VALIDATION OF A TYPOLOGY OF NOVICE TEACHERS' SUPPORT NEEDS AND COMPARATIVE ANALYSIS BASED ON SOCIODEMOGRAPHIC CHARACTERISTICS

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ABSTRACT. The first years of teaching are challenging. Knowledge of the kind of support new teachers require is essential. Existing typologies date back from the 1980s and the early 2000s. The aim of this article is twofold: 1) to validate a typology of novice teachers' support needs using confirmatory factor analysis and 2) to compare these needs in relation to different sociodemographic characteristics (gender, age, employment status, teaching level, and field of study). The quantitative data were drawn from a survey (N = 156) of new teachers. The validated typology highlights five types of support needs. Some key differences emerge from the comparative analyses based on respondents' age, employment status, and field of study. The results presented could help serve as a framework for better targeting the support to be offered to beginning teachers

VALIDATION D'UNE TYPOLOGIE DES BESOINS DE SOUTIEN DES ENSEIGNANTS EN INSERTION PROFESSIONNELLE ET ANALYSE COMPARATIVE SELON DES CARACTÉRISTIQUES SOCIODÉMOGRAPHIQUES

RÉSUMÉ. Les premières années en enseignement sont remplies de défis, et il s'avère essentiel de connaître la nature des besoins de soutien des enseignants débutants. Les typologies de besoins de soutien existantes datent principalement des années 1980 et du début des années 2000. L'objectif de cet article est double : 1) valider, à l'aide d'analyses factorielles confirmatoires, une typologie des besoins de soutien des enseignants débutants et 2) comparer les types de besoins de soutien ressentis par les enseignants débutants selon différentes caractéristiques sociodémographiques (le genre, l'âge, le statut d'emploi, l'ordre d'enseignement et le champ de formation). Les données de nature quantitative proviennent d'une enquête par questionnaire (N = 156). La typologie validée met en évidence cinq types de besoins de soutien et quelques différences significatives ressortent des analyses comparatives selon l'âge, le statut d'emploi et le champ de formation des répondants. Les résultats présentés pourraient aider et servir de cadre pour mieux cibler le soutien à offrir aux enseignants débutants.

New teachers encounter a wide range of difficulties during the professional induction period. Indeed, early-career teachers may experience difficulties in their professional development, their socio-professional integration into a new

work environment, the administrative aspects of task assignment and hiring, and their affective and emotional needs (Auclair Tourigny, 2017; Desmeules & Hamel, 2017). Teaching is increasingly demanding and complex (Conseil supérieur de l'Éducation [CSE], 2014; Tardif, 2013). According to Brault-Labbé (2015), a key explanation is the large-scale integration of students with special needs' into regular classrooms. Indeed, more and more teachers experience serious challenges with providing differentiated instruction (D'Arrisso, 2017; Rousseau, Point, Vienneau, Desmarais, & Desmarais, 2017) and effective classroom management (Kidd, Brown, & Fitzallen, 2015). The lack of opportunities for both continuing education and professional resources is also a reason why teaching workloads feel heavier (Tardif, 2013). Difficulties encountered during induction can affect the quality of teaching and lead to consequences that include burnout and attrition (Forseille & Raptis, 2016).

The implementation of support measures for beginning teachers would appear to be beneficial for counteracting the challenges teachers face. Such measures have been gradually adopted in Quebec and numerous places across the world (Bland, Church, & Luo, 2014; Kutsyuruba & Walker, 2017). Many researchers contend that they help reduce the professional attrition rate, improve job satisfaction, and increase teaching quality and effectiveness (Smith & Ingersoll, 2004). To offer new teachers constructive assistance, several researchers underscore the importance of identifying their specific needs. Molner Kelley (2004) writes that new teachers' support needs have long been ignored in the field of education, and Mukamurera, Martineau, Bouthiette, and Ndoréraho (2013) argue that more research-based knowledge must be developed on this subject. Similarly, the Organisation for Economic Co-operation and Development (OECD, 2012) indicates that new employees may have support needs in different areas. Accordingly, a number of researchers confirm the importance of considering the types of needs they experience during induction (Desmeules & Hamel, 2017; Forseille & Raptis, 2016; Kidd & al., 2015). Because teachers have a large variety of support needs (Auclair Tourigny, 2017; Brault-Labbé, 2015), and because it may be difficult to respond to them individually, many studies emphasize the need for generating a typology of support needs for novice teachers (Desmeules & Hamel, 2017; Forseille & Raptis, 2016; Kidd et al., 2015; OCDE, 2012). Existing typologies of new teachers' support needs (e.g., Bickmore & Bickmore, 2010; Gold, 1996; Hodson, 2006) tend to be outdated and removed from the realities of modern teaching, which has become ever more challenging and complex (CSE, 2014; Tardif, 2013). An updated typology rooted in antecedent research is necessary to provide an overview of the current types of support needs experienced by early-career teachers.

