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Implementing a Large-Scale Curriculum: Educators' Self–Assessments and Beliefs

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ABSTRACT

This study focused on educators' beliefs about implementing a large-scale curriculum called Common Core State Standards (CCSS), or as they are identified in one state, College- and Career- Readiness Standards. Building–level educators in the state of West Virginia were surveyed using a modified Stages of Concern instrument that measures attitudes toward an innovation at a given point in its implementation (Hall et al, 1977). The research questions for the study were: (1) What is the comfort level of educators with new curriculum standards four years after adoption? and (2) What are the relationships among gender, grade level taught, the highest degree earned, and age on educators' comfort level and concern toward a new curriculum set of standards? For research question one, the data showed that mathematics and English language arts teachers held a high awareness of the standards and were not overly concerned about the standards regarding time management. For research question two, simple regression results revealed significant relations between five of the seven stages of concern and some demographic variables: *awareness* with grade level taught and gender, *informational* with the highest degree obtained, *personal* with age, *management* with grade level taught, and *collaboration* with age. In general, educators who had more years of teaching, higher educational credentials, and were older were more likely to know where and how to obtain additional resources as well as get assistance, possibly as a result of their experiences and sociocultural capital gained over the years on the job. Administrators' views were in alignment with teachers regarding their awareness of the standards and time management, and administrators were slightly more concerned with the consequences of the new standards and with teacher collaboration.

***Keywords*:** Common Core, curriculum standards, K-12 education

Teachers are the key to the success of any educational reform because of what and how teachers think about and do the change introduced to them in an educational setting. The reform process is mediated by the teachers given their knowledge, skills, and abilities to affect the change process and outcomes (Fullan & Hargreaves, 2013; McLaughlin & Oberman, 1996). The Common Core State Standards (CCSS) is a clear set of shared goals and expectations for the knowledge and skills students need at each grade level to prepare them to succeed in college, career, and life. Given this understanding, the CCSS is directly related to a process of curriculum change.

In the State of West Virginia, the CCSS is known as the College- and Career- Readiness Standards (CCRS). Studies related to the CCRS reform in WV are sparse. Ratliff's (2014) dissertation study examined kindergarten teachers'

perceptions of teaching one particular content area: informational texts. A study conducted by the West Virginia Department of Education investigated the prevalence and effectiveness of professional development for teacher trainers—that is, teachers who would provide training back in their home schools and districts (Hammer & Nixson, 2015). The broad literature on common core reform (to be discussed next) is likewise limited, with some primarily focusing on implications of CCSS related to particular domains and/or subgroups (e.g., Murphy & Haller, 2015) and others on the types of professional development and their effects (e.g., Kim et al., 2014; Xu et al., 2012).

As waves of educational reforms have targeted curriculum, teacher quality, and leadership capacity, system–wide undertakings such as the CCSS in the United States and a National Curriculum in England call on our attention to the intertwined facets of policy, structure, people, and resources in relation to implementation. The present study was part of a larger research project targeted to further assess the needs and beliefs in the field for implementing a large–scale new curriculum. As one of the dozens of states implementing the Common Core Curriculum, findings from this state provided a glimpse at what may be happening across the country. The present study focused solely on secondary schools. The two guiding research questions were: (1) What concerns do educators have with the curriculum standards and to what extent at the time of the study? (2) What are the relationships between measured demographic factors (gender, grade level taught, the highest degree earned, and age) on educators' concern toward the standards?

Literature Review: What Do We Know About CCSS

Forty-one states plus the District of Columbia have adopted the CCSS (Common Core State Standards Initiative [CCSSI], n.d.). Its proponents include prominent foundations and professional entities such as the College Board and the National Education Association, the Bill and Melinda Gates Foundation, the American Federation of Teachers, and the National Association of State Boards of Education (Liebtag, 2013). Also, a survey conducted by the American Federation of Teachers found that 75% of educator respondents held favorable views of the CCSS (Hart Research Associates, 2013). Nonetheless, the current literature to a great extent shows more concerns regarding its implementation and impacts.

