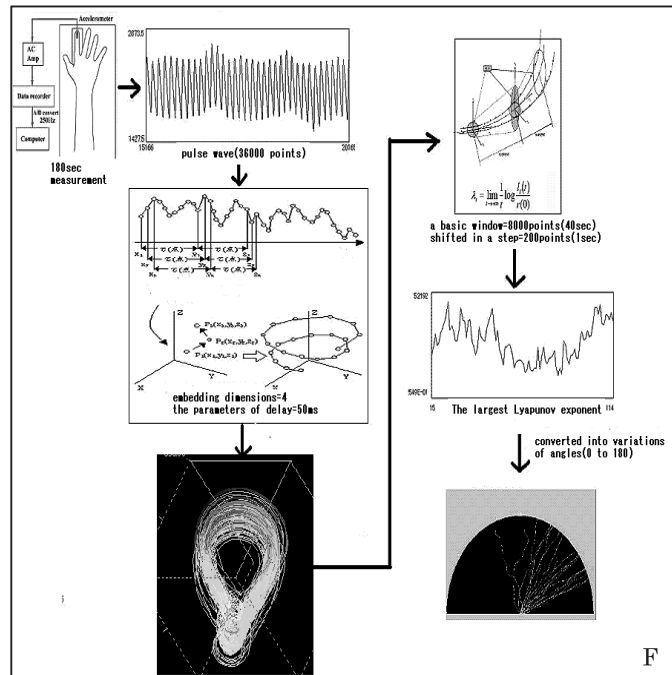


Fig.1 Flow diagram showing the procedure from the measurement of pulse waves to calculation of the Lyapunov exponent.

3. Methods of Measurement

(1) Study subjects

Our study was conducted on 28 members of staff involved in providing care at a social welfare facility for the elderly. There were six male staff and 22 female staff, with the male/female ratio being one male to four females. Ages ranged from 22 to 67, with the average age being 38. Qualifications held by the staff (multiple answers possible) were Licensed Nursing Care Giver (10 people), Home Helper (16 people), Nurse (6 people), Licensed Social Welfare Worker (4 people) and Care Manager (3 people), with one person without any qualifications. Many of the staff individually had several qualifications. 19 of the staff members were full-time employees and 9 were part-time. 16 of the staff members had night duty and 11 had no night duty.

(2) Study location

The measurement of the fingertip pulse waves was carried out in the social welfare facility for the elderly A and in B prefecture.

(3) Study period

August of 2011

(4) Measurement details

Questionnaires were distributed to the participating staff members asking about their aforementioned backgrounds, their physical condition on the day measurements were taken and if there were any problems that they were conscious of, having them check on a scale of 5 as to how prone to get tired they considered themselves to be. In addition, in answer to the question "If you get angry, feel sad or grow irritable before or during work, how does that affect you while you are working?" the four choices for answers given were "1. I completely forget about it. 2. I put those emotions aside. 3. I am unable to shake off what happened. 4. Other answer. (Please state)." We asked those who

answered that they were unable to shake off what happened if that was always the case, sometimes the case or occasionally the case. We also asked those who answered that they were unable to shake off what happened how this affected them. Finally, in answer to the question “Do you ever worry about the gap between your own personal emotions and how you feel you should convey yourself as a professional?” the four choices for answers given were “1. always 2. sometimes 3. hardly ever 4. never.”

At the social welfare facility for the elderly, in order to support the lifestyles of the residents on a 24-hour basis, the staff is on a shift system which often means an irregular work pattern with early shifts and late shifts. The working hours of each member of staff who took part in this study, including breaks, were 9 hours. The staff with the earliest starts commenced work at 7:30 and staff with later starts commenced work at 11:30, finishing at 20:30. We did not conduct our study during the night shift. The measuring device (BACS:2000) was setup in a space near an area where care workers were working with the elderly. We measured the individual finger plethysmograms of the staff for a two-minute period three times during their working hours, once before they commenced work, once before their long breaks and once immediately after they finished work. We analyzed their finger plethysmograms using the method of nonlinear analysis, gaining the maximum Lyapunov exponents (LLE) and the autonomic nerve balance figures. We compared and examined the figures.

4. Results

According to the differences in the LLE and autonomic nerve balance figures, we were able to divide the results into 5 groups. We compared the characteristics of each group with the information gained from the questionnaires about whether the individual was unable to shake off something that happened or could and to what extent and how much of a gap the individual felt between their own emotions and how they felt they should convey themselves as professionals.