According to Veenman (1984), problems perceived by beginning teachers may also vary based on teachers' characteristics. In this regard, researchers have examined variables such as field of study (Welsh, 2012) and geography (Aspiros, 2009; Mason & Matas, 2015). Welsh (2012), along with Veenman (1984), deplores the paucity of studies on the sociodemographic variables likely to influence types of support needs and attests to the necessity of examining different variables, including new employees' age, field of study, and teaching experience. Thus, our aim is twofold: first, to validate a typology of new teachers' support needs and, second, to observe the possible differences between types of support needs based on five specific sociodemographic variables (gender, age, employment status, teaching level, and field of study). Among other benefits, this may help raise awareness the educational community to the overall support needs of new teachers and to the specific needs of certain groups of teachers.

CONCEPTUAL FRAMEWORK

Different conceptualizations of teacher induction

Teacher induction is a dynamic, interactive, and multidimensional process lasting approximately five years (Bland et al., 2014; De Stercke, 2014). Among the first models used, those developed by Füller (1969) and Nault (1993) present induction as a process consisting of successive stages. Both models have long served as a reference for teacher induction in Quebec. Although they continue to be relevant, current studies tend to emphasize the dynamic and multidimensional nature of induction, suggesting that induction for new teachers should instead be based on the different dimensions of the process (De Stercke, 2014; Jabouin, 2018; Mukamurera et al., 2013; Pogodzinski, 2012; Vallerand, 2008).

For instance, Vallerand (2008) focuses on novice teachers' life experience. She proposes four dimensions that highlight their subjective experience: (a) construction and consolidation of knowledge, (b) development of a relationship with others, (c) development of a professional identity, and (d) integration into the school culture. These dimensions are interrelated and contribute to the construction of the new teacher's life experience. Pogodzinski (2012) proposes a conceptual framework for teacher induction based on Bourdieu's social capital. The cornerstones are: (a) social context; (b) characteristics of new teachers, mentors, and colleagues; (c) compatibility among new teachers, mentors, and colleagues; and (d) frequency and content of interactions. The goal of their conceptualization is to inform school administrators about the key elements that can equip them in conducting successful teacher induction.

The model by Mukamurera et al. (2013) focuses on teacher induction as a whole and is structured around five dimensions. The first is employee induction, and refers to hiring practices and to the characteristics of the jobs held, for example, employment qualifying period and employment status (precarious, contract or permanent). The second dimension, specific assignment and task conditions, refers to the nature, components, and organization of the new teacher's task. Class specificities and the workload assigned to new teachers also relate to this dimension. Organizational socialization is the third dimension of the conceptual model. It refers to the integration of, and acclimatization to, different aspects of the work environment (physical, psychological, organizational, social, philosophical, and political). The fourth dimension is professionality. New teachers must acquire, develop and master the professional knowledge and competencies specific to teaching. Finally, the personal and psychological dimension involves the affective and emotional aspects of induction, including emotional regulation and self-esteem. De Stercke (2014) affirms that "because of its structure and integrative strength, Mukamurera's model can reasonably be considered a new paradigm in the field of teacher induction" (p. 24). Many studies use this conceptual framework to observe the entire induction process (De Stercke, 2014; Desmeules & Hamel, 2017; Jabouin, 2018). To obtain an accurate picture of the type of support required by new teachers, a conceptual framework must consider teachers' overall experience. Desmeules and Hamel (2017) promote "the relevance of the multidimensional model for understanding and analyzing the teacher induction process" (p. 31). Accordingly, the conceptual model of Mukamurera et al. (2013) was chosen for this research.

Typologies of new teachers' support needs

A few researchers have proposed typologies that better describe new teachers' overall support needs (Bickmore & Bickmore, 2010; Gold, 1996; Hodson, 2006). They mention cognitive and intellectual needs, including, notably, ongoing training and intellectual stimulation (Gold, 1996), pedagogical needs mainly associated with the development of professional competencies (Bickmore & Bickmore, 2010), affective or emotional needs encompassing various aspects of well-being and self-esteem (Bickmore & Bickmore, 2010), and social and psychosocial needs linked to socialization and the need to enter into relationship with others (Hodson, 2006).

