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The Impact of Ego Depletion on Practical Skills Among University Students and Psychological Intervention Strategies

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Abstract: With increasing pressures in modern society, college students face significant challenges to their self-control resources, leading to widespread ego depletion. Ego depletion refers to the consumption of psychological resources following prolonged and intense self-control tasks, which in turn affects the performance of subsequent tasks. This study aims to explore the current status of ego depletion among college students, its influencing factors, and its impact on practical skills, while evaluating effective psychological intervention strategies. Through a survey of 492 students majoring in Early Childhood Care and Education from a vocational college in Weifang City, Shandong Province, the study finds that the overall ego depletion score of college students (3.02±1.471) is at a moderately low level, with no significant impact of gender, grade, only-child status, or place of origin on ego depletion ($P > 0.05$). Further analysis indicates that ego depletion negatively affects students' practical skills, primarily resulting in decreased execution efficiency and unstable behavior. To address ego depletion, this paper proposes a series of psychological intervention strategies, including scientific time management, mindfulness meditation, positive emotion cultivation, regular lifestyle habits, and seeking social support. These strategies can help improve college students' self-control abilities, enhance their academic and practical performance, and promote psychological well-being.

Keywords: Ego depletion, Practical skills, Psychological intervention

Introduction:

Self-control is one of the key factors for college students to achieve success in their academic, social, and personal lives. In recent years, with the advancement of psychological research, the theory of limited resources for self-control has gained widespread attention. This theory posits that self-control is a limited psychological resource, and when this finite resource is depleted, it results in a phenomenon known as ego depletion [1]. The concept of ego depletion highlights the crucial role of psychological energy in self-control and points out that the consumption of this energy can lead to decreased efficiency in subsequent tasks.

In the modern higher education system, college students face pressure from various sources, including academic demands, exams, and social interactions. If these multiple pressures are not effectively managed, they may lead to ego depletion, which can impact students' self-regulation abilities, resulting in decreased academic performance, hindering the development of professional practical skills, and even worsening mental health.

Practical skills are a crucial foundation for success in students' future careers. Stuart & Dahm (1999) reported that modern workplaces require employees to possess not only theoretical knowledge but also practical skills and problem-solving abilities. However, ego depletion can negatively impact students' academic performance and mental health, and it may also affect their practical skills. Prolonged depletion of self-control resources can lead to decreased attention, increased impulsive behavior, and impaired decision-making abilities, all of which can hinder students' performance in internships and other practical activities.

In recent years, as psychological research has deepened, ego depletion has become an important research area, especially within the college student population, offering significant theoretical and practical value. Therefore, this paper aims to provide an in-depth study of the phenomenon of ego depletion among college students, reveal its causes and impacts, and explore the effects of ego depletion on students' practical skill development. Ultimately, it proposes corresponding psychological intervention strategies to help students better manage their self-control resources and enhance their practical skills.

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Literature Review

Ego depletion, as a phenomenon where individuals experience resource depletion after prolonged high-intensity tasks, has become a significant research topic in psychology. Previous studies on ego depletion have mainly employed two perspectives: the total resource perspective and the dual-system processing perspective.

From the total resource perspective, ego depletion occurs when individuals experience decreased performance in subsequent tasks due to the insufficient self-control resources or psychological energy available, or a tendency to conserve remaining resources (Tan Shuhua et al., 2012) [2]. Research has found that individuals with high trait self-control possess more self-control resources and thus show less performance decline after experiencing ego depletion, while those with low self-control levels are more susceptible to the negative effects of ego depletion (Schöndube et al., 2017) [3]. Dvorak and Simons (2009) investigated the moderating role of different types of self-control on resource depletion, finding that proactive self-control (e.g., active coping strategies) and passive self-control (e.g., temptation avoidance) have different effects on self-control resource depletion. Proactive self-control tends to lead to greater resource depletion, whereas passive self-control results in lower depletion levels [4].

Vohs and Heatherton (2000) proposed the resource depletion model of self-regulation failure, which suggests that limited resources consumed during self-control processes lead to failures in self-regulation in subsequent tasks. Experiments have validated this theory, revealing that resource depletion results in increased impulsive behavior and reduced self-control abilities in subsequent tasks [5].

From the dual-system processing perspective, ego depletion leads to a lack of self-control resources, which weakens the control system's processing capacity and enhances the influence of the automatic system. Consequently, individuals face difficulties in rational judgment, goal setting, behavior planning, and inhibiting automatic responses, leading to a range of negative behaviors (Pan Ailing et al., 2017) [6]. This theory also applies to the development of practical skills. Mastery of practical skills often requires high levels of focus and good self-regulation abilities, and ego depletion can lead to poor performance, errors, and inefficient behaviors in practical activities such as laboratory operations and internships.

