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PROFESSIONAL EDUCATION & TRAINING | RESEARCH ARTICLE

Approaches to studying: Associations with learning conceptions and preferences for teaching

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Abstract: Background: Research into occupational therapy students' approaches to studying is growing, and research has shown approaches to studying to be associated with academic performance. However, learning conceptions and preferences for teaching among occupational therapy students have rarely been reported, and their relationships to study approaches need to be empirically investigated.

Aim: This study aimed to investigate the sociodemographic and education-related factors associated with approaches to studying among occupational therapy students in Norway.

Methods: Occupational therapy students ($n = 149$) from one education program in Norway completed questionnaires related to approaches to studying, learning conception, preferences for teaching, and sociodemographic factors. Hierarchical linear regression analyses were used to examine the independent variables' associations with approaches to studying.

Results: Higher age was associated with higher deep approach scores and lower surface approach scores, whereas being female was associated with higher surface approach scores. Higher scores on learning conception was associated with higher scores on the deep and the strategic approaches. Higher scores on supporting understanding was associated with higher scores on the deep and strategic approaches, whereas higher scores on transmitting information was associated with higher scores on the surface approach.

ABOUT THE AUTHORS

The authors have utilized data from an international research study investigating “approaches to studying” and other aspects related to learning among undergraduate occupational therapy students. They are presently involved in a research project which will expand from the present study in several ways. First, a longitudinal research design is employed, such that the students' development in study approaches will be analyzed across their three years of studying. Second, the impact of the perceived learning environment on the students' approaches to studying will be examined. Third, the participants are recruited from several universities, thus allowing a comparative analysis of different occupational therapy education programs in Norway.

PUBLIC INTEREST STATEMENT

Using theory concerned with students' “approaches to studying” as the point of departure, this study found that a broader view of learning was associated with more of the deep and strategic approaches to studying. A stronger preference for teachers to “support understanding” was associated with favorable study approaches, whereas a stronger preference for teachers to “transmit information” was associated with a less favorable study approach. The study indicates that study approaches appear within context. They are related to the way—broader or narrower—by which the student conceives learning and to the student's expectations toward teaching. As a result, teachers in higher education should not just focus on the content of their course, but just as much on how they can assist the students to engage with the content, and how they can support the students' understanding.

Conclusions: This study provides increased understanding of the associations between students' learning conceptions, preferences for teaching, and approaches to studying. The results contribute to educators' knowledge base from which they can adapt their way of teaching according to student group characteristics.

Subjects: Adult Education and Lifelong Learning; Educational Research; Education Studies; Study of Higher Education; Teaching & Learning; Research Methods in Education; Theories of Learning; Study Skills; Theory of Education; Allied Health

Keywords: approaches to studying; higher education; learning conception; preferences for teaching; occupational therapy; students

1. Introduction

During the last decades, many researchers have studied the processes and strategies of students' learning (Brandsford, Brown, & Cocking, 2000; Hattie & Yates, 2014). Such studies have included explorations into how educators may facilitate students' learning by assisting their adoption of a productive approach to studying. Approaches to studying refer to the students' general orientation toward learning in academic situations (Richardson, 2013). Previous research has identified three different approaches to studying. These are the deep, strategic, and surface approaches, and the three approaches have been well established across a range of settings and academic fields (Byrne, Flood, & Willis, 2004; Diseth & Martinsen, 2003; Entwistle, Tait, & McCune, 2000; Kreber, 2003). The deep approach is described as studying with the purpose of finding meaning in, and increasing one's understanding of, the topic in question. The strategic approach is described as oriented toward competition and achievement, and learning is therefore viewed as instrumental to achieving good grades. Lastly, the surface approach is described as studying with the aim of passing exams while making little true effort (Entwistle et al., 2000). However, the three approaches to studying are not mutually exclusive—students often use a combination of attitudes and behaviors related to each of them (Entwistle, 2007).

Several studies have found significant relationships between study approaches and academic outcomes. For example, Ward's studies of medical students found that students with higher scores on the deep and, in particular, the strategic scales obtained better exam results, compared to students who had higher scores on the surface approach (Ward, 2011a, 2011b). In a similar yet more detailed vein, Bonsaksen and coworkers used the study approach subscales as predictors of occupational therapy students' exam results (Bonsaksen, Brown, Lim, & Fong, 2017). They found higher scores on the study approach subscales "seeking meaning", "lack of purpose", and "achieving", and lower scores on the subscales "time management" and "fear of failure", to be significantly associated with better academic performance.