The above proposals can be used to develop a further typology structured around the conceptual framework for teacher induction designed by Mukamurera et al. (2013). Indeed, certain types of support needs highlighted in the researchers' various typologies refer to the dimensions of induction. For example, the cognitive and intellectual needs discussed by Gold (1996) are included in the dimension related to professionalization in the conceptual

framework chosen. The affective or emotional needs of Bickmore and Bickmore (2010) fall within the dimension of personal and psychological needs. These typologies are interesting, to be sure; however, they were developed in different professional (secondary school teaching of science for Hodson, 2006) or geographical (United States for Bickmore & Bickmore, 2010, and Gold, 1996) contexts, while others date back a number of years (over 20 years for Gold, 1996). The educational system, job market, and teaching profession, on the other hand, have changed and grown more complex over the years (CSE, 2014; Tardif, 2013). The difficulties regarding differentiated instruction and classroom management identified by researchers (Auclair Tourigny, 2017; D'Arrisson, 2017; Rousseau et al., 2017), for example, are not explicitly included in existing typologies. As a result, we used existing typologies to fully consider new teachers' many difficulties while relying on the conceptual framework of Mukamurera et al. (2013) to validate an updated typology of their types of support needs. This new typology was then used to perform comparative analyses of support needs based on certain sociodemographic characteristics of new teachers. These include gender, age, employment status, teaching level, and field of study. The present article thus aims to validate a typology of support needs for new teachers and to discuss the results of the comparative analyses.

METHODOLOGY

Data sources and description of sample

This research used quantitative data drawn from a French-language survey conducted among two hundred and fifty teachers in Quebec in 2013 (Mukamurera and Martineau, 2013). The purpose was to draw a portrait of new teachers' support needs and of the kinds of support available to them during induction. Because this research was structured around teachers' support needs during the induction period, the data from a subsample of 156 teachers with a self-reported teaching experience of five years or less were analyzed.

The majority of the respondents were women (81.4%), which is a fair representation of the teaching profession (79%; ministère de l'Éducation et de l'Enseignement supérieur, 2016). Most of the respondents were under 30 years old (66.4%), 57% were precariously employed, and 43% were employed full-time. With respect to teaching level, 58% of respondents were teaching elementary school, 26% were teaching secondary school, and 15% fell into the category "Other", grouping together general adult education, vocational training, and multiple assignments. In terms of field of study, the percentage of respondents with a BA was 49% in elementary education, 18% in secondary education, 14% in the teaching of a discipline or subject area

(physical education, English as a second language, and music), and 19% in special education. Respondents came from 36 different French school boards.

The analysis focused on one specific question: during your first years of teaching (1 to 5 years), what are (were) your specific support needs in terms of the following aspects of your teaching assignments and induction? Thirty-one items were listed from the literature review of Mukamurera and Martineau (2013), and respondents were asked to indicate whether they required little or no, moderate, or significant support regarding each item. It was also possible for participants to add support needs.

Conception of typology of new teachers' support needs

Discussions relied on numerous preliminary analyses, the difficulties experienced by new teachers, and the conceptual framework of Mukamurera et al. (2013) in order to divide support needs into groups. The associations are presented in Table 1. The first dimension of the conceptual framework chosen, job integration, corresponded to only one of the 31 needs identified. Next, none of the needs identified appeared correlated with the second dimension of induction, specific assignment and task conditions. Four support needs were associated with organizational socialization. Professionality, the fourth dimension of the conceptual framework, was associated with numerous support needs. This may be explained by the many difficulties related to professional competencies experienced by teachers during induction (Bland et al., 2014; Veenman, 1984), with particular regard to planning, teaching and evaluating, classroom management, and differentiated instruction (Auclair Tourigny, 2017; D'Arrisson, 2017; Rousseau et al., 2017). To avoid over-simplifying the data and to ensure promising categories for future analyses (Field, 2013), support needs linked to professionalization were divided into three sub-categories. Five support needs were linked to teaching and evaluation, three to classroom management, and five to differentiated instruction. Finally, seven support needs seemed to correlate with the personal and psychological aspects of induction. The preliminary analyses did not allow us to connect all support needs identified with the dimensions of the conceptual framework chosen, as these items did not saturate for one particular dimension based on the rules of use for this type of analysis. Five support needs were put aside because they had no distinct link to a dimension of teacher induction.

