

The impact of the lower limit interaction in the social influence on the doctors' operational skills efficiency

Xian-kun Wang^{1,2,3, a} Xiao-Yan Cao^{1,2,4, b, *} Yan Kang^{1,2,4, c}

1 School of Humanities and Management Sciences, Southwest Medical University, Luzhou, Sichuan, 646000

2 Lab for Cognitive Development and Brain Plasticity, Southwest Medical University, Luzhou, Sichuan, 646000

3 Beijing Ditan Hospital Capital Medical University, Beijing 100015

4 Center for Medical Humanities Research, Southwest Medical University, Luzhou, Sichuan, 646000

^a wangxiankun0404@sina.com, ^b caoxy@swmu.edu.cn, ^c kangy@swmu.edu.cn

*Corresponding author

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Abstract. Purpose To explore the impact of the lower limit interaction in the social influence on the doctors' operational skill efficiency. **Methods** Thirty-two standardized-trained-graduates were assigned randomly to two groups: one with operating debridement and the other with dressing care of wood after hip replacement surgery, assessed by orthopedic specialist professor, physician, graduated student separately. In the same way, Thirty-two interns were also assigned randomly to two groups: one with operating dressing care of wood after arthroscopic meniscal repair surgery and the other with dressing care of wood after hip replacement surgery, as well as assessed by orthopedic specialist professor, physician, graduated student separately. **Results** Standardized-trained-graduates from group of operates debridement when at present at orthopedic specialist professor performed worse than when at present of a physician ($p = 0.0014 < 0.05$). Standardized-trained-graduates group who operated debridement performed worse when at present in a physician than that when at present in graduated students ($p < 0.01$). Standardized-trained-graduates group who operated dressing care of wood for hip replacement surgery performed better when at present at orthopedic specialist professor than that when at present at physicians ($p < 0.01$). Intern group which operates dressing care of wood after hip replacement surgery at present at orthopedic specialist professor works worse than that at present of a physician ($p < 0.01$). While at present in a physician, intern group that operated dressing care of wood for hip replacement surgery performed worse than that while at present at graduated students ($p < 0.01$). At the mean time, intern group that operated dressing care of wood after arthroscopic meniscal repair surgery performed better when at present at orthopedic specialist professor, as compared with that when at present in a physician ($p < 0.01$). **Conclusions** Standardized-trained-graduates and interns at the present in the senior doctors as they operate projects, the more difficult to carry out the projects they operate, the poorer performance they will make; the easier to carry out the projects they operate, the better performance they will make. So, we think Lower limit interaction exists on this situation. We can utilize it in the proper time.

1. Introduction

This low-limit interaction includes social support, social inhibition, and depersonalization. Social facilitation refers to the efficiency of an individual's dominant behavior (including correct and wrong behavior) that can be improved when others are present or working with others. Social inhibition refers to the phenomenon that the individual's performance in the group is not evaluated separately, but is regarded as a whole part, and the level of individual effort is reduced. De-individuation, refers to the loss of self-awareness and evaluation when people are in a group situation, the relaxation of restrictions on behavioral norms, and compliance with group norms ^[1].

One of the important mechanisms of social assistance and social inhibition is the theory of internal drive mechanics (referring to the presence of others to stimulate non-directed internal dynamics) ^[2]: pure presence, evaluation of concerns, distractions and concerns, social monitoring. Simple presence means that as long as the presence of others leads to social support, it does not involve the cognitive mediator variables of the participants. The evaluation of anxiety is to consider the subjective cognitive variables, and the subjects will judge whether the bystanders will be involved in the evaluation of their own operations. When it comes to evaluation, whether it is the source of motivation or the potential frustration, it will produce anxiety, which will increase the physiological arousal. This mechanism is particularly evident in anxiety personality. Distraction and anxiety mean that when a bystander is present, the subject will distract a part of the attention. Only when the attention of the observer and the attention intensity of the task are not much different or the former is higher than the latter, attention will be generated. To stimulate internal drive. Social supervision is to express that the bystander is an uncertain factor for the participants. The participants will spend some energy to judge the specific meaning of the bystander's behavior at all times. The more certain the meaning of the bystander's behavior is; the less obvious the social growth effects are.

