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Petri Karkkola
University of Eastern Finland, Finland

Aino Äikäs
University of Eastern Finland, Finland

Kati Kasanen
University of Eastern Finland, Finland

Mervi Issakainen
University of Eastern Finland, Finland

Taru Kekoni
University of Eastern Finland, Finland

Kaarina Mönkkönen
University of Eastern Finland, Finland

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Student Perceptions of Interprofessional Education: Associations with the Major Subject, Previous Education and Work Experience

Petri Karkkola, Aino Äikäs, Kati Kasanen, Mervi Issakainen, Taru Kekoni, Kaarina Mönkkönen

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Abstract

Based on previous studies, it was hypothesized that the personal background of students, including previous qualifications and work experience, may be one factor affecting their perceptions of interprofessional education. In a cross-sectional study, the associations between students' (N = 149) gender, major subject, previous degrees, and interprofessional work experience, perceptions of interprofessional education, and appraisal of members of their own profession in interprofessional cooperation were examined. According to the most noteworthy results, having more interprofessional work experience and a previous degree from a university of applied sciences was associated with perceiving interprofessional studies to be more useful. Moreover, having less interprofessional work experience was associated with perceiving members of one's own profession more positively regarding interprofessional cooperation. It is suggested that also these background variables are considered when designing and implementing interprofessional education.

Introduction

Interprofessional teamwork is considered very important in both healthcare and education (Dobbs-Oates & Wachter Morris, 2016). It is both crucial and difficult to achieve (Roodbol, 2010). This perceived significance has motivated educators of future professionals to include interprofessional education (IPE) in curriculums in vocational education and higher education, and researchers to examine the effects of IPE on student attitudes and behavior. IPE has been described as an intervention in which two or more members of health or social care professions (or both) learn interactively together, aiming to improve their collaboration or the wellbeing of their clients (Reeves et al., 2013). IPE can be implemented in various ways, and combinations of teaching and learning approaches are common. According to a review, simulation-based education, e-learning, and problem-bases learning are the most prevalent delivery methods of IPE (Aldriwesh et al., 2022). IPE is an essential part of a high-quality training programs, especially for healthcare professionals (World Health Organization, 2010).

IPE is generally valued by students (Reeves et al., 2017), and based on objective measurements it may improve interprofessional collaborative knowledge, skills, and behavior (Riskiyana et al., 2018). In the most recent Cochrane review of the subject, positive effects on professional practice or healthcare outcomes were indicated in 7 out of 15 studies measuring the effectiveness of IPE interventions compared to no educational intervention,

while four studies reported mixed outcomes (Reeves et al., 2013). Approaches to teaching IPE are varied (Aldriwesh et al., 2022; Simons et al., 2022) and, for example, Fox et al. (2018) stated that the lack of rigorous, comparable studies makes recommending any one teaching method over another difficult. Furthermore, it is possible that there are no universally optimal ways to build a curriculum. There have been studies suggesting that medical students tend to be more critical or more dissatisfied towards IPE and its different methods compared to students of other professions (Curran et al., 2008, 2010). Thus, differences in teaching methods may be only one factor affecting the outcomes. Learner characteristics may also be associated with attitudes and outcomes related to interprofessional work and education (Reeves et al., 2016).

According to a review, successful IPE models acknowledge differences among professions and students in advance, as the variety may be a challenge to implementation (Sunguya et al., 2014). Students' previous qualifications and work experience may also be one factor affecting implementation success. For example, among health and social care students, those with previous higher education qualifications were more critical towards the general interaction between health and social care professionals (Pollard et al., 2006; Pollard & Miers, 2008).

However, students have conceptions and stereotypes of other students and professions, even without qualifications or specific work experience. Students whose parents work as healthcare professionals have been observed to hold stronger stereotyped views of other professions compared to those whose parents do not work in healthcare (Tunstall-Pedoe et al., 2003). Moreover, students in healthcare programs hold various stereotypes of other healthcare students and professionals, and these stereotypes may influence communication and collaboration during future practice (Cook & Stoecker, 2014). Although IPE can facilitate the challenging and reconstructing professional and interprofessional identities (Cooper-Ioelu & Jowsey, 2022), the stereotypes held by students may even become more exaggerated during IPE (Tunstall-Pedoe et al., 2003).