The literature suggests that the implementation of the CCSS can be affected by the availability of resources provided to support such transition both at the state and local (i.e., district and school) levels, the process utilized to implement, the existing culture of the schools and/or districts, the individual teacher's characteristics and beliefs, and the subject matter (Barrett-Tatum, 2015; Gewertz, 2014; Hamilton et al., 2016; Liou et al., 2016; Smith, 2015; Wilcox et al., 2015; Zhang, 2014). For instance, Wilcox et al. (2015) found that while most teachers had a positive view of the CSSS, this was tempered by typically-performing school teachers who viewed the standards more negatively. In another study from the RAND Corporation, researchers reported that the majority of mathematics teachers noted familiarity with state mathematics standards and felt they were moderately or well-prepared to assist their students to meet them (Hamilton et al., 2016). In contrast, teachers of science and social students reported noticeably lower familiarity with the state mathematics standards even though they were also expected to address mathematics standards such as in word mathematics problems (Hamilton et al., 2016). Likewise, in his survey study of secondary mathematics and English teachers, Zhang (2014) found that the participants struggled with a lack of preparedness and challenges associated with working veteran teachers. Smith (2015) suggested such disparities could be explained by teachers' choice in how to engage standards, noting that "teacher beliefs influence practice; teachers who hold different mathematics beliefs assign different meanings to the language in mathematics standards, and use different pedagogical approaches when teaching the standards" (p. 211). According to Grewertz (2014), such challenges can be more intense for teachers who work with certain subgroups of students such as those with disabilities or from low-income families. Furthermore, during the implementation, teachers' needs or priorities can change, from needing more training and planning time with colleagues in the beginning to wanting more collaboration and support from other teachers and administrators later into the process (Ruchti et al., 2013).

In terms of the impact of the CCSS, researchers have voiced their concerns (Murphy & Torff, 2016; Polikoff, 2017). It is noted that the implementation of the CCSS negatively affects teachers' sense of self-efficacy, especially for those who had a stronger self-efficacy in the past (Murphy & Torff, 2016). In his review of studies on the common core initiative, Polikoff (2017) concluded that there was "no convincing casual evidence of the impact of the CCSS on any student outcome" (p. 2) as its proponents had promised or hoped. Undeniably, the implementation of the CCSS has increased the complexity of teacher preparedness (Liou et al., 2016). Yet, much remains unknown about the beliefs that teachers have about the CCSS and their sense of readiness to execute the standards. Furthermore, there is a lack of research related to the influence of school leaders in reference to the CCSS (Boulton, 2017). The few available studies that

looked into school administrators found that they appeared to have adequate subject matter knowledge about the CCSS and at times more than teachers did (Finnan, 2014; Supovitz et al., 2016).

Theoretical Framework

The Concerns-Based Adoption Model (CBAM, Hall & Hord, 2015) is the guiding theoretical framework for the study. The model deals with new ideas and innovation, perceived or real, surrounding the academic community and emphasizes a methodological way to understand and engage in the change process. CBAM has been used to better understand professional development and change within the educator and school environment (Khoboli & O'Toole, 2011).

Under the model, there are seven stages of concern (SoC) identified as having a powerful influence on the implementation of change, and as such, impacting sustainability in the internalization of learning and transformation. The seven stages are: *awareness, informational, personal, management, consequences, collaboration,* and *refocusing*. *Awareness*, as the base level of the model, examines the extent an individual is cognizant of the innovation. The second stage is *informational*, which addresses the willingness of a person to learn more about the innovation. The third stage is *personal*, reviewing statements on how the participant perceives the new innovation affecting him or her. The fourth stage of concern focuses on *management* and how the individual perceives the innovation imposed on his or her time. The fifth stage, *consequence*, addresses the perceived impact of the innovation beyond just the individual, such as how it will affect students. The sixth stage is *collaboration* and how the individual feels regarding the extent that he or she can use the innovation with other materials and professionals. The final stage is *refocusing*, which examines how one feels about exploring additional benefits from the innovation.

METHODS

The study was a quantitative one that utilized a survey instrument. An existing survey instrument grounded in the concerns-based adoption model (CBAM) (Hall & Hord, 2015) was used. The study was approved by the researchers' IRB office, and data were collected over a three-week window. At the time of this writing, this was the first and only statewide surveying ever taken on CCSS. The survey was sent electronically to all K–12 teachers and school-building administrators in the State of West Virginia using the personnel contact inventory provided by the State Department of Education. Of the 18,099 teachers and administrators contacted, 2,298 responded, resulting a 12.7% return rate. For purposes of this study, only data related to the subset of secondary language arts (ELA) teachers, secondary mathematics teachers, and secondary school administrators were used. The subsample included 181 secondary mathematics teachers (158 female, 23 male, and 3 undisclosed), 184 secondary English language arts (ELA) teachers (140 female, 40 male, and 1 undisclosed), and 55 secondary level school administrators (24 female and 31 male). The responses collected represented 55 school districts in the state.