Many scholars have carried out different explorations in the field of social growth effects. Smith divided the mice into 2 groups. Only 1 mouse from group 1 and 2 mice took cocaine, and the other 1 did not. The other 2 mice consumed cocaine and explored the number of cocaine ingested. A study on the dose-related study of cocaine intake showed that the cocaine intake dose of the two cocaine-injected mice was higher than that of the other cocaine ^[3]. Yoshie et al. explored the relationship between social growth and the high-level center of the human brain. Through f-MRI, it was found that when the evaluator bystander was present, the bilateral parietal cortex activity of the subjects decreased, and the activity of the upper sacral area was strengthened. This may be related to the increase in attention to the bystanders ^[4]. Listernick discovered that the rehabilitation process of a 16-year-old boy's calf found that the presence of his companion accelerated his condition, indicating that social support has a certain social support role ^[5]. When exploring the relationship between food intake and social growth, Herman found that eating together increased when eating alone, but this phenomenon was not statistically significant in children aged 5-6 ^[6-7]. In the time and accuracy of the simple and difficult baggage screening test conducted by X-rays, Yu et al. found that when a bystander was present, the subject's simple task response time was shortened. The response time for trials of complex tasks was prolonged, but there was no difference in accuracy between the two ^[8]. Byron et al. obtained similar results in similar experiments ^[9]. Snyder et al. found in the virtual and actual social growth model that the strength of the participants' self-competition consciousness would adjust the social growth effect [10]. Anderson et al. reached the same conclusion in a similar experiment ^[11]. Garriy, when studying the distraction of attention on the study of various basic psychological phenomena, clearly stated that social support is affected by the concentration of attention and the difficulty of the task ^[12].

Although there have been many excellent studies in the field of social assistance, there is still a lack of social support in the medical field. Today's doctor-patient relationship is very complicated, not only the problem of the patient, but also the problem of the doctor. The medical factors involved the doctor's self-protection awareness, lack of medical ethics, poor treatment techniques, etc. ^[13]. The doctor's skill operation is the basic process in the diagnosis and treatment process, and plays an important role in the doctor-patient relationship. Wang et al. found that factors affecting the efficiency of doctors' skills are: (1) Output variables, that is, services provided by doctors, such as daily outpatient reception;(2) Input variables (medical activity time input, doctor experience input, assistance) Sexual human resources investment, capital investment) ;(3) Individual characteristics of the doctor (gender, education level, department, incentive factors, income level, regional economic development level, medical level), etc. ^[14]. The social welfare has the following conditions: (1) Strong cohesiveness;(2) Strong sense of responsibility among members;(3) The work itself is challenging;(4) Individuals believe that other members work as hard as themselves. Comparing the above conditions, we can find that in terms of output variables, domestic doctors have a large number of consultations and more intractable diseases, and doctors have serious and responsible personality

characteristics to meet the social growth gain conditions 1, 3 and 4. Therefore, we can think that social support exists in the group of doctors and has a significant effect. Considering that social low-level interaction can improve people's enthusiasm and work efficiency, it can explore the impact of social low-limit interaction on doctors' work efficiency. According to the research results, appropriate measures can be given to improve the efficiency of doctors in basic operations such as debridement and dressing change, which will bring positive effects on doctor-patient relationship, and also supplement the vacancies that society encourages in medical field research.

Therefore, the purpose of this study is to explore the role of social growth effects in the efficiency of interns and discipline students' skills, and to propose suggestions for improving the efficiency of their skills.

2. Methods

2.1 The main test and the choice of the subject

The Participants' choice: 32 bone and joint discipline students from the First Affiliated Hospital of Southwest Medical University were selected. The criteria for entry were: Direct entry into the standardized training program after the end of the undergraduate course; Male. 32 interns' entry criteria: first entry into the bone and joint surgery practice; male; surgical surgery scores of 75 or more.

The main choice: choose 2 professors of orthopedics, 2 attending physicians, 3 graduate students.