However, academic outcomes are not the only outcomes of interest. Among health professionals, in particular, clinical skills performance is equally important, and such performance has also been found to be associated with study approaches. For example, May and coworkers found that high performing students were significantly higher on the deep approach compared to their low performing counterparts (May, Chung, Elliot, & Fisher, 2012). Conversely, low performing students were significantly higher on the surface approach compared to their high performing peers.

Study approaches among higher education students have also been found to be associated with the students' perceptions of the learning environment (Diseth, 2007; Diseth, Pallesen, Brunborg, & Larsen, 2010; Lizzio, Wilson, & Simons, 2002; Sun & Richardson, 2016). Thus, evidence suggests that the learning environment influences individual students' study behaviors, which in turn may influence study outcomes. However, Richardson (2011) argued that a substantial variance proportion of the students' study approaches is still not accounted for, even after having variations in their perceptions of their academic context statistically

controlled. According to Richardson (2011), one possibility is that study approaches also depend on the way students conceive learning. The student who conceives “learning” to be about remembering pieces of information would logically select other methods of studying, compared to the student who conceives “learning” to be about personal transformation and development. However, as students are rarely prototypes, a combination of different conceptions of learning should be expected. Students’ preferences for different types of courses and teaching are also of interest in relationship to study approaches. Recent studies have shown that a productive (deep and/or strategic) study approach, and a preference for teaching oriented toward supporting understanding (as opposed to teaching transmitting information), is largely associated with the same set of individual student characteristics: higher age, more independent study efforts, and higher general self-efficacy (Bonsaksen, 2018; Bonsaksen, Sadeghi, & Thørrisen, 2017).

The similar pattern of associations indicates that study approaches, learning conceptions, and preferences for teaching may be logically interrelated. On the one hand, deep and strategic study approaches, a conception of learning as personal development, and a preference for teaching oriented toward supporting understanding may be intrinsically related. On the other hand, a surface study approach, a conception of learning as being able to reproduce facts and information, and a preference for teaching oriented toward the transmission of information may be related. However, as suggested by Richardson (2011), these associations are tentative and need to be explored further in empirical studies carried out in various educational contexts. To date, we have not found any studies investigating the relationships between students’ learning conceptions, preferences for teaching, and approaches to studying.

2. Aim of the study

This study examined the associations between occupational therapy students’ age, gender, learning conceptions, preferences for teaching, and approaches to studying. The proposed model of associations is displayed in Figure 1.

3. Method

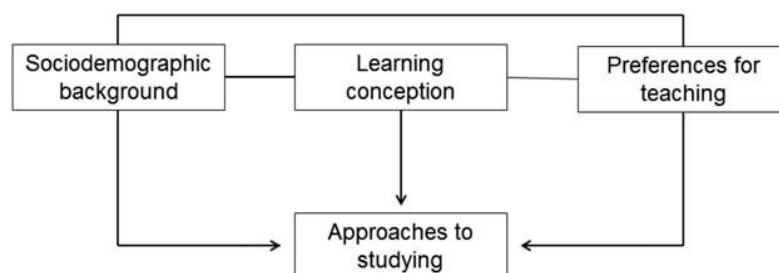
3.1. Design and data collection

The study is related to a larger cross-cultural survey of learning and studying among occupational therapy students in Australia, Hong Kong, Singapore, and Norway (Brown et al., 2016). In this sub-study, data from Norway only were used. A cross-sectional survey design was employed, and the data were collected by self-report questionnaires in January 2015.

3.2. Recruitment and participants

A convenience sample was recruited among undergraduate occupational therapy students enrolled at one Norwegian university. All students in the occupational therapy program were eligible for participation, and they were informed about the study and its procedures in writing and verbally prior to recruitment. The questionnaires were distributed to the students during session breaks in the classrooms, and the students could opt to complete the questionnaires then, or at a time and place of their

Figure 1. Theoretical model showing the proposed associations between the variable groups.



own convenience during the same week. Completed questionnaires were returned to the researchers in sealed envelopes. Those who opted to participate in the study returned a written consent along with the questionnaire responses.