In Group 1, the LLE figures which reflect mental revitalization were low. The autonomic nerve balance figures were high, and the sympathetic nerve was predominant. The level of mental activity was low, and it was clear that the individuals were tense. We called this “The Tense Group.” There were 10 members of staff in this group and it was the group with the most members.

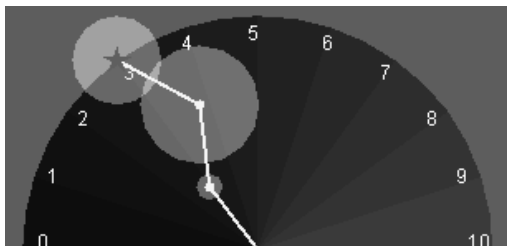


Fig.2 Case No.5's LLE

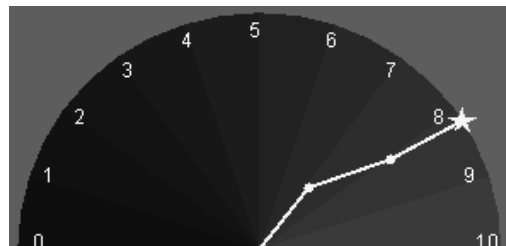


Fig.3 Case No.5's autonomic nerve balance

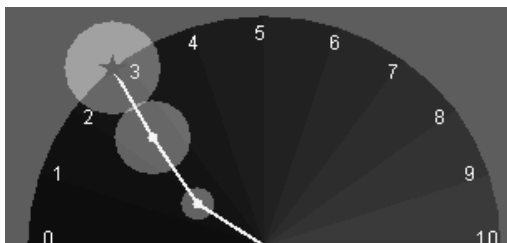


Fig.4 Case No.22's LLE

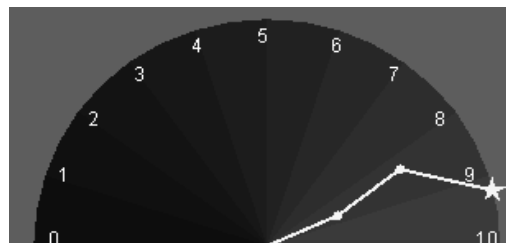


Fig.5 Case No.22's autonomic nerve balance

Group1 was mainly comprised of staff members prone to be unable to shake off minus emotion regarding something that happened and who were prone to worry about the gap in their own emotions and how they felt they should convey themselves as professionals.

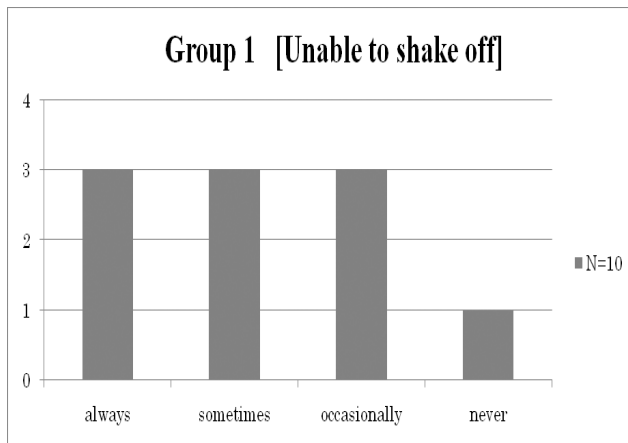


Fig.6 The degree to which an individual is unable to shake what off something that happened (Group 1)

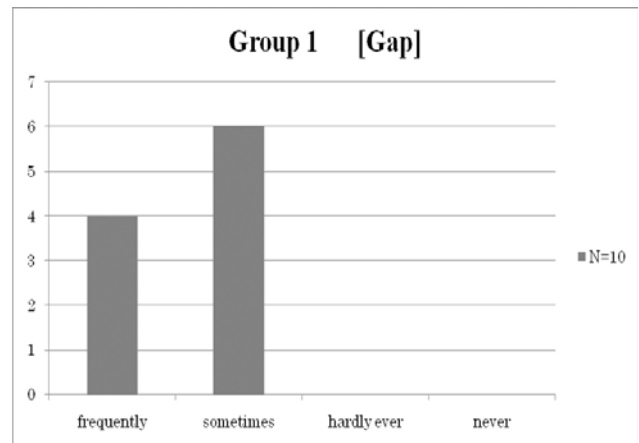


Fig.7 Worried about the gap between personal emotions and is expected of an individual as a professional (Group1)

In Group 2, the LLE figures were constantly on a low level throughout the shift, and the automatic nerve balance figures got lower at the end of their shifts. We can conclude that the staff members in this group were both physically and mentally inactive and were tired. We called this “The Fatigued Group.” There were 3 staff members in this smaller group.