2.2 Operating environment

Since the dressing change was almost always carried out after the rounds in the morning, the experiment was carried out at that time (except for debridement operations). The dressing care and the dressing care after hip replacement were performed after arthroscopic meniscal dressing. Waiting for cases requiring debridement, the size of the control debridement is similar (open wound, wound size about 10cm, depth 4cm, mild fracture, muscle tendon injury).

2.3 Material

The scoring material is derived from the scoring standard of surgical operation items in the qualification examination for medical practitioners:

2.3.1 Dressing operation evaluation form (questionnaire 1)

The content of this scoring questionnaire evaluation is the completeness and accuracy of the test dressing operation. If the operation of the subject is not carried out or the operation is wrong, the score of the corresponding operation step cannot be obtained. Finally, the scores of each step are counted to obtain the total score. The higher the total score was, the better the dressing operation was completed.

2.3.2 Debridement Operation Evaluation Form (questionnaire 2)

The content of this scoring questionnaire evaluation is the completeness and accuracy of the debridement operation of the subjects, and the scoring standard is the same as before.

2.4 Experiment process

(1) Since there are 8 interns in the bone and joint department every month, in the 8 places, 4 of them are drawn by the researcher by lottery, and the lottery is divided into 2 groups, respectively, for arthroscopic meniscus. Dressing care operation after dressing and dressing care after hip replacement. In addition, there are 6 physicians in the standardized training of the osteoarthritis every month. Therefore, among the 6 patients, 4 of them were drawn by lottery, and the lottery was divided into 2 groups for the dressing care operation after hip replacement. And debridement operations. A total of 32 interns and 32 discipline students were selected.

(2) Inform the graduate students in advance of the experiment, the attending physicians and professors must be strictly scored according to the actual operation.

(3) Before the internship nursing operation of the hip replacement after the intern, the researcher used a lottery to draw a graduate student to watch. The graduate student told the intern to rate his or

her operation and then told him to start the operation. After the final operation is completed, the graduate students will score according to Questionnaire 1. After half an hour of rest, the same interns performed the same second operation. Before the operation, the author selected a doctor to take a side by lot. The attending physician tells the interns to rate their operation and then tell them to start the operation. After the final operation is completed, the attending physician will score according to Questionnaire 1. After 45 minutes of rest, the same interns performed the same third operation. Before the operation, the author selected a professor to watch by lot. The professor told the intern to rate his operation and then told him to start the operation. After the final operation is completed, the professor will score according to Question 1.

(4) Before the internship menstrual dressing surgery, the researcher used the lottery to draw a graduate student to watch. The graduate student told the intern to rate his or her operation and then told him to start the operation. After the final operation is completed, the graduate students will score according to Questionnaire 1. After half an hour of rest, the same interns performed the same second operation. Before the operation, the author selected a doctor to take a side by lot. The attending physician tells the interns to rate their operation and then tell them to start the operation. After the final operation is completed, the attending physician will score according to Questionnaire 1. After 45 minutes of rest, the same interns performed the same third operation. Before the operation, the author selected a professor to watch by lot. The professor told the intern to rate his operation and then told him to start the operation. After the final operation is completed, the professor will score according to Question 1.

(5) Before the patient's dressing care operation after hip replacement, the researchers used a lottery to draw a graduate student to watch. The graduate student told the ruler to rate his operation and then tell him to start the operation. After the final operation is completed, the graduate students will score according to Questionnaire 1. After half an hour of rest, the same disciplined student performed the same second operation. Before the operation, the author selected a doctor to take a spectator by drawing lots. The attending physician tells the interns to rate their operation and then tell them to start the operation. After the final operation is completed, the attending physician will score according to Questionnaire 1. After 45 minutes of rest, the same disciplined student performed the same third operation. Before the operation, the author selected a professor to watch by means of drawing. The professor told the intern to rate his operation and then told him to start the operation. After the final operation is completed, the professor will score according to Question 1.

(6) Before the discipline students practice debridement, the researcher draws a graduate student to sit on the side by lot. The graduate student told the ruler to rate his operation and then tell him to start the operation. After the final operation is completed, the graduate students will score according to Question 2. After half an hour of rest, the same disciplined student performed the same second operation. Before the operation, the author selected a doctor to take a spectator by drawing lots. The attending physician tells the interns to rate their operation and then tell them to start the operation. After the final operation is completed, the attending physician will score according to Questionnaire 2. After 45 minutes of rest, the third operation of the same discipline, before the operation, the author used a lottery to draw a professor to watch. The professor told the intern to rate his operation and then told him to start the operation. After the final operation is completed, the professor will score according to Question 2.