The mean age of the sample was 23.7 years, and 20.1% of the participants were male. There were 51 students (34.2%) enrolled in the first study year, 49 students (32.9%) in the second year, and 49 students (32.9%) in the third year. In the total sample, 65 students (43.6%) had experience from higher education prior to enrolment in the occupational therapy study program.

3.3. Measures

3.3.1. Background variables

This information included age (in years), gender (0 = male, 1 = female), in addition to study cohort (1 = first year, 2 = second year, 3 = third year), and higher education experience prior to enrolment in the occupational therapy education program (0 = no, 1 = yes).

3.3.2. Study approaches

Approaches to studying, conceptions of learning, and preferences for teaching were assessed with the *Approaches and Study Skills Inventory for Students* (ASSIST; Tait, Entwistle, & McCune, 1998). The ASSIST comes in three parts. The first part, assessing conceptions of learning, consists of six statements to which the respondent rates his or her level of agreement on a 1–5 scale (1 means the statement content is “very different” from the student’s own thinking, and 5 means it is “very close” to the student’s thinking). Originally, conceptions of learning were considered to be of two different kinds (Entwistle, 1998; Tait et al., 1998): learning conceived as a process of reproducing factual information and as a process of constructing personal understanding and meaning. However, a recent study investigating the measurement properties of this section concluded that the six items might preferably be used as a unidimensional scale, with all six items reflecting different aspects of one higher-order concept of learning (Bonsaksen & Thørrisen, 2017). Factor loadings for the one-factor measure, which was used in this study, ranged between 0.42 and 0.76, and internal consistency of the scale items was $\alpha = 0.70$.

The second and most widely used section of the ASSIST, the approaches to studying, consists of 52 items expressing a variety of study behaviors. The behaviors are thought to reflect three main approaches to studying: the *deep*, *strategic*, and *surface* approaches, each of which was made up from four to five subscales (Tait et al., 1998). Sample items are “When I am reading I stop from time to time to reflect on what I am trying to learn from it” (*deep* approach); “I put a lot of effort into studying because I’m determined to do well” (*strategic* approach); and “Often I find myself wondering whether the work I am doing here is really worthwhile” (*surface* approach). This section of the instrument has been thoroughly scrutinized in terms of measurement properties, and the three main scales (*deep*, *strategic*, and *surface* approaches to studying) have been well established across a range of settings and academic fields (Byrne et al., 2004; Diseth & Martinsen, 2003; Entwistle et al., 2000; Kreber, 2003). High factor loadings have been found in the high range for each of the main scales: *deep* approach (16 items, 4 subscales) = 0.64–0.84, *strategic* approach (20 items, 5 subscales) = 0.53–0.84, and *surface* approach (16 items, 4 subscales) = 0.56–0.82 (Bonsaksen et al., in press). Similarly, estimates of internal consistency between scale items have been high: *deep* approach $\alpha = 0.81$, *strategic* approach $\alpha = 0.80$, and *surface* approach $\alpha = 0.77$ (Bonsaksen, Thørrisen, & Sadeghi, 2017). Higher scores on each of the scales indicate higher levels of the measured construct.

The third section of the ASSIST, consisting of eight statements assessing preferences for courses and teaching, was also recently psychometrically investigated (Bonsaksen & Thørrisen, 2017). With this section, the theoretically proposed two-factor structure was confirmed, and the factors are labeled teaching as “supporting understanding” (factor loadings ranging 0.59–0.67, $\alpha = 0.51$) and teaching as “transmitting information” (factor loadings ranging 0.66–0.77, $\alpha = 0.60$).

The ASSIST was translated into Norwegian by Diseth (2001), who also validated its second section about approaches to studying. Bonsaksen and Thørrisen (2017) performed the initial validation procedures with the Norwegian version of the first and third ASSIST sections, about conceptions of learning, and preferences for courses and teaching, on this sample of occupational therapy students.