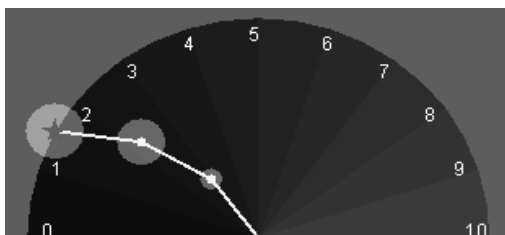


Fig.8 Case No.13's LLE



Fig.9 Case No.13's autonomic nerve balance

Group 2 comprised of 2 staff members who answered “sometimes” and 1 staff member who answered “occasionally” when asked if there were times when they were unable to shake off minus emotion, but no one answered “always.” All three answered “hardly ever” to the question as to whether they worry or not about the gap between their own emotions and how they felt they should convey themselves as professionals.

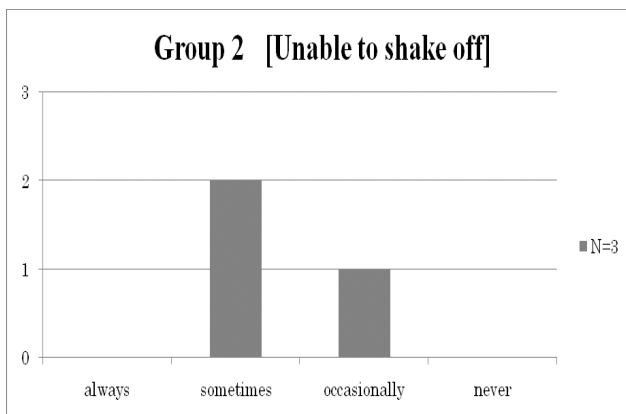


Fig.10 The degree to which an individual is unable to shake off something that happened (Group 2)

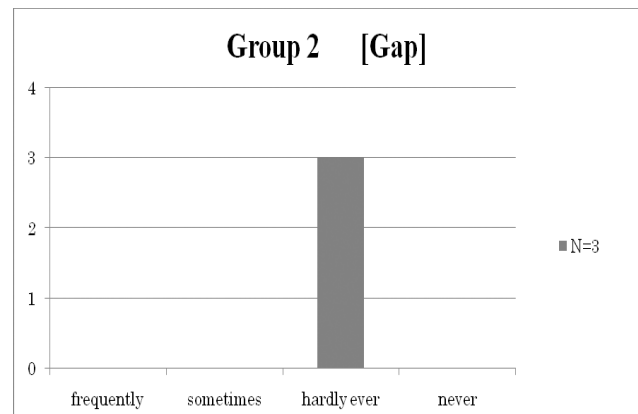


Fig.11 Worried about the gap between personal emotions and hat is expected of an individual as a professional (Group 2)

In Group 3, in the majority of cases, the LLE and automatic nerve balance figures both lay suitably midway, and many of the staff members' figures hardly rose or fell all day. We can conclude that the staff members in this group worked with an appropriate amount of tension and were full of vitality both physically and mentally. We called this "The Stable Group."