TABLE 1. *Typology of novice teachers' support needs*

Organizational socialization	· Familiarization with the work environment · Integration into school team and cycle team · Learning and adapting to school culture · Knowledge of organizational expectations
Teaching	· Appropriation and implementation of Quebec Education Program · Planning of teaching and learning situations · Assessment of students' learning · Use of different teaching methods · Pedagogical use of technologies for teaching and learning
Classroom management	· Determining and applying problem-solving methods with students exhibiting problematic behaviours · Motivating students demonstrating little interest in subject or school work · Maintaining a climate conducive to learning in class
Differentiated instruction	· Proposing suitable challenges to particularly advanced or gifted students · Meeting the needs of at-risk students · Promoting the pedagogical and social integration of students with handicaps, social maladjustments or learning difficulties · Presenting learning tasks and challenges for student with handicaps, social maladjustments or learning difficulties · Managing differences and paces of learning in the classroom · Using differentiated instruction
Personal and psychological needs	· Reassurance and approval regarding teaching · Listening, empathy, and encouragement in difficult moments · Managing early career stress and difficult integration conditions · Personal development (self-knowledge, self-confidence, self-efficacy) · Developing a sense of belonging to the profession · Persevering in the teaching profession · Maintaining a positive relationship to the profession

Analytical approach

Factor analysis, a multivariate statistical technique allowing interrelated variables to be grouped together (Tabachnick & Fidell, 2013), was chosen to validate the typology developed. For this article, confirmatory factor analysis was used to validate the typology. To perform factor analysis, saturation and Cronbach's alpha must be interpreted (Field, 2013). Saturation represents the correlation between the variables and the factor. Saturation may vary from −1 to 1. The more the factor explains the variable, the more saturation approaches 1. Whereas Corbière (2014) maintains that a saturation of 0.40 is an acceptable threshold, Tabachnick and Fidell (2013) propose a minimal threshold of 0.50. A minimal threshold of 0.50 is thus used in this article. Cronbach's alpha, on the other hand, is a statistical index that varies between 0 and 1, and allows us to evaluate the homogeneity, and thus the internal consistency, of a set of items that should apprehend a same phenomenon. A high value indicates great internal consistency (Tabachnick & Fidell, 2013). The minimal acceptable threshold is 0.60, and a value of 0.70 is acceptable (Field, 2013).

The size of the sample required for performing a confirmatory factor analysis varies depending on the researchers. Some researchers find that a fixed number of participants is needed to obtain reliable and valid results. In this regard, Schermelleh-Engel, Moosbrugger, and Müller (2003) agree with many that the sample size must be at least 100. Other researchers argue that an observable / individual ratio is more accurate for estimating the number of participants required. Thus, Tabachnick and Fidell (2013) write that a ratio of about 1 to 5 allows for valid results. Since we have 31 observables (31 x 5 = 155), our number of respondents (*N* = 156) is considered suitable in the opinion of various researchers.

Before a confirmatory factor analysis is performed, certain premises must be verified. First, this analysis uses continuous ordinal variables suitable for factor analysis (Field, 2013). The Kaiser-Meyer-Olkin (KMO) index thus varies from 0 to 1 and indicates whether correlations between pairs of variables can be explained by other included variables. The higher the KMO index, the better the quality of the inter-item correlations. While an index lower than 0.50 rules out factor analysis, an index higher than 0.80 is excellent. Furthermore, Bartlett's test of sphericity allowed us to verify the null hypothesis in which all correlations are equal to zero. The test value must be lower than 0.05. We used a KMO index of 0.881, which is excellent, and verified that the correlation matrix differed from the identity matrix (matrix with ones on the main diagonal and zeros elsewhere) based on Bartlett's test, which proved significant (χ 2 (465) = 3089.68; $p < 0.000$). We were then able to perform a confirmatory factor analysis.

Once the confirmatory factor analyses were completed and the typology of new teachers' support needs validated, the second part of our analyses focused on examining for differences between the types of new teachers' support needs relative to specific characteristics. First, new teachers were classified according to certain sociodemographic variables (gender, age, employment status, teaching level, and field of study). Next, nonparametric tests using two independent samples (Mann-Whitney) or *K* independent samples (Kruskal-Wallis) were performed on the data to verify for significant differences between the groups. These nonparametric tests were necessary because, according to the distribution graph (Kolmogorov-Smirnova and Shapiro-Wilk), the data were not normally distributed, and group variances were not equal (Levene's test).