2.5 Analytical method

A t-test of paired design data was performed using SPSS20.0.

3. Results

(1) The t-test analysis results of the score-matching design data of the debridement operation professor and the attending physician of Pei Peisheng are shown in Table 1:

Table 1. Pediatric debridement operation scores

Items	Mean	SD	<i>t</i>	<i>p</i>
Professor score	61.50	11.95		
Attending physician score	69.12	8.19	-2.784	0.014

Findings in table1 suggested that the debridement operation of the disciplined students is different in the presence of the professor and the attending physician, with the debridement operation of the discipline performing worse when the professor was present than the attending physician performing.

(2) The results of the t-test analysis of the score-matching design data of the graduate students and attending physicians of the disciplined students are shown in Table 2:

Table 2. Pediatric debridement operation scores

Items	Mean	SD	<i>t</i>	<i>p</i>
Postgraduate score	81.50	9.30		
Attending physician score	69.12	8.19	6.710	0.000

According to Table2, we can find that the debridement operation of the discipline is better in the presence of the graduate student than in the chance of the attending physician.

(3) The results of t-test analysis of the design data of the nursing operation and the attending physician's score matching design after hip joint replacement are shown in Table 3:

Table 3. Dressing care operation after scaling hip replacement

Items	Mean	SD	<i>t</i>	<i>p</i>
Professor score	86.44	4.47		
Attending physician score	78.81	6.55	5.263	0.000

It can be considered that the dressing operation after the hip joint replacement is better when the professor is present than the operation when the attending physician is present (see table3).

(4) The results of t-test analysis of the graduated and attending physicians' scores of the design data of the postoperative nursing operation after the hip joint replacement are shown in Table 4:

Table 4. Dressing care operation after scaling hip replacement

Items	Mean	SD	<i>t</i>	<i>p</i>
Postgraduate score	77.50	6.61		
Attending physician score	78.81	6.55	-0.953	0.356

From table4, there is no statistical significance between the postoperative nursing operation of hip replacement after the regulation of the students in the presence of the graduate students and the perform under the attending physician.

(5) The results of the t-test analysis of the design data of the nursing operation and the attending physician's score matching design after the hip joint replacement of the intern are shown in Table 5:

Table 5. Dressing care operation after intern hip replacement

Items	Mean	SD	<i>t</i>	<i>p</i>
Professor score	64.38	10.59		
Attending physician score	72.56	8.73	-6.957	0.000

Significantly, the postoperative nursing operation of the hip replacement after interns is different in the presence of the professor and the attending physician, indicates that the intern's dressing operation after hip replacement is worse when the professor is present than the attending physician (Table5).

(6) The results of the t-test analysis of the internship's postoperative nursing operation postgraduate and attending physician score pairing design data are shown in Table 6:

Table 6. Dressing care operation after intern hip replacement

Items	Mean	SD	<i>t</i>	<i>p</i>
Postgraduate score	81.00	7.01		
Attending physician score	72.56	8.73	6.63	0.000

According to Table6, we can consider that the postoperative nursing operation of the hip replacement after interns is different in the presence of the graduate student and the attending physician. According to the average score, it can be concluded that the dressing operation of the intern after hip replacement is better when the graduate is present than when the attending physician is present.

(7) The t-test analysis results of the intern's arthroscopic meniscal dressing after the dressing nursing operation professor and the attending physician score matching design data are shown in Table 7:

Table 7. Dressing care operation after arthroscopic meniscus dressing

Items	Mean	SD	<i>t</i>	<i>p</i>
Professor score	83.50	6.08		
Attending physician score	79.31	6.35	9.134	0.000

The intern's arthroplasty after the arthroscopic meniscus dressing operation is different in the presence of the professor and the attending physician (See Table7). According to the average score, it can be concluded that the intern's dressing operation after hip replacement is worse when the professor is present than the attending physician.