The Stages of Concern (SoC) instrument created by Hall et al. (1977) was used, and it contains 35 8-point Likert-scale items that examine participants' comfort level after exposure to a new innovation. Respondents chose the number that best reflected their attitude toward a given statement, with a zero representing "does not reflect" and a seven "strongly reflects." Each stage is measured by five items; as such, a total ranking score for a respondent could range from 0 to 35 for each of the stages. This instrument has been used frequently in the past and has proved to be very reliable, with a coefficient alpha = .91 (Reed, 1990). The validity of the instrument, as determined by its creators, consisted of inter-correlation matrices, judgments of concerns based on interview data, and confirmation of expected group differences and changes over time across multiple studies (Hall et al., 1977; see also Hall & Hord, 2015).

The surveys were administered online via SurveyMonkey. The potential participants were informed that their participation was anonymous and voluntary. Descriptive statistics were obtained on each item in the survey. A regression analysis procedure was conducted to examine the perceptional differences between subgroups (math teachers, ELA teachers, and administrators) on comparable items on the stages of concern. Also examined were relationships between demographic factors and perceptions on concern using the simple regression procedure. It should be noted that the statistical results should be interpreted with caution due to the limited sample size in the current study. In addition, age cannot be considered a direct link to years of experience, as some teachers may have entered the field later in life.

RESULTS

Secondary Mathematics and ELA Teachers

Overall, mathematics and ELA teachers were very similar in their rankings on the stages of concern (see Table 1). For the secondary mathematics teachers, they were least concerned about *awareness*. In other words, the teachers were highly cognizant of the standards and what they represented, and the mean score (8.91) was well below the other stages. They rated *management* the second lowest, meaning that they were not overly concerned about the standards with regard to time management. Interestingly, the standard deviation for this stage was the highest for all, representing a wider spread of answers between the extremes. While the secondary mathematics teachers rated *refocusing* the highest, followed by *collaboration*, *consequence*, and *personal*, given that the highest score one could obtain on one stage was 35, these mean scores fell in a middle range, showing neither a strong affiliation nor disaffiliation with the statements. Similarly, the secondary ELA teachers rated *awareness* the lowest, followed by *management*. These teachers also rated *refocusing* the highest, followed by *collaboration*, *consequence*, and *personal*. In general, the mathematics teachers tended to rate themselves higher (meaning more anxious) on each of the stages than the ELA teachers did.

Table 1

Teachers' Scores on the Seven Stages of Concern

Stage of Concern	Mathematics Teachers		English Language Arts Teachers	
	N	*M* (*SD*)	*N*	*M* (*SD*)
Awareness	174	8.91 (6.09)	183	7.73 (5.68)
Informational	168	19.67 (6.96)	172	17.85 (7.71)
Personal	171	20.29 (7.05)	174	19.03 (8.30)
Management	172	15.47 (9.51)	176	12.00 (9.14)
Consequence	172	20.48 (7.12)	173	19.12 (7.32)
Collaboration	179	20.49 (8.85)	182	19.97 (9.87)
Refocusing	172	21.65 (5.47)	173	21.13 (6.16)

A simultaneous regression analysis on demographic variables (gender, age, grade level taught, and highest degree earned) was performed. Simultaneous regression of the variables was chosen to provide full regression data on each variable, as opposed to a stepwise or hierarchical model, which eliminates variables that do not contribute to the dependent variable score. The scores on the stages of concerns showed some statistically significant relationships for the mathematics teacher subgroup (see Table 2), but not for the ELA teachers (Table 3).

When examining the significant results from the mathematics teachers' regression analysis, demographic factors were found to be predictors of the four (of the seven) stages of concern. For the factors that had significant regression scores, a semi-partial correlation was also performed to determine the strength of the relationship of variance between the variable and the stage mean. The stages with significant results are:

- *Awareness*. *Gender* was found to be a significant predictor at the $p < .05$ level, and *grade level taught* was significant at the $p < .01$ level. A semi-partial correlational analysis showed that *gender* contributed 2.8% to the variance in scores, with women being less anxious of the new standards than male teachers. *Grade level taught* provided 4.7% of the score variance, with high school mathematics teachers being more anxious than middle school mathematics teachers.
- *Informational*. The *highest degree earned* was a highly significant predictor of anxiety ($p < .01$), with mathematics teachers' anxiety scores dropping as they attained higher level degrees (bachelors, masters, doctoral). This variable contributed 4.3% to the stage variance in scores.
- *Management*. *Grade level taught* was found to be a highly significant ($p < .01$) predictor of concern, and it contributed 6.2% to the variance in scores. Again, high school mathematics teachers were more anxious than middle school teachers.