3.4. Data analysis

Differences between men and women were examined with independent *t*-tests. Then, assumptions for running a linear regression analysis were checked using the Shapiro–Wilk test, which has been found to be more powerful than other commonly used tests of normality (Razali & Yap, 2011). Despite some tendency toward skewness for two of the outcome variables (deep approach = -0.30 , strategic approach = -0.34), all three outcome variables were deemed as having a normal distribution (Shapiro–Wilk: deep approach $p = 0.16$, strategic approach $p = 0.06$, and surface approach $p = 0.88$). There was no multicollinearity between the independent variables ($r \leq 0.25$ in all analyses). The standardized residuals ranged between -3.4 and 3.1 for the deep approach scale, between -3.2 and 2.5 for the strategic scale, and between -2.1 and 2.4 for the surface approach scale. However, Cook's distance was below the recommended maximum value of 1, ranging between 0.74 (deep approach), 0.65 (strategic approach), and 0.70 (surface approach). As a result, we proceeded with the analyses.

In the three subsequent linear regression analyses, scores on the deep, strategic, and surface approach scales were used as outcomes, respectively. In each of these analyses, age and gender were included as independent variables in the first block, learning conception was included in the second block, and the two types of teaching preferences (teaching as transmitting information and teaching as supporting understanding) in the third. Each of the regression models also assessed the amount of variance accounted for by each block of independent variables. Statistical significance was set at $p < 0.05$, and effect sizes were reported as standardized β weights and as Cohen's *d*. Effect sizes > 0.50 were considered large, according to Cohen (1992).

3.5. Ethics

The study was conducted according to ethical guidelines for research (World Medical Association, 2013). The researchers informed the participants about the aims and procedures of the study, and all participants provided a written consent form. The information to the participants emphasized that the collected data would be analyzed at an aggregated group level. In addition, it was emphasized that participation in the study was optional. No benefits were related to individuals' participation, and conversely, no disadvantages were related to non-participation. The study received approval from the Norwegian Data Protection Official for Research at the Norwegian Centre for Research Data (project number 40314).

4. Results

4.1. Approaches to studying in the sample

An overview of the sample mean scores, and comparisons between men and women, is shown in Table 1. Compared to the male students, the female students had higher scores on learning concept ($p = 0.03$, $d = 0.42$), strategic approach ($p = 0.02$, $d = 0.48$), and surface approach ($p = 0.02$, $d = 0.55$).

4.2. Factors associated with approaches to studying

Table 2 displays the results from the regressions analyzing factors associated with scores on the deep, strategic, and surface approaches to studying. Higher age ($\beta = 0.15$, $p < 0.05$), higher scores on learning concept ($\beta = 0.33$, $p < 0.001$), and higher scores on the type of course and teaching supporting understanding ($\beta = 0.38$, $p < 0.001$) were independently associated with higher levels of deep approach. The full model accounted for 36.0% of the variance in deep approach scores.

Table 1. Sample characteristics (n = 149)

Variables	All (n = 149)	Men (n = 30)	Women (n = 119)		
Age	M (SD)	M (SD)	M (SD)	p	ES
Years of age	23.7 (4.2)	23.2 (2.0)	23.9 (4.5)	0.23	0.20
<i>Learning conception</i>					
Learning concept	25.6 (2.3)	24.8 (2.5)	25.8 (2.3)	0.03	0.42
<i>Preferences for teaching</i>					
Supporting understanding	15.5 (2.7)	15.0 (2.7)	15.6 (2.6)	0.33	0.23
Transmitting information	17.6 (2.3)	17.4 (2.5)	17.7 (2.3)	0.54	0.12
<i>Approaches to studying</i>					
Deep	57.5 (8.3)	57.5 (8.7)	57.5 (8.2)	0.98	0.00
Strategic	71.0 (10.1)	67.3 (9.3)	72.0 (10.1)	0.02	0.48
Surface	48.0 (8.8)	44.6 (6.3)	48.9 (9.1)	0.02	0.55

Notes: Statistical tests are independent *t*-tests. Effect size (ES) is Cohen's *d*.

Higher scores on learning concept ($\beta = 0.29$, $p < 0.001$) and higher scores on courses and teaching supporting understanding ($\beta = 0.32$, $p < 0.001$) were independently associated with higher levels of strategic approach. The full model accounted for 25.9% of the variance in strategic approach scores.

Lower age ($\beta = -0.26$, $p < 0.01$), female gender ($\beta = 0.22$, $p < 0.01$), and higher scores on the course and teaching type transmitting information ($\beta = 0.24$, $p < 0.01$) were independently associated with higher levels of surface approach. The full model accounted for 36.0% of the variance in surface approach scores.