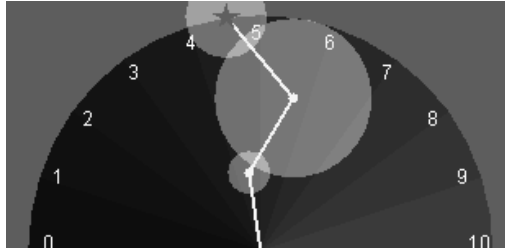


Fig.12 Case No.14's LLE

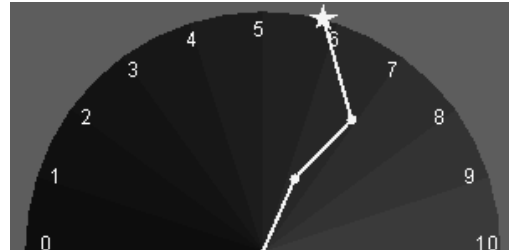


Fig.13 Case No.14's autonomic nerve balance

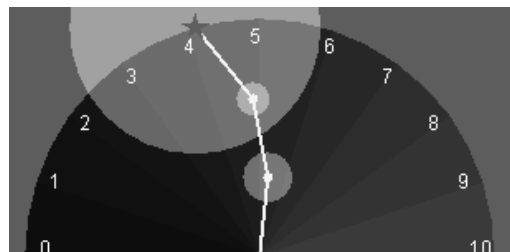


Fig.14 Case No.16's LLE

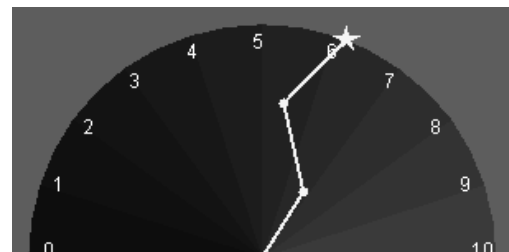


Fig.15 Case No.16's autonomic nerve balance

Group 3 comprised of only one staff member who answered "sometimes" and 5 staff members who answered "never" when asked if there were times when they were unable to shake off minus emotion. Everyone answered that they "sometimes" worry about the gap between their own emotions and how they felt they should convey themselves as a professional, so we can surmise that this group of staff members are emotionally stable, but think very seriously about how they should convey themselves as professionals.

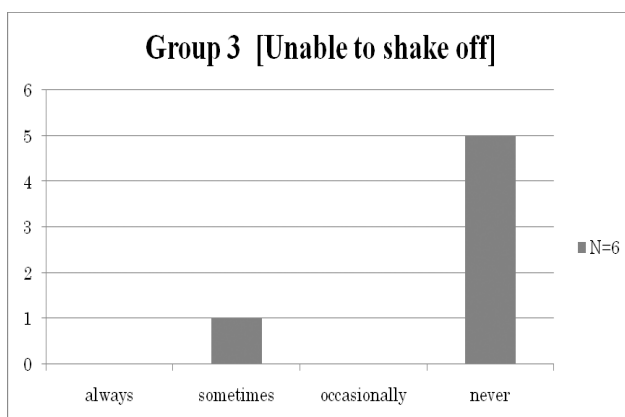


Fig.16 The degree to which an individual is unable to shake off something that happened (Group 3)

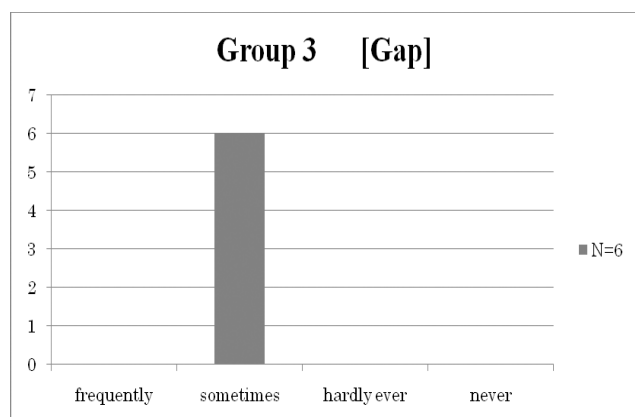


Fig.17 Worried about the gap between personal emotions and what is expected of an individual as a professional (Group 3)

In Group 4, there are both older staff members, with LLE and automatic nerve balance figures that are both on a low level and which are stable, and younger staff members, with LLE and automatic nerve balance figures that are both on

a high level and which are stable. The staff members in this group all said “I am not worried about anything” when their measurements were being taken. They have stable low and high figures, stable like the Group 2 members, but not in the same mid range, so we made them into a separate group. We called this “The Easygoing Group.”