Thus, it appears that conceptions, stereotypes, and professional identity, partly formed before professional education, may affect IPE and further professional practice. It has been suggested that IPE should facilitate understanding among students of their own professional identity while gaining an understanding of the roles of other professionals in the healthcare team (Bridges et al., 2011). This may be challenging. The creation of professional identity is a social activity based on practice and education, and it is situated in organizational and professional cultures with actors from several different professions (Best & Williams, 2019). When conceptualized in this way, professional identity is also related to power. Although designing training scenarios that require interprofessional practice may be one key feature of successful IPE (Maddock et al., 2023), one should remember that students or professionals are not without a personal past and preconceptions. Members of the team may not feel equal (Frost et al., 2005). In a critical review, Roodbol (2010) stated that at the same time, higher status professionals may be concerned about losing their status when collaborating with lower status professionals, may be unable to identify with a diverse team, and may be able to hide behind their higher status professional group. Questions of identity and power are at play. For example, social workers may perceive overall interprofessional collaboration as positive, but may be concerned that they are not able to work to their full scope of practice, perhaps partly due to a lack of understanding of social work ideology among other professionals (Glaser & Suter, 2016). Taken together, future and present professionals in healthcare professions need

interprofessional education, as interprofessional cooperation is a crucial part of their work. Similarly, professionals in education and social work face challenges that require interprofessional cooperation and some understanding concerning other fields. Some background factors may, however, affect on successfully implementing IPE.

Background of the Problem

To better understand the context of the study, some basic information about the Finnish education system is needed. Among Finnish children and youth, almost 100% of the age cohort complete basic education, and about 97% continue their studies at the secondary education level (Statistics Finland, 2020). Education from pre-primary to a doctoral degree is free for all pupils and students in Finland. The education system includes nine years of compulsory basic education, upper secondary education (either general upper secondary education or vocational education and training), and higher education in universities and universities of applied sciences (Ministry of Education and Culture, n.d.). The focus of universities is on scientific research and on education based on it, whereas universities of applied sciences are described to provide somewhat more practical education in response to the needs of the labor market. Among many other professionals, nurses, physiotherapists, and several types of engineers gain their degree (usually at the bachelor's level) from a university of applied sciences.

The students in the present sample were studying at a university to achieve a master's level degree in special education, psychology, social work, or social psychology. Due to the inclusive education and provision of support for all, interprofessional teamwork is a part of the occupation of all teachers, particularly special education teachers, and also a part of the occupation of psychologists and social workers. Therefore, theoretical knowledge of and practice in collaboration during higher education is important for all students in these fields. However, as is common, undergraduate-level training for every profession is performed quite independently from one other (Aldriwesh ym., 2022), and there is a lack of information on perceptions of students of different disciplines regarding interprofessional learning and interprofessional collaboration.

Research-based knowledge, which is widely promoted in the educational field (Finnish National Agency for Education & Ministry of Education and Culture, 2021; Säntti et al., 2018), as well as in education in social work, social psychology, and psychology, improves students' abilities to solve and redefine future educational and pedagogical challenges in working life, for example in relation to interprofessional teamwork and challenges in collaboration in this field (Toom et al., 2010). However, due to Finland's relatively flexible and, for the students, inexpensive educational system, students may already have both a degree from vocational education or from a university of applied sciences and previous work experience requiring interprofessional teamwork. At the moment, there is no reliable information on these kinds of background factors that may affect learning during IPE.

The Research Question

In the present study, various factors related to student backgrounds and previous experience that possibly affect their perceptions of interprofessional education and interprofessional collaboration are examined. It is studied

whether gender, the major subject, previous interprofessional work experience, and previous degrees are associated with student perceptions of interprofessional education and collaboration at the beginning of an IPE course. The sample consists of students at a Finnish university majoring in special education, social work, social psychology, and psychology.

Method

The Sample

The sample of the present study is a convenience sample of students (N = 149) participating in a course on interactional skills in interprofessional collaboration. At the beginning of the course, the students were informed about the study and were able to decide whether to participate. The ethical principles, privacy policy, and data protection legislation were followed throughout the research. Participation or opting out had no bearing on the course work and was unknown to the teachers of the course. The data were collected in three courses with identical learning outcomes and content during successive semesters in 2018–2020. The study is cross-sectional, and all data were collected at the beginning of the course. Informed consent to use the student answers as research data was requested in the survey, and the students were given the possibility to withdraw their answers from the study at any point. The data were collected and saved in a secure university information system.