FINDINGS

Table 2 presents the overall results of the confirmatory factor analyses on the typology. The percentages of variance and Cronbach's alpha are presented for each type of support needs. The saturation for each item is also highlighted. We point out that the set of saturations (from 0.61 to 0.87) is higher than the minimal threshold of 0.50 proposed by Tabachnick and Fidell (2013), and that the percentages of variance explained fluctuate between 47.730 and 69.958. The analyses enable the confirmation of a typology based on five types of support needs in the following areas: organizational socialization, teaching, classroom management, differentiated instruction, and personal and psychological needs. This typology was used to make comparative analyses of support needs relative to the five sociodemographic characteristics of novice teachers: gender, age, employment status, teaching level, and field of study.

Results of the comparative analyses regarding new teachers' different types of support needs, and the characteristics based on gender (male or female), employment status (precarious or full-time), and teaching level (elementary or secondary) reveal no significant differences. However, in terms of support needs related to organizational socialization, the results for employment status (p = .069) and teaching level (p = .069) approach the significance threshold. Detailed results are given in Table 3. The average rankings lead us to conclude that precariously-employed teachers and elementary school teachers have more support needs in terms of organizational socialization than full-time-employed and secondary school teachers.

Next, for comparative analyses regarding "age" and "field of study", a nonparametric test on *K* independent samples (Kruskal-Wallis) was used to verify for significant differences between the groups. The results are presented in Table 4.

TABLE 2. *Results of confirmatory factor analyses*

Types of support needs	Percentage	Support needs	Saturation	Cronbach's alpha
Organizational socialization	69.958	· Familiarization with the work environment · Integration into school team and cycle team · Learning and adapting to school culture · Knowledge of organizational expectations	.87 .83 .80 .68	.79
Teaching	47.730	· Appropriation and implementation of Quebec Education Program · Plan teaching and learning situations · Assessment of students' learning · Use of different teaching methods · Pedagogical use of technologies for teaching and learning	.72 .75 .66 .74 .61	.72
Classroom management	66.864	· Determining and applying problem-solving methods with students exhibiting problematic behaviours · Motivating students demonstrating little interest in subject or school work · Maintaining a climate conducive to learning in class	.85 .83 .76	.74
Differentiated instruction	58.153	· Proposing suitable challenges to particularly advanced or gifted students · Meeting the needs of at-risk students · Promoting the pedagogical and social integration of student with handicaps, social maladjustments or learning difficulties · Presenting learning tasks and challenges to student with handicaps, social maladjustments or learning difficulties · Managing differences and paces of learning in the classroom · Using differentiated instruction	.65 .75 .76 .79 .79 .81	.85
Personal and psychological support needs	62.463	· Reassurance and approval regarding teaching · Listening, empathy, and encouragement in difficult moments · Managing early career stress and difficult integration conditions · Personal development (self-knowledge, self-confidence, self-efficacy) · Developing a sense of belonging to the profession · Persevering in the teaching profession · Maintaining a positive relationship to the profession	.71 .72 .78 .81 .81 .84 .85	.90

TABLE 3. *Results of comparative analyses of support needs regarding employment status and teaching level*

		Employment status				Teaching level			
		Precarious	Full-time	*U* de Mann Withney	*p*	Elementary	Secondary	*U* de Mann Withney	*p*
Organizational socialization	Average rank	74.87	62.53	1921.500	,069	74.87	62.53	1921.500	.069
	n	78	60			78	60		
Teaching	Average rank	64.63	66.58	2025.500	,770	64.63	66.58	2025.500	.770
	n	72	58			72	58		
Classroom management	Average rank	69.92	67.85	2248.000	,760	69.92	67.85	2248.000	.760
	n	76	61			76	61		
Differentiation	Average rank	69.90	63.25	1957.500	,323	69.90	63.25	1957.500	.323
	n	75	58			75	58		
Personal and psychological support needs	Average rank	73.42	64.56	2047.000	,196	73.42	64.58	2047.000	.196
	n	77	61			77	61		

TABLE 4. *Results of comparative analyses of support needs regarding age and field of study*