(8) The t-test analysis results of the intern's arthroscopic meniscal dressing after the dressing nursing operation operation postgraduate student and attending physician score matching design data are shown in Table 8:

Table 8. Dressing care operation after arthroscopic meniscus dressing

Items	Mean	SD	<i>t</i>	<i>p</i>
Postgraduate score	78.00	7.73		
Attending physician score	79.31	6.83	-1.892	0.078

As findings shown in Table8, the intern's arthroscopic meniscus dressing after the dressing care operation in the presence of the postgraduate and the attending physician in the performance difference.

(9) Subject error analysis

Nearly 100% of the wrong operations occurred on the preparation of the supplies, and the remaining errors were evenly distributed.

4. Discussion

4.1 Results and analysis of corresponding mechanisms

The results of this study found that, whether it is an intern or a student, the general rule is that when a doctor with a higher professional title is watching a project that is relatively difficult to operate, the performance is less than ideal; and vice versa. This finding is consistent with the basic law of social support in the theory of low-limit interaction—the enhancement of the superior behavioral efficiency brought about by the presence of others or activities with others. Because of the presence of onlookers and the evaluation of the operation of the subjects, the participants will develop evaluation anxiety, followed by physiological awakening, which includes both the awakening of psychological processes (cognition, emotion, will, etc.), including Physiologically arousal of autonomic nerves (excitement, sweating, etc.), which will enhance the superior behavior of the subjects. This dominant behavior includes the behaviors that the subjects are good at and the behaviors that are not good at them. Good at the increase in project errors.

Chabaud et al. studied the memory of *Drosophila* and found that the theory of low-limit interaction has no obvious effect on the long-term memory retention of *Drosophila*, even less than that of *Drosophila* alone, but in short-term memory (ARM), low Limited interaction can significantly improve the short-term memory of *Drosophila* ^[15]. Therefore, we speculated that in this study, when the subjects were operating, their short-term memory was improved, so the skill operation was more convenient, resulting in an increase in efficiency, but whether the mechanism is applicable to humans remains to be further studied.

It is worth noting that, in the results of this study, there is no statistical difference in the performance of the intern or the graduate student when they are on the sidelines of the operation of the easier project. There are four possible reasons for speculation. Points: First, the attending physicians and graduate students present the attention of the subjects on the easier-to-operate projects. The attention paid is less than the attention required for the operation. It does not cause attention conflicts. There is no difference in the degree of internal drive enhancement. It is not enough; the second is that because the subjects are relatively tired after carrying out more projects, the degree of physiological awakening is not enough; the third is that the subjects have adapted to the experimental environment and links, resulting in no difference in experimental results. The incidence of errors in the preparation of supplies was abnormally high. Considering that the experiment was sudden, the subjects were overstressed and prone to errors. Fourth, the sample content is relatively low, and does not reflect the difference that should be.

4.2 Insufficient and prospect of this study

Because this study is only a preliminary description of some phenomenology, it can continue to deepen in future research, further explore the physiological reactions and psychological internal processes throughout the experimental process, and explore whether there is excessive stress in patients and verify the subjects. The case where the error rate is high in item preparation. Due to the small limitation of the sample size, the overall effect of this effect may not be reflected, and the sample content may be appropriately increased in future studies. This study, because of the limitations of the fit of the subjects, does not involve gender differences, can involve gender in future research, and further explore the dual impact of gender-assisted and social-assisted on the efficiency of physicians. In the context of social support, we can further study the corresponding conditions in the future, such as the measurement of the personality of the doctor, and then the analysis of the skills of the doctor; and the relationship between the amount of outpatients and the social support of doctors.

In practical applications, we can try to make the higher-level personnel sit on the sidelines when the doctors operate simple projects. When doing complex projects, try to choose a lower professional title to watch. However, in actual work, the situation is different. Usually, the higher-ranking personnel guide the doctors on the more difficult and dangerous operation of the doctor. Therefore, in further research in the future, we can also discuss the doctors under the supervision of professors.

Strengthen training, can overcome this kind of effect, increase the familiarity of skills, and also improve the psychological quality, better face and serve patients.
process.

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