Measurements

In a web-based survey, the respondents were asked to provide demographic information (e.g., gender, major subject, previous studies, and work experience) and their perceptions regarding interdisciplinary education and members of their own profession in interdisciplinary work.

Respondents' perceptions of interdisciplinary education were assessed with sixteen items, several of which were based on the Readiness for Interprofessional Learning Scale (Parsell & Bligh, 1999) and some of which were developed for this study. Perceptions of members of the respondents' own profession in interdisciplinary work were assessed with two items based on the Interdisciplinary Education Perception Scale (Luecht et al., 1990). The response scale for all the items was from 1 (fully disagree) to 5 (fully agree).

Data Analysis

The analyses were conducted with SPSS version 27.0. To obtain variables to measure the perceptions of interdisciplinary learning and studies, the 16 items were analyzed in successive principal component analyses with varimax rotation, looking for a solution with prominent principal components (eigenvalues > 1) with items loading strongly (> .40) on only a single component. The adequacy of the data for the principal component analysis was examined with Bartlett's sphericity test (χ^2), in which statistically significant results suggest that the associations between variables are reliably different from zero, and the Kayser-Meyer-Olkin measure (KMO), for which values close to one indicate that the sample size is adequate to obtain reliable factors. Scales for the perceptions were then formed by averaging the selected items. The internal consistency of all the continuous

scales in the study was examined with Cronbach's alpha coefficient (α), except for the two-item scales, for which internal consistency was examined with the more applicable Spearman–Brown coefficient (ρ′).

Two tests were used in analyzing the differences between separate groups of respondents. In comparisons including more than two groups, the Kruskall–Wallis test was first used to examine whether the distributions of the groups were equal, with differences being suggested by a statistically significant test statistic H. If the distributions were not equal, suggesting that the compared groups differed in their responses, the analysis proceeded with pairwise comparisons using the Mann–Whitney U-test. Statistically significant U-values indicate that there is a difference between two groups. In these pairwise comparisons, the Bonferroni correction was used to control for the risk of chance results due to multiple comparisons. The size of the differences between groups is described by the medians (Md) and the mean ranks of the groups, and the standardized test statistic z. In analyses with only two groups, the Mann–Whitney U-test was used.

Results

Exploratory Factor Analysis and Scale Formation

First, the items describing perceptions of interdisciplinary learning and studies were analyzed. In exploratory principal components analysis with varimax rotation, eleven of the original sixteen items produced a readily interpretable solution. The data were adequate for the analyses (χ_{255} = 745.50, $p < .001$; KMO = .84). Three principal components with eigenvalues above 1 were extracted and rotated. In total, they explained 68% of the variance. After the rotation, each item had a clear primary loading on a single component (on average, loadings on the respective primary components were on .76). All items except one had no loading over .40 on any other component, with most secondary loadings being less than .30, making the components relatively distinct.

Three scales were formed following the principal component analysis by computing the mean of each respondent. The first scale was labeled the perceived utility of interprofessional education during studies (5 items, e.g., "Professional interaction skills should be studied in an interdisciplinary fashion"; α = .87). The second scale was labeled the perceived utility of interprofessional education for future working life (3 items, e.g., "Interdisciplinary education provides a clearer view on the problems of clients/pupils"; α = .76). The third scale was labeled the perceived uselessness of interprofessional education (3 items, e.g., "Problem-solving skills needed at work can only be learned with students of one's own discipline"; α = .76).

Two items based on the IES measure were combined into one scale labeled the positive appraisal of members of one's own profession in interprofessional cooperation (2 items, e.g., "Members of my own profession are able to fluently cooperate with other professionals"; ρ′ = .57). Again, the score was computed by averaging the responses of each respondent.

Descriptive Statistics

Table 1 presents the descriptive statistics for the sample.