Age		25 and −	26–27	28–29	30–34	35–39	40 and +	Kruskal Wallis	*p*
Organizational socialization	Average rank	46.57	69.19	73.40	76.23	92.86	91.50	10.386	.065
	n	14	36	46	28	7	14		
Teaching	Average rank	55.08	71.83	59.96	86.29	69.75	83.07	10.572	.063
	n	12	33	46	28	6	15		
Classroom management	Average rank	41.42	74.18	70.26	83.00	86.14	85.14	11.222	.047
	n	13	37	46	28	7	15		
Differentiated instruction	Average rank	52.54	71.72	59.12	86.96	82.17	84.80	12.932	.024
	n	13	34	46	27	6	14		
Personal and psychological support needs	Average rank	58.81	78.74	68.78	77.98	85.43	70.11	3.701	.593
	n	13	35	48	28	7	14		

Field of study		Elementary		Secondary		Teaching of a discipline		Special education		Kruskal Wallis	*p*
Organizational socialization	Average rank	61.23		81.85		62.94		60.56		5.780	.132
	n	64		23		17		25			
Teaching	Average rank	65.53		52.70		52.44		66.08		3.648	.302
	n	59		22		17		24			
Classroom management	Average rank	61.53		83.57		67.89		54.29		8.401	.038
	n	64		23		18		24			
Differentiated instruction	Average rank	68.37		70.78		63.47		36.34		14.602	.002
	n	63		23		16		22			
Personal and psychological support needs	Average rank	65.31		64.31		65.82		64.08		6.033	.998
	n	62		23		19		25			

First, as Table 4 makes clear, significant differences between the different age groups of the participants were observed for two types of support needs: classroom management (p = .047) and differentiated instruction (p = .024). Two other types of support needs approach the significance threshold: organizational socialization (p = .065) and teaching (p = .063). Second, there are salient differences as well between the different fields of study. These support needs correspond to classroom management (p = .038) and differentiated instruction (p = .002).

Regarding the types of support needs showing significant results, in order to identify the groups that differ, tests with two independent samples were performed using the nonparametric U of Mann-Whitney. In view of the large number of comparables, a Bonferroni correction (α/number of comparisons) was made (Field, 2013). Thus, for the "age" variable, a significance threshold of 0.003 was used because fifteen comparisons were made (0.05/15); for the "field of study" variable, a significance threshold of 0.008 was retained because six comparisons were made (0.05/6).

For the "age" variable, two-to-two comparisons do not reveal significant differences between age groups, despite the significant results of the Kruskal-Wallis test. On the other hand, certain results are close to the significance threshold. For support needs related to classroom management, we observe probable differences between new teachers who are 25 years old and under, and those between ages 30 and 34 (p = .004), teachers between 35 and 39 (p = .008), and, to a certain extent, those 40 years old and above (p = .015). When observing average rankings, there is a possibility that new teachers 25 years old and under have more support needs related to classroom management than those over 30.

For the "field of study" variable, certain results are significant. In fact, support needs related to classroom management demonstrate salient differences between teachers with a degree in secondary education and those with a degree in special education (p = .005). The average rankings indicate that teachers who studied secondary education have more support needs related to classroom management than those with a special education degree. Thus, for support needs associated with differentiated instruction, significant differences are observed between teachers with degrees in special education and elementary education (p = .000), and those with a degree in secondary education (p = .002). The difference closely approaches significance (p = .009) for teachers with a BA in a specialized discipline. In all cases, teachers with a degree in special education have fewer support needs related to differentiated instruction.

DISCUSSION

What the typology reveals about existing typologies

Our primary objective was to propose an updated typology of novice teachers' support needs in line with current research on professional induction. A typology of this kind necessitated taking into account the increasing complexity and intensification of teaching rooted in society's evolution and its expectations regarding teachers (CSE, 2014; Tardif, 2013). Our typology was validated using confirmatory factor analysis in keeping with the conceptual framework of Mukamurera et al. (2013) and the difficulties experienced by novice teachers. The analyses allowed us to validate a typology with five types of support needs. A comparison of the validated typology with the aforementioned typologies of identified support needs (Bickmore & Bickmore, 2010; Gold, 1996, Hodson, 2006) prompted several observations. The first two dimensions of the conceptual framework chosen, job integration, and specific assignment and task conditions, are not present in either the typologies identified or the one validated. However, other studies, including those by Desmeules and Hamel (2017), and Dufour, Portelance, Van Nieuwenhover, and Vivegnis (2018), reveal that the model's first two dimensions create many problems for new teachers. Indeed, it appears that many teachers experience support needs linked to these aspects of induction, particularly regarding the components and organization of tasks assigned to new employees (Forseille & Raptis, 2016), class specificities, employment status, and job security (Auclair Tourigny, 2017; Desmeules & Hamel, 2017). Furthermore, results presented by Brault-Labbé (2015) indicate that, in the opinion of a large majority of novice teachers, a stable, lighter or reduced task would facilitate induction. Thus, we recommend incorporating items pertaining to the support needs inherent in specific assignments and task conditions into a future questionnaire on the support needs of new teachers during induction. Further research could include an enhanced questionnaire allowing for the confirmation of a typology that considers all dimensions of professional induction.