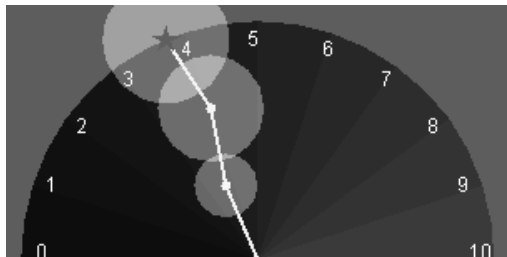


Fig.18 Case No.6's LLE



Fig.19 Case No.6's autonomic nerve balance

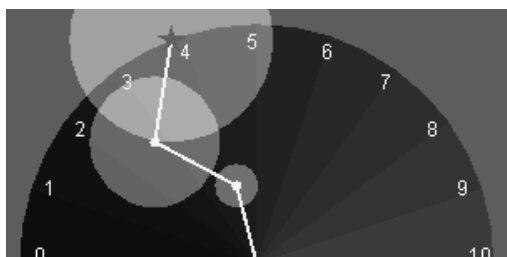


Fig.20 Case No.23's LLE

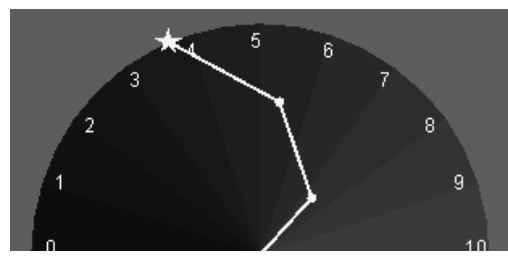


Fig.21 Case No.23's autonomic nerve

Group 4 comprised of staff members who all answered “never” when asked if there were times when they were unable to shake off minus emotion. 5 staff members answered “hardly ever” and 1 staff member answered “never” when asked if there were times they worried about the gap between their own emotions and how they felt they should convey themselves as professionals. The staff member who answered “never” is a younger member of staff with LLE and automatic nerve balance figures that are both in a high bracket and which are stable. Since they are not worried about the gap between their own emotions and how they feel they should convey themselves as a professional, we can consider that they enjoy their work and are easygoing.

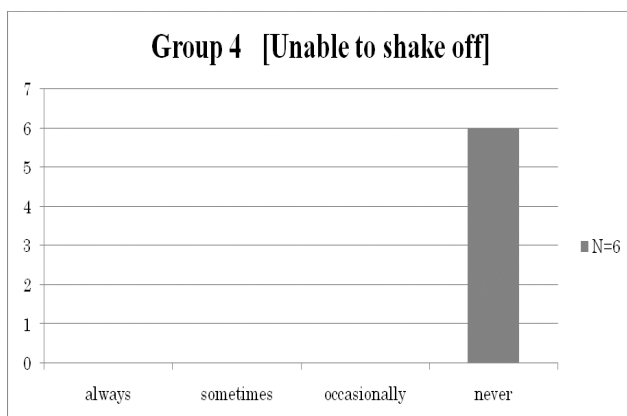


Fig.22 The degree to which an individual is unable to shake off what is expected of an individual as a professional (Group4)

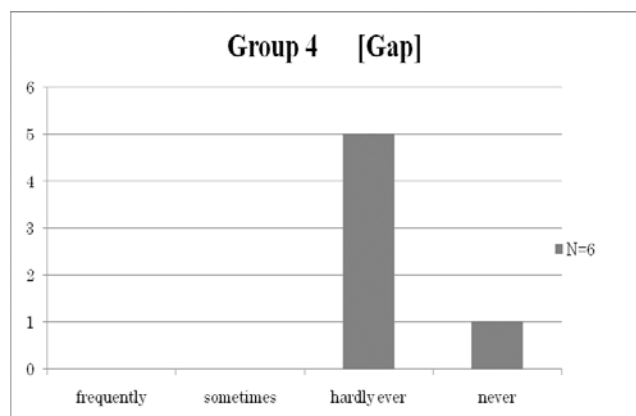


Fig.23 Worried about the gap between personal emotions and something that happened(Group 4)

In Group 5, there are staff members whose LLE and automatic nerve balance were both low at the start of their shifts, but higher at the end, staff members whose LLE and automatic nerve balance were both very low the whole

time and younger staff members whose LLE and automatic nerve balance were both quite high and remained constant. Since it was not possible to group these staff members in the aforementioned four groups, we made them into a group by themselves, known as “The Others’ Group.”

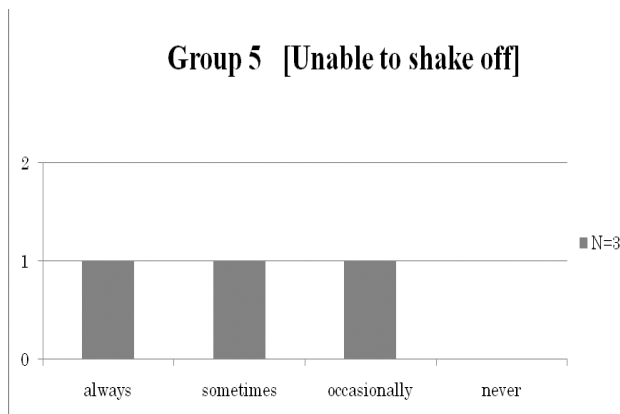


Fig.24 The degree to which an individual is unable to shake off emotions and what something that happened (Group 5)

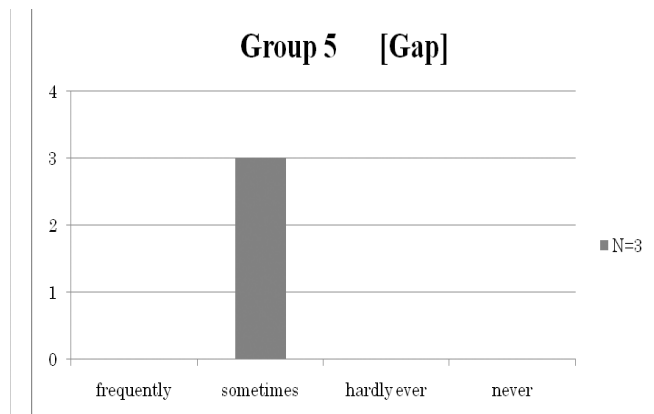


Fig.25 Worried about the gap between personal is expected of an individual as a professional (Group5)