Table 1. The Participants

Sample characteristics		N	%
Gender	male	12	8
	female	132	89
	unknown or other	5	3
Major subject	special education	73	49
	psychology	3	2
	social work	65	44
	social psychology	7	5
	unknown	1	< 1
Interprofessional work experience	none	64	43
	less than 2 years	39	26
	more than 2 years	46	31
Previous degrees[1]	none	71	48
	vocational degree	18	12
	applied sciences degree	33	22
	university degree	38	26

[1] The sum of percentages of previous degrees exceeds 100%, as one participant may have several degrees.

Table 2 presents the descriptive statistics for the continuous scales. The scores for the scales were not normally distributed but skewed in a way that reflects very positive perceptions among students of interprofessional education and their own profession, and medians and ranges are thus reported.

Table 2. The Internal Consistencies, Medians, Ranges, and Correlations

	Internal consistency[1]	Median	Range	Correlations[2,3]		
				1	2	3
1. Utility of interprofessional education during studies	.87	4.80	1.00–5.00			
2. Utility of interprofessional education for future working life	.76	4.33	1.33–5.00	.63		
3. Uselessness of interprofessional education	.76	1.67	1.00–5.00	–.36	–.46	
4. Appraisal of members of one's own profession in interprofessional cooperation	.57	4.00	2.00–5.00	.12	.20	.01

NOTE.

[1] Cronbach's alpha for 1–3, Spearman–Bowman coefficient for 4.

[2] Spearman rank-order correlation coefficient.

[3] Correlations ≥ |.20| are significant at $p < .05$ and correlations ≥ |.36| are significant at $p < .001$.

Mean Comparisons

Gender

For this analysis, those not reporting their gender (n = 5) were omitted. Men and women did not differ on any scale.

Major Subject

Due to the low numbers of students in other majors, only students majoring in special education (n = 73) and social work (n = 65) were compared. At the beginning of the course, the students majoring in special education (Md = 4.00; mean rank = 76.65) appraised the members of their own profession more positively regarding interprofessional cooperation compared to students majoring in social work (Md = 4.00; mean rank = 61.47; U = 1850.50, z = 2.30, p = .023).

Work Experience

Students with differing amounts of interprofessional work experience differed in their appraisals regarding the usefulness of interprofessional studies (H(2) = 9.55, p = .008). In pairwise comparisons, having more work experience was associated with perceiving interprofessional studies as more useful. Those with at least two years of interprofessional work experience (Md = 1.33; mean rank = 59.24) perceived the studies more useful than those with no work experience (Md = 1.67; mean rank = 80.15; U = 1052.50, z = –2.60, p = .027) or those with less than two years of work experience (Md = 1.67; mean rank = 85.14; U = 591.50, z = – 2.76, p = .018).

Interprofessional work experience was also associated with the respondents' perceptions of members of their own profession in interprofessional cooperation (H(2) = 8.71, p = .013). Having less experience was associated with more positive appraisals. In pairwise comparisons, those with no interprofessional work experience appraised the members of their profession more positively regarding interprofessional cooperation (Md = 4.50; mean rank = 86.63) compared to those with at least two years of work experience (Md = 4.00; mean rank = 65.84; U = 1049.50, z = 2.65, p = 0.024). Although not significant after the Bonferroni corrections, the respondents with no interprofessional work experience also tended to appraise members of their profession more positively compared to those with less than two years of work experience (Md = 4.00: mean rank = 66.72; U = 926,00, z = 2.27, p = .069).

Previous Degrees

For this analysis, respondents with more than one previous degree (n = 9) were omitted. Students with different previous degrees differed regarding the perceived uselessness of interprofessional studies (H(3) = 9.15, p = .027). In pairwise comparisons, those with a degree from a university of applied sciences (Md = 1.33; mean rank = 49.42) appraised interprofessional studies as more useful compared to those with no previous degree (Md = 1.67; mean rank = 75.04; U = 929.00, z = –2.87, p = .016). Although not significant after the Bonferroni

corrections, the respondents with a degree from a university of applied sciences also tended to appraise interprofessional studies as more useful than those with a university degree (Md = 1.67: mean rank = 77.50; U = 591,00, z = –2.52, p = .072).