Based on the analyses, support needs linked to organizational socialization concern the new teacher's familiarization with the work environment and integration into the school team. Lack of peer support and a sense of professional isolation are notable difficulties for a fair number of teachers during induction (Forseille & Raptis, 2016). This type of support need is partly underscored by Gold (1996), who points out teachers' need for friendship, collegiality, and interpersonal relationships, and by Feiman-Nemser (2003), who states that entry into a new environment goes hand in hand with a need for organizational acculturation. The typology validated in this article further emphasizes aspects that prove relevant in the current context of a vastly more complex school system and teacher induction. They

include the work environment, the organizational culture specific to each school, and professional mobility.

In the typologies of support needs reviewed, the issue revolves around cognitive and intellectual (Gold, 1996) or pedagogical (Bickmore & Bickmore, 2010) needs closely connected with everyday teaching practice. The typology validated in this article associates these needs with three types of support needs: teaching, classroom management, and differentiated instruction. Among the main difficulties shared by beginning teachers, several pertain directly to assessment, classroom management, and the behavioural management of students (Bland et al., 2014; CSE, 2014). Additional concerns involve proposing suitable challenges, adapting interventions to students' specific characteristics, and managing the different learning paces of students in the classroom (Auclair Tourigny, 2017; Rousseau et al., 2017). Our typology thus considers cognitive and pedagogical needs but refines their definition to provide a more accurate picture of the types of support needs experienced by teachers during induction.

The need for personal and psychological support is present to an extent in some of the typologies reviewed. Indeed, Gold (1996) discusses the needs for reassurance, attentive listening, and self-confidence to encourage the development of a sense of belonging to the teaching profession, while Bickmore and Bickmore (2010) distinguish between professional and personal needs. The current typology, however, enhances these types of support needs and better reflects the multiple realities of new teachers by validating the existence of additional, specific support needs: management of early career stress and difficult induction conditions; personal development, including self-knowledge and a sense of personal efficacy; perseverance; and maintenance of a positive relationship to the profession. In our opinion, this complies with the findings of several studies evoking the painful struggles of the first years of teaching as well as burnout and psychological distress in teachers in general and new teachers in particular (Auclair Tourigny, 2017; Guilbert & Périer, 2014; Tardif, 2013).

Finally, the typology validated in this article reiterates certain elements of the earlier typologies reviewed and improves upon them in light of the increasing complexity of professional induction and of teachers' work. We note, nevertheless, that the last three dimensions of the conceptual framework of Mukamurera et al. (2013) are those most heavily represented. The list of support needs identified by Mukamurera and Martineau (2013) should, in fact, be further developed and extended to include additional items corresponding to the support needs that correlate with the first two dimensions of the conceptual framework: job integration and specific assignment.

Discussion of comparative analyses

To date, little research has focused on comparing new teachers' support needs during induction based on their sociodemographic characteristics. Veenman (1984) and Welsh (2012), however, recently argued that the issue merits our attention. To this end, comparative analyses were performed, and a discussion of the findings follows. First, results demonstrate that types of new teachers' support needs are not significantly different in terms of gender (male or female), employment status (precarious or regular) or teaching level (primary or secondary). For support needs regarding organizational socialization, however, results approach the significance threshold. In fact, precariously-employed teachers may experience more support needs in this regard than those with regular employment. Auclair Tourigny (2017) notes that, owing to their precarious status, some teachers may feel detached and unwelcome to fully participate in school life.

Regarding teaching level, primary teachers may have more support needs linked to organizational socialization than secondary teachers. Houlfort and Sauvé (2010) observe that secondary teachers are significantly less attached to their school team than primary teachers and are less involved in their school. According to these researchers, part of the reason for primary teachers' greater need for support in this regard is because organizational socialization is more important to them. It would be well to consider interviews with primary and secondary teachers to further discuss and better understand the distinction between these two teaching levels in terms of their daily experience.