- *Collaboration*. *Grade level taught* was significant at the $p < .01$ level and contributed 6.0% to the variance in scores, with high school mathematics teachers having more concern than middle school mathematics teachers.

Table 2

Mathematics Teachers' Regression Scores Based on the Seven Stages of Concern

Stage of Concern with Demographic Factors	95% Level for β		Std. Error	β	t	p
	Lower Bound	Upper Bound				
Awareness						
Age	-.039	1.499	.390	.141	1.874	.063
Gender	-4.610	-.325	1.085	-.168	-2.273	.024*
Grade Level Taught	.909	4.554	.923	.220	2.958	.004**
Highest Degree Earned	-1.568	1.845	.864	.012	.160	.873
Informational						
Age	-1.554	.316	.474	-.102	-1.307	.193
Gender	-2.784	2.220	1.267	-.017	-.223	.824
Grade Level Taught	-1.219	3.108	1.096	.066	.862	.390
Highest Degree Earned	-4.908	-.806	1.039	-.214	-2.750	.007**
Personal						
Age	-1.738	.157	.480	-.130	-1.647	.101
Gender	-.949	4.166	1.295	.095	1.242	.216
Grade Level Taught	-1.437	2.960	1.114	.053	.684	.495
Highest Degree Earned	-3.102	1.010	1.041	-.079	-1.004	.317
Management						
Age	-1.581	.891	.626	-.042	-.551	.582
Gender	-3.126	3.623	1.709	.011	.145	.885
Grade Level Taught	1.922	7.722	1.469	.249	3.283	.001**
Highest Degree Earned	-5.013	.416	1.375	-.128	-1.671	.097
Consequence						
Age	-1.581	.333	.485	-.102	-1.286	.200
Gender	-1.336	3.802	1.301	.073	.948	.345
Grade Level Taught	-.362	4.100	1.130	.129	1.654	.100
Highest Degree Earned	-1.826	2.345	1.056	.019	.246	.806
Collaboration						
Age	-2.857	-.608	.570	-.229	-3.041	.003**
Gender	-1.590	4.573	1.561	.070	.956	.341
Grade Level Taught	-5.198	.112	1.345	-.141	-1.891	.060
Highest Degree Earned	-.808	4.231	1.276	.101	1.341	.182
Refocusing						
Age	-1.029	.459	.377	-.060	-.756	.451
Gender	-1.669	2.324	1.011	.025	.324	.746
Grade Level Taught	-2.453	1.020	.880	-.064	-.815	.416
Highest Degree Earned	-1.803	1.432	.819	-.018	-.226	.821

Note. *p<.05; **p<.01.

Secondary School Administrators

In general, the administrators' views on the stages of concerns were in alignment with those of teachers (see Table 4). Similar to teachers, the administrators ranked *awareness* the lowest, followed by *management*. And similar to teachers, the highest three stages of concern for administrators were *collaboration*, *consequence*, and *refocusing* as well. But, different from teachers, the administrators were most concerned about *collaboration*, followed by *consequence* and *refocusing*.

In terms of demographic variables, only *grade level taught* and *highest degree earned* were found to be statistically significantly related to three of the seven stages of concern for administrators (see Table 5). Those stages were *management*, *collaboration*, and *refocusing*.