Ego depletion has broad and profound effects on individual behavior and psychological state. Baumeister et al. (1998) suggested that prior deliberate actions might deplete self-resources, leading to reduced willingness or ability to perform subsequent tasks, and potentially resulting in irrational or unethical behavior, known as the "depletion aftereffects."

Research indicates that ego depletion significantly affects individuals' time perception and working memory (Vohs & Schmeichel, 2003; Liu Hong et al., 2020) [7][8], and leads to decreased attention (Qi Xiaodong, Zhang Dajun, 2015) [9]. Emotionally, Muraven and Baumeister (2000) found that ego depletion makes individuals more prone to anxiety, depression, and irritability, which undermines emotional stability and social interaction capabilities [10]. This emotional instability further diminishes performance in challenging situations, characterized by distracted attention, increased error rates, and reduced work efficiency. Resource depletion also limits individuals' ability to suppress impulsive and aggressive behaviors (DeWall & Anderson, 2011) [11], leading to increased aggression and impatience in social situations, and affecting the quality of interpersonal relationships.

Moreover, ego depletion is closely related to a reduction in healthy behaviors. In a state of ego depletion, individuals are more likely to choose unhealthy foods, reduce physical activity, and potentially increase smoking and alcohol consumption. Tice et al. (2007) noted that depletion of self-control resources makes individuals more prone to impulsive decisions, such as binge eating or excessive shopping, which not only harms physical health but also may lead to financial problems and social dilemmas [12].

Long-term ego depletion can also increase the risk of mental health issues, potentially leading to anxiety, depression, and other psychological disorders. These issues not only impact academic and life quality but also have negative effects on future career development and social adaptation.

Practical skills refer to abilities acquired through hands-on experience and include not only technical skills but also interpersonal, communication, and problem-solving skills. In the current educational context, developing practical skills is considered crucial for enhancing employability and meeting societal demands. Yorio and Ye (2012) found that graduates with strong practical skills are more competitive in the job market, with higher career satisfaction and success rates compared to their peers [13]. Furthermore, Heckman (2006) showed that employers prefer candidates with rich practical experience and strong practical skills, which are often seen as important indicators of professional competence [14].

Given the extensive and profound impact of ego depletion on college students' practical skills and mental health, understanding the current state of ego depletion and its effects, and implementing effective psychological interventions, are essential for improving students' overall health, academic performance, and practical skills.

Investigation on the Current State of Ego depletion

1. Materials and Methods

1.1 General Information

In July 2024, a random sampling method was used to conduct an electronic questionnaire survey of 492 first- and

second-year students majoring in Early Childhood Care and Education Services at a vocational college in Weifang, Shandong Province. All questionnaires were valid, with a response rate of 100%. Among the respondents, 27 were male (5.5%) and 465 were female (94.5%).

The specific information is shown in the table below:

Table 1: Demographic Information (N=492)

Demographic Information			Percentage
Gender	Male	27	5.5%
	Female	465	94.5%
Grade	Freshman	245	49.8%
	Sophomore	247	50.2%
Only Child	Yes	61	12.4%
	No	431	87.6%
Place of Origin	Urban	106	21.5%
	Rural	386	78.5%

1.2 Survey Method

To investigate the current status of ego depletion among college students, this study employed a combination of questionnaire surveys and interviews for data collection. Firstly, electronic questionnaires were distributed via the Wenjuanxing app, with participants invited to scan a QR code to complete the survey. The questionnaire included demographic information and a ego depletion scale to comprehensively assess their level of ego depletion. Secondly, interviews were conducted with students at different levels of ego depletion to gain in-depth insights into their self-assessment of professional practice skills. This mixed-method approach provides a more accurate understanding of the impact of ego depletion on college students' professional practice skills.

1.3 Survey Tool

1.3.1 Ego depletion Scale

The study used a shortened version of the ego depletion scale developed by Lanaj, Johnson, and Barnes (2014), which consists of 5 items. The Chinese version was revised by Zhang Xuan et al. (2017). The scale employs a 7-point Likert scale, where 1 = Strongly Disagree and 7 = Strongly Agree. Higher average scores on this scale indicate more severe ego depletion. The Chinese version of the scale demonstrated good reliability, with a Cronbach's α of 0.94 in this study.