Discussion

Work Experience and Education May Influence Students' Perceptions of Interdisciplinary Education and Their Own Profession

Interprofessional teamwork is very important in different contexts (Dobbs-Oates & Wachter Morris, 2016), and its significance will probably not decline in the foreseeable future. Although interprofessional education is likely to improve valued competencies (Reeves et al., 2016; Riskiyana et al., 2018), there is still much to learn regarding the factors affecting the success of IPE interventions and curricula. Previous education (Pollard & Miers, 2008), shared stereotypes (Cook & Stoecker, 2014), and even familial backgrounds (Tunstall-Pedoe et al., 2003) may influence interprofessional education and later interprofessional collaboration. However, these types of factors should be acknowledged in advance (Sunguya et al., 2014). To gain more information on background factors to acknowledge, the present study examined several differences among students, such as their gender, major subject, and previous education and work experience, which may influence their perceptions of interdisciplinary education and their own profession regarding interprofessional cooperation. Furthermore, the students mostly represented the fields of social science and education as opposed to the more extensively studied healthcare professions.

Firstly, students majoring in special education appraised members of their own profession more positively regarding interprofessional cooperation than students majoring in social work. Admittedly, the difference between majors was small and prone to exaggerated interpretations. However, provided that the difference is reliable, it may be associated with the role of students and professionals of social work. They may collaborate the most with representatives of healthcare, particularly with medical doctors, and it has traditionally been thought that social workers remain somewhat in the role of sub-respondents in this collaboration, i.e., they do not feel that they are equal members of the team, especially if the collaboration is in health services (Frost et al., 2005). This phenomenon may also influence thinking among social work students about their own professional group's attitudes towards collaboration. On the other hand, it has also been observed that the more collaboration there is, the more equal all actors experience themselves and the more they feel involved in joint decision-making (Tousijn, 2012).

Secondly, it was observed that previous work experience was associated with the perceived uselessness of interprofessional education. Again, the effect was small, but it was quite consistent. Participants with at least two years of experience of interprofessional work more frequently deemed interprofessional education useful compared to those with less work experience. This may point to the perceived importance of interprofessional and interdisciplinary competencies based on participants' work experience. It is possible that accumulating work experience underlines the importance of teamwork and its prerequisites, which could be improved during studies.

Thirdly, work experience was also associated with the appraisal by students of members of their own profession

in interprofessional cooperation. Having less experience was associated with more positive appraisals. This is a very interesting observation, especially when paired with the above-discussed association regarding experience and the perceived usefulness of interdisciplinary education. In the Finnish educational system and in the present sample, special education students have less work experience compared to social work students, and may thus have a more "rosy picture" and positive perception of their own profession and interprofessional work in general during their studies than the more experienced social work students. The curriculum of special education teacher students includes theoretical studies on special education prior to this course, but little or no realism about the challenges of interprofessional teamwork brought by work experience. Although longitudinal research is needed to properly examine the subject, it can be speculated that the perception of oneself and colleagues as interprofessional cooperators is a developmental process. It may also be that the more experienced participants had faced social and organizational frameworks regulating interprofessional practices (see Best & Williams, 2019; Glaser & Suter, 2016) that the less experienced were not yet aware of.

Fourthly, the previous degrees of the participants were associated with the perceived uselessness of interprofessional education. The effect was small and not robust, but students with a previous degree from a university of applied sciences tended to more frequently perceive interprofessional education as useful than participants with no previous degree or those with a university degree. It is possible that previous work experience accounts for this association, as many of those with a degree from a university of applied sciences had probably worked in interprofessional teams both during and after their studies. Participants with a previous university degree might have had less interprofessional work experience, because the degree might have been from a completely different field compared to the current major, and as in many university curricula, the degree might not have included any interdisciplinary courses at all.

Limitations of the Present Study

The present study has some limitations to acknowledge. Firstly, the study design was cross-sectional. Therefore, it was not possible to observe the formation of perceptions of interprofessional collaboration and their possible change during and after the course. It would be very beneficial to know whether the small differences are stable. Some previous studies have even implied intergenerational processes in attitude formation and the strengthening of stereotypes during interprofessional education (Tunstall-Pedoe et al., 2003). However, this cross-sectional study raises the possibility of some differences in perceptions of interprofessional education and collaboration between students from different educational backgrounds that are worthy of further studies.