Group 5 comprised of staff members who all said they were unable to shake off minus emotion related to things that happened. They all answered “sometimes” when asked if there were times when they worried about the gap between their own emotions and how they felt they should convey themselves as professionals. We can see that, unlike Group 4, they have concerns.

The breakdown of full-time staff and part-time staff is, overall, 19 full-time staff (67.9%) and 9 part-time staff (32.1%). In the stable group there are 5 full-time staff (83.3%) and 1 part-time staff (16.7%). In the easygoing group there are 2 full-time staff (33.3%) and 4 part-time staff (66.7%).

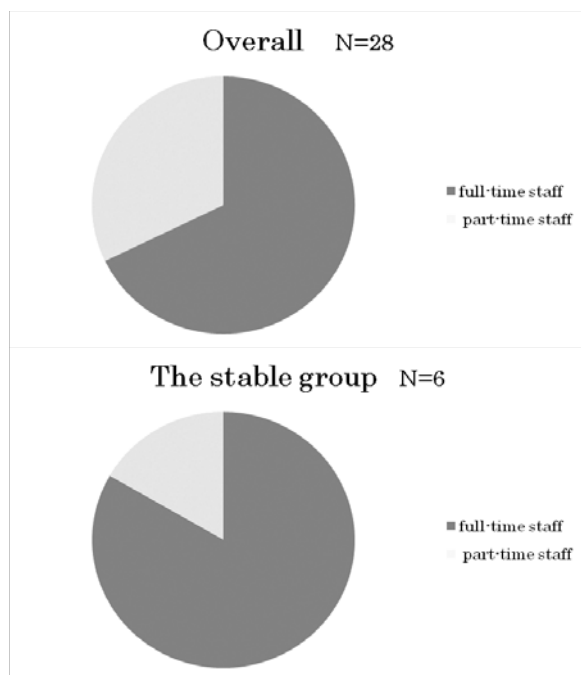


Fig.27 The proportion of full-time staff to part-time staff in the stable group

Fig.26 The proportion of full-time staff to part-time staff in the all group

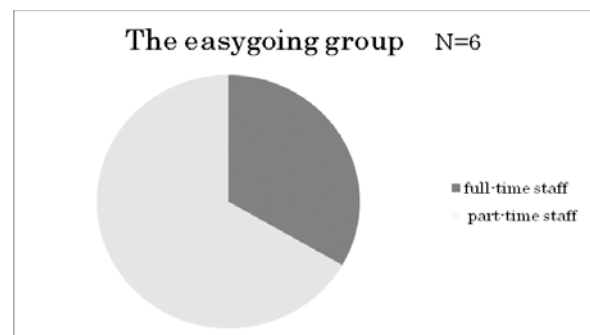


Fig.28 The proportion of full-time staff to part-time staff in the easygoing group

A background factor to these results can be considered to be the fact that the members of staff in the stable group all take pride in their work. It can also be said that the easygoing group members of staff, not being on irregular shifts, do not have to take on as much responsibility as other staff do.

The members of staff (5 members) who complained of not being at their best physically and mentally are all members of the tense group.

The following graph shows the answers given regarding the minus emotional effects of being unable to shake off something that happened.