Table 3

Language Arts Teachers' Regression Scores based on the Seven Stages of Concern

Stage of Concern with Demographic Factors	95% Level for β		Std. Error	β	t	p
	Lower Bound	Upper Bound				
Awareness						
Age	-.998	.443	.365	-.056	-.759	.449
Gender	-1.216	3.426	1.176	.070	.940	.349
Grade Level Taught	-.435	2.908	.847	.109	1.460	.146
Highest Degree Earned	-.889	2.001	.732	.057	.759	.449
Informational						
Age	-.795	1.192	.503	.030	.395	.694
Gender	-2.461	4.681	1.809	.048	.614	.540
Grade Level Taught	-.457	4.248	1.191	.123	1.591	.113
Highest Degree Earned	-2.833	1.232	1.030	-.061	-.778	.438
Personal						
Age	-.798	1.341	.542	.038	.501	.617
Gender	-2.138	5.470	1.927	.068	.864	.389
Grade Level Taught	-1.289	3.802	1.289	.076	.975	.331
Highest Degree Earned	-3.379	.949	1.096	-.087	-1.109	.269
Management						
Age	-.867	1.491	.597	.040	.523	.602
Gender	-2.447	5.948	2.126	.064	.823	.412
Grade Level Taught	-1.268	4.314	1.414	.084	1.077	.283
Highest Degree Earned	-1.149	3.602	1.203	.079	1.020	.309
Consequence						
Age	-.383	1.533	.485	.091	1.185	.238
Gender	-4.003	2.757	1.712	-.029	-.364	.716
Grade Level Taught	-2.300	2.226	1.146	-.003	-.032	.974
Highest Degree Earned	-2.784	1.052	.972	-.070	-.891	.374
Collaboration						
Age	-1.422	1.078	.633	-.020	-.271	.786
Gender	-4.822	3.471	2.101	-.024	-.322	.748
Grade Level Taught	-1.787	4.121	1.497	.059	.780	.437
Highest Degree Earned	-2.482	2.540	1.272	.002	.023	.982
Refocusing						
Age	-.501	1.096	.404	.056	.735	.463
Gender	-3.156	2.600	1.458	-.015	-.191	.849
Grade Level Taught	-1.952	1.837	.959	-.005	-.060	.952
Highest Degree Earned	-2.559	.659	.815	-.092	-1.165	.246

Note. *p<.05; **p<.01.

Table 4

Secondary School Administrators' Scores on the Seven Stages of Concern

Stage of Concern	*N*	*M*(*SD*)
Awareness	54	6.78(5.07)
Informational	54	19.56(6.41)
Personal	54	20.07(7.48)
Management	53	12.57(8.97)
Consequence	54	22.76(6.13)
Collaboration	54	23.04(9.00)
Refocusing	54	20.63(6.51)

Table 5

Administrators' Regression Scores on the Seven Stages of Concern

Stage of Concern with Demographic Factors	95% Level for β		Std. Error	β	*t*	*p*
	Lower Bound	Upper Bound				
Awareness						
Age	-.350	2.673	.752	.209	1.545	.129
Gender	-5.303	.283	1.390	-.248	-1.806	.077
Grade Level Taught	-2.938	2.643	1.386	-.014	-.103	.919
Highest Degree Earned	-6.127	4.133	2.553	-.053	-.390	.698
Informational						
Age	-2.157	1.677	.954	-.034	-.252	.802
Gender	-5.453	1.630	1.762	-.150	-1.085	.283
Grade Level Taught	-.796	6.268	1.758	.214	1.557	.126
Highest Degree Earned	-2.271	10.738	3.237	.180	1.308	.197
Personal						
Age	-3.642	.666	1.072	-.181	-1.388	.171
Gender	-4.765	3.195	1.980	.053	-.396	.694
Grade Level Taught	.943	8.882	1.975	.329	2.487	.016*
Highest Degree Earned	-1.574	13.046	3.638	.209	1.577	.121
Management						
Age	-3.754	1.537	1.316	-.114	-.842	.404
Gender	-10.253	-.316	2.471	-.295	-2.139	.038*
Grade Level Taught	-3.751	6.159	2.464	.067	.489	.627
Highest Degree Earned	-4.313	13.652	4.467	.143	1.045	.301
Consequence						
Age	-2.545	1.156	.921	-.103	-.754	.454
Gender	-4.225	2.612	1.701	-.066	-.474	.638
Grade Level Taught	-1.477	5.342	1.697	.158	1.139	.260
Highest Degree Earned	-1.062	11.497	3.125	.232	1.670	.101
Collaboration						
Age	-3.136	2.037	1.287	-.056	-.427	.671
Gender	-.915	8.643	2.378	.215	1.625	.111
Grade Level Taught	-2.859	6.674	2.372	.106	.804	.425
Highest Degree Earned	3.972	21.528	4.368	.386	2.919	.005**
Refocusing						
Age	-3.124	.427	.884	-.189	-1.526	.133
Gender	-4.212	2.349	1.632	-.072	-.571	.571
Grade Level Taught	.200	6.744	1.628	.268	2.132	.038*
Highest Degree Earned	3.653	15.705	2.998	.405	3.228	.002**