5. Discussion

The study investigated the associations between the students' learning conceptions, preferences for teaching, and approaches to studying, while controlling for age and gender. Higher scores on the learning conception measure was associated with higher scores on the deep and strategic approaches. Higher scores on "supporting understanding" was associated with higher scores on the deep and strategic approaches, whereas higher scores on "transmitting information" was associated with higher scores on the surface approach.

Compared to their younger counterparts, older students had higher scores on deep study approach and lower scores on surface approach (Table 2). The detected relationship between higher age and a productive study approach is in line with previous research (Beccaria, Kek, Huijser, Rose, & Kimmins, 2014; Bonsaksen et al., 2017; Salamonson et al., 2013; Wickramasinghe & Samarasekera, 2011; Zeegers, 2001). Higher age indicates more experience, from life in general and often also from prior higher education. Such experience may logically translate into higher motivation, intellectual maturity, and productive study habits. However, female students showed higher levels of a surface approach to studying compared to males. The surface approach is described as studying with the aim of passing exams while making little effort to understand—true comprehension is often beyond the horizon of the student using a surface study approach. As previous research has largely indicated no gender differences in study approaches (Baeten, Kyndt, Struyven, & Dochy, 2010; Ballantine, Duff, & Larres, 2008; Severiens & Dam, 1998), we can only speculate about its reasons in this group of students.

Studies suggest that the learning environment influences individual students' study behaviors (Diseth, 2007; Diseth et al., 2010; Lizzio et al., 2002; Sun & Richardson, 2016), but according to Richardson, study behaviors may also be shaped by the students' idea of what learning is

Table 2. Hierarchical linear regression analyses showing variables associated with approaches to studying in the sample (n = 149)

Independent variables	Deep approach		Strategic approach		Surface approach	
	β	p	β	p	β	p
Age	0.15	0.04	-0.02	0.82	-0.26	< 0.01
Gender	-0.10	0.16	0.11	0.15	0.22	< 0.01
Explained variance	6.9%	< 0.01	3.9%	0.05	15.8%	< 0.001
Learning concept	0.33	< 0.001	0.29	< 0.001	-0.07	0.40
R² change	16.2%	< 0.001	12.8%	< 0.001	0.3%	0.48
Explained variance	23.1%	< 0.001	16.7%	< 0.001	16.1%	< 0.001
Supporting understanding	0.38	< 0.001	0.32	< 0.001	-0.15	0.06
Transmitting information	0.02	0.83	0.06	0.42	0.24	< 0.01
R² change	12.9%	< 0.001	9.2%	< 0.001	7.6%	< 0.01
Explained variance	36.0%	< 0.001	25.9%	< 0.001	23.7%	< 0.001
Durbin-Watson	1.78		1.92		1.94	

Notes: Table content is standardized β weights, showing the independent variables' association with the approaches to studying scores while controlling for all variables in the model. Coding: male gender = 0, female gender = 1. For all other variables, higher scores indicate higher levels.

(Richardson, 2011). In this study, we measured a unidimensional learning concept (Bonsaksen & Thørrisen, 2017), implying that learning could be understood on a continuum from broader to narrower. Higher scores would indicate a broader learning concept and would imply that the student rated most of the items at a high level. In line with Richardson's (2011) assumption and the theory underpinning the ASSIST scales (Entwistle, McCune, & Tait, 2006; Entwistle & Tait, 1990; Tait et al., 1998), we found that students with broader learning concepts had higher scores on the deep and strategic approach scales, compared to their counterparts (Table 2). This would indicate, for example, that students whose idea of learning was “remembering things well” (item 1, associated with a surface concept), but also as “developing as a person” (item 2, associated with a deep concept) would be more inclined to use productive study approaches, compared to those who scored more of the scale items at a lower level.

Students with a stronger preference for the teaching type “supporting understanding” similarly showed higher scores on the deep and strategic approaches to studying (Table 2). This is fully in line with the theoretical assumptions behind the ASSIST measure (Tait et al., 1998). Students who have a drive to understand a complex issue more fully would logically want their teachers to stimulate this drive—not by telling them what to put down in notes (item 1, associated with teaching “transmitting information”), but rather by encouraging them to think for themselves and show how they themselves think (item 2, associated with teaching “supporting understanding”).