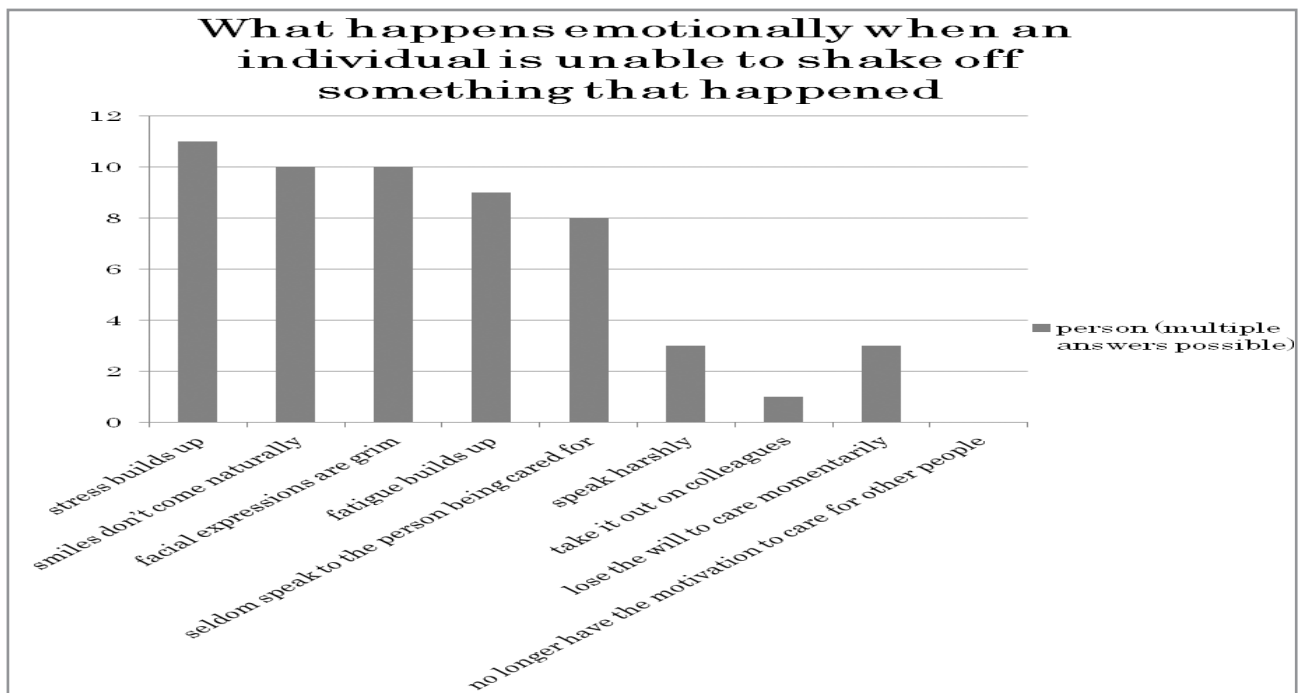


Fig.29 What happens emotionally when an individual unable to shake off something that happened

We found that stress builds up and is reflected in an individual's attitudes in the case where individuals experience minus emotional effects resulting from being unable to shake off something that happened. But there is nobody who answered "no longer have the motivation to care for other people". We considered that the staffs are doing their respective best.

5. Conclusion

In the case of Emotional Labor, the five following patterns became clear from the results of the biological information derived from the chaos analysis of the staff finger plethysmograms.

a. The Tense Group

The LLE figures dropped and the figures for the sympathetic nerve corresponded. The majority of individuals were unable to shake off minus emotion related to things that happened and were worried about the gap between their own emotions and how they felt they should convey themselves as professionals.

b. The Fatigued Group

Some individuals had low LLE figures and their sympathetic nerve figures also dropped during their shifts. This group of individuals, compared to the tense group, was better at shaking off minus emotions and not as worried about the gap between their own emotions and how they felt they should convey themselves as

professionals. We can surmise that the drops seen in their emotional levels come from their fatigue.

c. The Stable Group

Both the LLE and automatic nerve balance were appropriate and there was little movement in these figures during their shifts. Everyone was able to totally shake off minus emotions, but everyone also answered that they sometimes worried about the gap between their own emotions and how they felt they should convey themselves as professionals. We can consider this to be a sign that they have their own ideals as professionals and are very serious about their work.

d. The Easygoing Group

This group, with LLE and automatic nerve balance figures not apparent in the aforementioned three groups, answered that they were able to shake off minus emotion and were not worried about the gap between their own emotions and how they felt they should convey themselves as professionals. Although they are emotionally stable, we can consider them to be lacking in the attitude required towards their jobs as professionals.

e. The Others' Group

There were differences in the patterns of the LLE and automatic nerve balance, a greater extent of being unable to shake off minus emotions and large gaps between the individual's own emotions and how they felt they should convey themselves as professionals.

As in the stable group, we were able to determine on the biological information level that deep actors with high emotional control skills have stable LLE and automatic nerve balance which positively influences them both physically and mentally.

On the contrary, as in the case of the tense group, we were able to determine that surface actors with low emotional control skills have low LLE figures, showing that their levels of mental activity is low, their automatic nerve balance is not as it should be and their level of tension is high. There were a large number of individuals in the tense group who did not feel at their best, and, if an individual does not feel well, the LLE will potentially drop, causing the automatic nerve balance to not be as it should. This will, in turn, potentially influence the care worker and influence their emotional control.