With respect to the "age" variable, comparative analyses point to some related differences. Indeed, as regards support needs related to classroom management and differentiated instruction, the responses of teachers 25 years and under differed from those of new teachers 30 years and older. Although results for types of support needs pertaining to organizational socialization and teaching are not significant, they nevertheless approach the significance threshold. For these four types of support needs, new teachers under 25 have greater need for support than those 30 years old and over. Research by Duchesne (2008) on the professional transition to teaching reveals that those who choose teaching as a second career have different support needs but demonstrate good awareness of their strengths and limitations. Their past experiences have confirmed their ability to overcome difficulties, and they feel better equipped for success. Thus, the personal and professional life experience of teachers who start their careers later in life could partially explain these differences.

The "field of study" variable highlights salient differences regarding support needs related to classroom management between secondary school teachers

and those with a degree in special education. Thus, new secondary teachers feel a greater need for support in terms of classroom management than special education teachers. Although the issue of classroom management arises repeatedly, several researchers note that it becomes more pronounced at the secondary level for various reasons, notably students' age, and the physical and intellectual changes experienced by young people during adolescence (Vennman, 1984). As well, the report on special education and school adjustment developed by the Gouvernement du Québec (2014) highlights certain employment opportunities for teachers in special education: special instruction in classes with a limited number of students, remedial instruction for a few students at a time, and, to a lesser extent, regular teaching. It may therefore be assumed that special education teachers have different task conditions. This fact, together with the challenges of secondary school, could partially explain these results.

Still in relation to "field of study", teachers with a special education degree have systematically fewer support needs relative to differentiated instruction than those with a background in preschool and primary education, secondary education or a particular discipline. Several hypotheses may explain these results. With the growing integration of at-risk and special needs students (D'Arrisson, 2017), regular teachers are increasingly faced with students in difficulty and with greater cognitive diversity in the classroom. They consequently feel less qualified than their special education counterparts, who have the training to identify and to work with students of this kind. Furthermore, special education teachers very often teach special classes where fewer students exhibit problems similar to those in "language" or "behaviour" classes. These different hypotheses coincide with those of Noël (2014) and Paret (2015), and offer promising new avenues for research.

In summary, we note that early-career teachers often face common challenges and issues, among them teaching tasks that are increasingly demanding and complex, the integration of students in difficulty, and classes that present substantially greater challenges (Brault-Labbé, 2015; Desmeules & Hamel, 2017). Recent research generally confirms that the first years of teaching are difficult. In light of this discussion, avenues for reflection and future research are highlighted in the conclusion.

CONCLUSION

The factor analyses performed first allowed us to confirm the typology of new teachers' support needs. The first dimension of teacher induction in the conceptual framework of Mukamurera et al. (2013), job integration, could not be validated in the analyses because only one support need in the survey correlated with it. The second dimension of the framework, specific assignment and task conditions, was not present because there were no

corresponding support needs. The three other dimensions of the framework were characterized by very strong saturations and significant Cronbach alphas. All the same, it would be highly interesting to conduct further interviews or a new literature review to identify additional support needs related to the first two dimensions of the model. In the process, confirmatory factor analysis could be re-performed to validate a typology of support needs that considers all dimensions of teacher induction.

Next, the comparative analyses reveal that some of new teachers' sociodemographic characteristics appear to influence the degree of importance and the intensity of the support needs they experience. Age and teaching level may in fact influence support needs related to organizational socialization and differentiated instruction, while field of study may influence those linked to classroom management and differentiated instruction. Given the paucity of research on the subject, some hypotheses were presented following the discussion. This represents the main limitation of our study. Additional interviews and studies may complement, clarify or qualify some of the results obtained.

Recent years have seen a growing interest in the creation of professional induction programs that respond to new teachers' support needs (Bland et al. 2014; Desmeules & Hamel, 2017; Forseille & Raptis, 2016; Kidd et al., 2015). The confirmation of a typology of support needs is the first step to better understanding the nature of such needs. What is more, the resulting knowledge could serve to improve initial training, thereby laying the groundwork for transition and induction, an undertaking rarely seen at the moment (Leroux, Dufour, Portelance, Meunier, Cividini & Carpentier, 2016). A more rigorous preparation could serve as a protective factor for new teachers. This typology might then serve as a framework for targeting measures that take into account the plural nature of support needs. As well, the findings may help those in charge of induction programs offer support measures consistent with teachers' different types of needs. Based on the typology validated in this article and the comparative analyses performed, it will be interesting to see if the support measures currently available to new teachers prove satisfactory. Thus, knowledge of the relevance of the measures offered and the ways they correspond to various types of support needs could enlighten decision-makers seeking to develop and implement induction programs that are of real benefit to novice teachers.

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