1.3.2 Interview Guide for Practice Skills

Part 1: Self-Evaluation of Practice Skills

"How do you evaluate your performance in practical activities?", "What do you think are the reasons for your outstanding performance in practical activities?", "If your performance in practical activities did not meet your expectations, what do you believe are the main reasons?", "Have you ever felt that ego depletion made you feel incapable, thereby affecting your performance in practice?"。

Part 2: Impact of Ego depletion on Practice Skills

"What specific impacts do you think ego depletion has on your practice skills?", "In cases of severe ego depletion, do you avoid participating in certain practical activities? If so, what are the reasons?", "Does ego depletion affect your teamwork ability?", "How do you view the impact of long-term ego depletion on your future professional development? Does it affect your future career planning?"

1.4 Statistical Methods

Data analysis for the ego depletion survey was conducted using SPSS 27.0 software. Initially, descriptive statistics such as mean and standard deviation were calculated to summarize the overall ego depletion levels of the sample. Subsequently, independent samples t-tests were performed to compare the mean ego depletion scores between different groups, assessing whether the group differences were statistically significant, with the significance level set at $P<0.05$.

In the analysis of practice skills interviews, content analysis was used to gain an in-depth understanding of students' views, attitudes, and emotional expressions under the context of ego depletion. By identifying and analyzing frequently occurring keywords and phrases in the interviews, major themes and patterns were summarized to reveal the potential impacts of ego depletion on students' practice skills.

2. Survey Results

2.1 Ego depletion Survey Results

The results showed that the overall score of ego depletion among college students was (3.02±1.471), which was at a moderately low level (Table 1). The results of the independent sample t-test showed that there were no statistically significant differences in ego depletion scores across the variables of gender, grade, whether the respondent was an only child, and place of origin (P > 0.05) (Table 2).

Table 2: Descriptive Statistics of Ego depletion (N=492)

	N	M	SD
Ego depletion	492	3.02	1.471

Table 3: Mean and Standard Deviation of Ego depletion Across Different Demographic Variables

Variable		M	SD	*P*
Gender	Male	3.02	1.315	0.256
	Female	3.02	1.481	
Grade	Freshman	3.05	1.514	0.335
	Sophomore	2.99	1.430	
Only Child	Yes	3.04	1.384	0.157
	No	3.01	1.485	
Place of Origin	Urban	2.91	1.600	0.202
	Rural	3.05	1.435	

2.2 The Impact of Ego Depletion on Practical Skills

In terms of self-evaluation of practical skills, students in the high ego depletion group generally rated their performance in practical activities lower than expected. They often reported feelings of fatigue and lack of energy during activities, which directly affected their performance. On the other hand, students in the low ego depletion group rated their performance more favorably, believing that they were able to complete practical tasks effectively. The high ego depletion group acknowledged that ego depletion made them feel overwhelmed during practical activities, leading to poor performance. They indicated in interviews that ego depletion impacted their physical and psychological state, making it difficult for them to focus on practical tasks.

Regarding the impact of ego depletion on practical skills, students in the high ego depletion group reported that ego depletion led to decreased attention, reduced work efficiency, and impaired decision-making and creativity in practical activities. In contrast, students in the low ego depletion group felt that the impact of ego depletion on their performance was minimal and that they were able to handle challenges in their work more effectively.

3. Result Analysis

The overall score for ego depletion among university students was 3.02 ± 1.471, indicating that their ego depletion level is somewhat below average (Table 1). This result is consistent with previous research, which typically finds ego depletion to fluctuate around a moderate level (Muraven & Baumeister, 2000). This suggests that while university students may experience some degree of resource depletion, their overall self-control resources remain within a manageable range.

The effects of gender, academic year, only-child status, and place of origin on ego depletion were not statistically significant.

The results of the independent samples t-test showed no statistically significant difference in ego depletion scores based on gender (p > 0.05). This indicates that gender may have little impact on ego depletion (Tice et al., 2007). This result suggests that, whether male or female, university students do not show significant differences in their ego depletion levels, likely due to similar pressures and challenges faced by individuals in this group.

Although some studies suggest that the pressure faced by students might increase with higher academic years, affecting ego depletion (Vohs & Heatherton, 2000), this study did not find significant differences between academic years. This may be due to the relatively similar types and intensities of pressure faced by students across different academic years.

The difference in ego depletion scores based on only-child status was also not statistically significant (p > 0.05). This contrasts with the findings of Galla and Duckworth (2015), who found that family background might influence

psychological resources. However, the data in this study did not support this, possibly because the psychological resource differences between only-children and non-only-children were not significant in the sample, or other factors may have masked this effect.