It can be said that the improvement of emotional control skills is vital for not only the residents of social welfare facilities for the elderly, but also for the staff members themselves.

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「ケアワーカーの感情労働と指尖脈波に関する研究」

概要

感情労働 (Emotional Labor) は、Arlie Russel Hochschildによって「自分の感情を誘発したりしながら、相手の中に適切な精神状態をつくり出すために、自分の外見を維持すること」と定義されている。対人援助職として高齢者福祉施設のケアワークに従事する者は、業務上感情労働を実践することが必要であり、専門職としてふさわしい感情の表出と不適切な感情の抑制という感情管理を行うことが求められている。

そこで、本研究では、高齢者福祉施設職員の主観的な感情管理評価の質問紙調査結果と、指尖脈波のカオス情報を非線形解析の技法を用いて解析した結果を分析することによって、目に見えにくい感情管理スキルと彼らの精神的ストレスとの関係性について考察した。

調査方法

A県内のB施設で高齢者のケアに従事する職員、28名を対象とした。男性が6名、女性が22名で、平均年齢は38歳だった。保有する資格は、看護師、介護福祉士、ホームヘルパー、社会福祉士、介護支援専門員であり、経験年数は半年から40年だった。重複して資格を持っている人が多かった。勤務状況は、常勤が19名、非常勤が9名だった。

対象者に質問紙を配布し、属性、当日の体調、自覚症状、疲れやすさについて聞いた。仕事前か仕事中に、怒り・悲しみ・イライラなどの感情を抱いた時、仕事中どのような状態になるか、その感情を引きずるかどう、個人的感情と職業人としてのあるべき感情とのギャップに悩む時はあるかという質問に、4段階で答えを求めた。

早出から遅出まで対象者の変則的な勤務にあわせて、それぞれの勤務の前と、途中の長い休憩の前、勤務終了直後の、1日計3回、指尖脈波を2分間ずつ測定した。指尖脈波の値を非線形解析の技法により分析し、精神的な活性度を表すと検証されている最大リアプノフ指数 (LLE) の数値と自律神経バランスの値を得た。そしてその値を比較検討した。

結果・考察

LLEと自律神経バランスの値の違いにより、5つの群に分類することができた。それぞれの群の特徴と、質問紙調査で把握した、感情を引きずるか否かとその程度、個人の感情と職業人としての感情のギャップの度合いを比較した。その結果、感情労働について、生体情報である指尖脈波のカオス分析内容から、次の5つのパターンがあることが明らかになった。各群の特徴によって仮に〇〇群と名付けた。

1. 緊張群

精神的活性度を表すLLEが低下し、交感神経の値が亢進していた。マイナスの感情を引きずっていて、個人と専門職としての感情のギャップに悩む人が多かった。

2. 疲労群

LLEの値が低く、交感神経も勤務の間に下がっていく人がみられた。この群の人は、マイナスの感情の引きずり度が、緊張群に比べて低く、個人と専門職としての感情のギャップの悩みも少なかった。疲れているため、感情レベルの低下がみられるのではないかと考える。

3. 安定群

LLEも自律神経バランスも適切で、一日の間の変動も少なかった。マイナスの感情はまったく引きずっていなかったが、個人と専門職としての感情のギャップについては時々悩むと、全員が答えていた。専門職としての理想があり、仕事に真剣に取り組んでいることの表われであると考え。常勤者の割合が高かった、

4. 気楽群

3つの群に属さないLLEと自律神経バランスの値を持ち、マイナスの感情を引きずらない、個人と専門職としての感情のギャップにも悩まないと回答していた。精神的には安定していても、専門職としての心構えが不足していることが考えられる。非常勤者の占める割合が多かった。

5. その他

第1から第4群の中に分類できない人を「その他」とした。LLEと自律神経バランスのパターンが各群とは異なり、マイナスの感情の引きずり度も、個人と専門職としての感情のギャップの度合いも高かった。

安定群のように感情管理スキルが高い人は、LLEや自律神経バランスが安定しており、心身に良い影響があることが、生体情報のレベルからわかった。逆に緊張群のように、感情管理スキルが低い人では、LLEの値が低いことから精神的活性度が低く、自律神経バランスが崩れて緊張度が高いことがわかった。心身の体調不良があると話していた人は、すべて緊張群に属していた。緊張群に体調不良者が多かったわけだが、体調不良だとLLEが低下し、自律神経のバランスが崩れると考えられ、それがケアワークにも影響を及ぼし、感情規制に影響を与えられとされる。

感情規制のスキルの向上は、施設入所者にとって重要であり、また職員自身にとっても重要であることが明らかになった。