Secondly, the sample was relatively small, and many key variables utilized in the study were categorical. Both factors limit the statistical methods available and affect the possibility to observe small but potentially interesting and important associations. Although categorical variables are not a problem as such, some groups, for example according to major subject, were small and were excluded from certain analyses. Likewise, it was not possible to examine the potential joint effects of multiple previous degrees or of previous degrees and the current major, and the present analyses were restricted to those with no previous degrees or with a single degree. Additionally, it might be that the observed associations would only hold in some groups but not others, and the present study did

not examine the previous qualifications in any detail. As life-long learning is emphasized, the significance of previous experience and qualifications should be properly examined, because differences between both professions and students may challenge the implementation of interprofessional education (Sunguya et al., 2014). The present study is a small step in this direction, but studies with larger samples and more sophisticated analyses are needed. Also, regarding the sample, it included very few healthcare students, and it is not possible to generalize the observations to the most common healthcare professions.

Thirdly, the present study can be criticized on the grounds of ad hoc measurement of the continuous variables. The main measure was partly based on the Readiness for Interprofessional Learning Scale (Parsell & Bligh, 1999) and it did not aim to be a faithful Finnish adaptation. Perhaps adaptation as such is not even needed, as the RIPLS and its variations have suffered from psychometric challenges and their construct validity has been questioned (Mahler et al., 2015). However, this may justify questioning of what was actually measured in the present study. Looking at the operationalizations, it can be assumed that something concerning the perceived utility and uselessness of interprofessional education during studies and future working life has been examined, as well as student perceptions of members of their own profession in interprofessional cooperation, even if the conceptualizations and measurement did not strongly advance theoretical understanding of the phenomena.

Conclusion

Despite the limitations, it is possible to draw some tentative conclusions based on the results of the present study. Interprofessional work experience may be associated with perceiving interprofessional studies more useful but perceiving the members of one's own profession more negatively. As a practical implication, possible reasons for this could be explicated and processed during IPE. Perhaps more experienced students could in a guided fashion present both positive and negative aspects of interprofessional cooperation and its observed necessity during course activities. However, instructors should be aware that IPE does not necessarily weaken stereotypes (Tunstall-Pedoe et al., 2003) and that methods aiming to challenge professional identities (see Cooper-Ioelu & Jowsey, 2022) and discussion about power relations may also be needed for a fuller comprehension of the present preconditions for interprofessional collaboration in actual working environments (on power, see Roodbol, 2010).

As a second tentative conclusion, it seems that previous degrees may affect perceptions, as students with a previous degree from a university of applied sciences see the potential benefits of interprofessional education more easily compared to university students with no previous degrees. However, this should be deemed neither inevitable nor preferable. As a practical implication, applicable university courses could include more case studies with an explicated need for interprofessional collaboration. It could also be worthwhile to familiarize students with the appropriate service systems (e.g., healthcare or education), emphasizing the roles of other professionals in relation to one's own role, as suggested by Bridges et al. (2011). Taken together, it can be concluded that background factors examined in the present study should be considered noteworthy factors when designing and implementing interprofessional education at least in the disciplines related to education and social work, but potentially also in the field of health professions.

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Author Information

Petri Karkkola
https://orcid.org/0000-0003-3414-0020
University of Eastern Finland
Yliopistokatu 2, FI-80100 Joensuu
Finland
Contact e-mail: *petri.karkkola@uef.fi*

Aino Äikäs
https://orcid.org/0000-0003-4674-0533
University of Eastern Finland
Yliopistokatu 7, FI-80100 Joensuu
Finland

Kati Kasanen
https://orcid.org/0000-0002-1126-7902
University of Eastern Finland
Yliopistokatu 2, FI-80100 Joensuu
Finland

Mervi Issakainen
https://orcid.org/0000-0001-7471-2148
University of Eastern Finland
Yliopistonkatu 2, FI-80100 Joensuu
Finland

Taru Kekoni
https://orcid.org/0000-0002-3167-0758
University of Eastern Finland
Yliopistonranta 1, FI-70210 Kuopio
Finland

Kaarina Mönkkönen
https://orcid.org/0000-0002-2822-7018
University of Eastern Finland
Yliopistonranta 1, FI-70210 Kuopio
Finland