On the other hand, stressful and demanding learning environments may have a negative effect on the students' approach to studying (e.g., Diseth, 2007; Diseth et al., 2010; Diseth, Pallesen, Hovland, & Larsen, 2006). Similarly, stress might also affect their preferences for teaching and organization of courses, such that they tend to favor teaching that transmits information. A curriculum with frequent exams and reading lists covering large amounts of detailed information, for example, might impose stress and lead the student to try to “get all the facts straight”, while the “bigger picture” resides beyond reach. Such aspects of the learning environment may be an important reason for preferring a teaching type oriented toward transmitting information, but also for employing a surface-type study approach. Aspects of the environment may, therefore, contribute to explain the association shown between these variables (Table 2).

However, we should note that stress among students is not only induced by the learning environment at the university, but seems to be an aspect of current society in general.

Internationally, stress levels among occupational therapy students have been found to be high (Pfeifer, Kranz, & Scoggin, 2008). In Norway, according to a large, annual survey describing youth and adolescents' outlook on life, young people seem to be quite well adjusted, active, and home-loving (Bakken, 2017). There is a decline in use of tobacco, alcohol, and illegal drugs compared to earlier generations. Thus, the next generation is considered proper and conscientious, but at the same time, more young people struggle with mental health issues (Nedregård & Olsen, 2014). Particularly young women experience school as a stressful arena (Bakken, 2017). In our study, females were in majority in the sample (79.9%). In view of the apparently higher stress levels among young women, the gender composition of the sample may indicate elevated stress levels in the student group as a whole. To cope with the stress, a surface approach to studying and a preference for teaching oriented toward "transmitting information" could appear to be a solution.

5.1. Implications for practice

As a point of departure, one may assume that students in higher education seek not only to receive new information, but also to understand concepts and conceptual relationships in new and more meaningful ways. At the same time, higher education institutions often place tremendous pressure on young students. Academic success is highly valued, and in a context of many demands, students may choose to—or need to—stay on the surface in order to haste through the syllabus and hope to pass the next exam.

Therefore, the important message of this study is that approaches to studying do not appear out of context. Study approaches are, as indicated from the results, related to the way—broader or narrower—by which the student conceives learning. Further, the student's approach to studying is related to the expectations toward classroom teaching. This indicates that teachers in higher education should not just focus on the content of their course, but just as much on how the students engage with the content and how they themselves can support the students' understanding. They may need to talk to students about the varied implications of the student role and of their own, and may need to address different ways of looking at learning altogether. They may not reach agreement on these issues. Thus, teachers should be aware of, and be able to mitigate, a potential conflict between their personal practice of teaching (hopefully aiming to support the students' understanding) and what students might expect from them in the classroom.

5.2. Study limitations and further research

When considering the results of the study, certain limitations should be kept in mind. The study had a cross-sectional design, and therefore, causal inferences should not be made. The associations detected in the study may well have a cyclical nature. The study is limited as data from only one academic institution, and from only one group of students, were analyzed. The sample size was relatively small, such that generalizations to the larger population of occupational therapy students may not be valid. Another possible limitation of the study is that the data were gathered with the help of self-report scales. Such scales are widely used in this area of research, but may also be augmented with other methods. Further studies, in particular with the use of additional scales to measure aspects of the learning environment, may expand on these findings.

Several studies of higher education students have assumed that the students' approaches to studying over time will progress toward more use of the deep approach (Baeten et al., 2010; Entwistle & Ramsden, 1983; Trigwell, Prosser, & Waterhouse, 1999). However, according to Asikainen and Gijbels (2017), there seems to be no clear theoretical foundation nor empirical evidence to support this assumption. It seems to be based on a general agreement in the field, or rather a traditional expectation in higher education (Herrmann, McCune, & Bager-Elsborg, 2017). Future studies should examine the development of students' approaches to studying in various contexts and should seek to assess how the learning environment affects their development across time.

6. Conclusions

This study examined the associations between occupational therapy students' learning conceptions, preferences for teaching, and their approaches to studying, while controlling for age and gender. The results indicate that learning conceptions, study approaches, and teaching preferences are interrelated in a logical way, lending support to the theory underpinning the ASSIST measures.

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