The impact of place of origin on ego depletion scores was also not statistically significant ($p > 0.05$). While some research suggests that urban-rural differences may affect individual psychology and behavior (Brown & Johnson, 2019), this study did not find a significant impact of place of origin on ego depletion. This may indicate that, after entering university, the influence of place of origin diminishes, or the effects of urban-rural differences are overshadowed by other factors in university life.

Based on the interview results, students in the high ego depletion group had significantly lower self-evaluations of their practical skills compared to those in the low ego depletion group. The high ego depletion group primarily attributed their poor performance to a combination of mental and physical exhaustion, as well as decreased attention, which they believed hindered their ability to maintain efficiency in practical activities. In contrast, students in the low ego depletion group attributed their good performance to effective time management, a positive mental state, and strong self-control abilities, with any underperformance usually attributed to external factors such as insufficient resources or task difficulty.

Regarding the impact of ego depletion on practical skills, students in the high ego depletion group commonly felt that ego depletion reduced their attention, leading to decreased learning efficiency and impaired decision-making and creativity. They tended to avoid practical activities that required high levels of focus and long-term commitment, fearing that poor performance could negatively affect team outcomes. Conversely, students in the low ego depletion group remained actively engaged in practical activities even under conditions of ego depletion, maintaining good performance through appropriate rest and adjustment.

4. Psychological Intervention Strategies

In response to the current state of ego depletion among university students and its impact on practical skills, the following psychological intervention strategies are proposed to help students better manage their self-control resources and improve their practical skills.

Firstly, it is crucial to manage time and tasks effectively to avoid prolonged high-intensity self-control tasks. Smith (2020) highlights that scientific time management and task allocation can effectively reduce the consumption of self-control resources, enhancing learning efficiency and quality of life. University students can optimize their learning and practical efficiency by setting priorities, breaking tasks into stages, and avoiding procrastination. Setting clear goals and breaking tasks down can help students organize their practical training more systematically and reduce stress and anxiety caused by task backlog.

Secondly, mindfulness meditation and emotion regulation training can help students enhance psychological resilience, maintain stable emotional states, and mitigate the negative impact of ego depletion on practical skills. High psychological resilience aids in better handling stress and challenges, and psychological counseling and self-regulation training can effectively improve resilience (Muraven & Baumeister, 2000).

Positive emotions also play a crucial role in restoring and enhancing self-control resources. Tice et al. (2007) found that positive emotions help restore self-control resources and improve performance in subsequent activities. It is recommended that students engage in enjoyable activities and cultivate hobbies to maintain positive emotions, thereby enhancing self-control abilities and practical skills (Fredrickson, 2001).

Regular lifestyle habits are also essential for restoring self-control resources. Healthy eating and moderate exercise contribute to maintaining and replenishing self-control resources. Muraven and Baumeister (2000) note that insufficient sleep accelerates the depletion of self-control resources; thus, students should ensure adequate sleep, avoid staying up late, and maintain good lifestyle habits[15]. Regular routines and healthy eating habits can help students sustain efficient learning and living conditions, preventing psychological resource depletion due to physical fatigue. Galla and Duckworth (2015) also emphasize the importance of good lifestyle habits in academic and career success (Galla & Duckworth, 2015) [16].

Social and self-support play crucial roles in mitigating self-control resource depletion. Seeking support from family, friends, and peers can enhance psychological resilience and alleviate stress and anxiety (Cohen & Wills, 1985). Students should actively participate in campus activities and build a strong social network to gain emotional support and practical help. Muraven et al. (2008) found that high levels of self-support can reduce feelings of ego depletion and improve self-control abilities. Enhancing a sense of self-support can effectively mitigate self-control resource depletion and improve practical skills performance.

These strategies integrate time management, emotion regulation, healthy lifestyle habits, social support, and self-support to help students effectively manage self-control resources, thereby improving practical skills and overall psychological health.

5. Conclusion

This paper explored the current state of ego depletion among university students and its impact on practical skill

development, proposing corresponding psychological intervention strategies. The study found that ego depletion not only negatively affects academic performance and mental health but also significantly impacts practical skill levels. To alleviate the impact of ego depletion on practical skills, it is recommended to adopt strategies such as effective time management, mindfulness meditation, positive emotion intervention, and maintaining a healthy lifestyle. These strategies can help students better cope with challenges, enhance their practical skills, and improve their future career development abilities.

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