Note. *p<.05; **p<.01

When examining the significant results from the administrators' regression analysis, the results showed that demographic factors were predictors for four of the seven stages. For the factors that had significant regression scores, a semi-partial correlation was performed to determine the strength of the relationship of variance between the variable and the stage mean. The stages with significant results are:

- *Personal*. *Grade level taught* was found to be significant, and the semi-partial correlation found that it contributed 10.4% to the variance in scores, with high school administrators scoring higher on average compared to middle school administrators.
- *Management*. *Gender* was found to be a significant ($p < .05$) predictor of concern, and contributed 8.3% to the variance in scores, with males scoring on this stage higher than females.
- *Collaboration*. *Highest degree earned* was significant at the $p < .01$ level and contributed 14.4% to the variance in scores, with administrators who had advanced degrees being more concerned.
- *Refocusing*. Both *grade level taught* and *highest degree earned* were significant predictors of level of concern. *Grade level taught* was statistically significant at the $p < .05$ level, yielding a positive correlation with higher grade levels and contributing 6.9% to the variance in scores. *Highest degree earned* was a highly significant positive correlation, with the variable contributing 15.8% to the score variance.

DISCUSSION, IMPLICATIONS, AND CONCLUSIONS

In this study, the researchers used the concerns-based adoption model (CBAM) to discover the areas of concern that school educators in the state of West Virginia had in implementing the new statewide College- and Career-Readiness Standards (CCRS) as well as how such concerns were affected by the educators' backgrounds. The study attended to the perceptional differences between teachers and administrators and between teacher subgroups. The researchers of the study recognize and argue that better understanding individual and collective concerns is a key to better provision of support (be it structural, material, and rhetorical/cultural) and makes subsequent adjustment necessary. Further, the model, while grounded in the notion of growth, acknowledges the interactive and iterative aspects of human concerns when encountering change. The researchers of the study argue such a concern model can be used as a tool in school climate or personnel needs assessment to build ongoing improvement and capacity building.

Before discussing the study's implications, it is important to note that there are limitations to the study that need to be acknowledged. First, the survey did not attempt to distinguish differences between respondent age and years of experience. While most educators start their careers immediately after receiving an undergraduate degree, some educators entered the field after working in other careers or have taken time away from their teaching careers for family or other interests. It is also worth noting that in developing the survey instrument, reviewers were concerned that some administrative respondents would misinterpret a question of experience and include years of teaching experience as part of their years of administrative experience, thus age was used as a proxy for experience to eliminate the potential error (Hall et al., 1977; Hall & Hord, 2015). A second limitation of this study is that it was not possible to link a teacher respondent's survey results to an administrator's results from the same school and maintain confidentiality at the same time. Thus, while it might be interesting to examine the effect an administrator's concern could have on the teacher's, it was beyond the capacity of the current data structure.

As revealed in the survey data, the results partially supported the developmental stages of concerns; the participants' average scores on internal concerns (*awareness*, *management*, *informational*, *personal*, and *management*) were relatively lower than those of the external ones (*consequence*, *collaboration*, and *refocusing*), and they did not preclude a developmental shift to the external concerns as postulated under CBAM—a progression from *self* to *task* and then *task* to *impact* with more knowledge, experience, and time. One possible explanation might be that the implementation was still in an early stage when the study was conducted, and such knowledge accumulation and better practice realization may have yet to transfer into enhanced self-efficacy. Further, school administrators are held accountable for the performance of their respective schools, which means their concerns may be more of a manifestation of a collection of self and other (i.e., staff) concerns.

All of the statistical results on teachers seem to suggest that generally, the teacher participants in the current study felt a high level of awareness of the CCRS. This finding supports the broader literature available on CCRS training and implementation (e.g., Barrett-Tatum, 2015; Hamilton et al., 2016). Given that the state-supported professional development for teachers and administrators started in the summer of 2011, by the time the current study was conducted

in 2015, educators in the state would have had numerous channels of contact with the CCRS. As such, the teachers' lowest rankings on *awareness* were not surprising.

Another finding of the study was that secondary ELA and mathematics teachers showed similar patterns on the following stages of concerns: *personal*, *consequences*, and *collaboration*. The average scores on these stages of concern were moderately high and yet with high variations as indicated by larger standard deviation values. With high-stakes testing/assessments associated with the standards, the provision of professional training initially received, perceived support moving forward in the process, and the time given for implementation, it is not surprising that the teacher respondents in the study were concerned with the potential effects that the standards would have on themselves (*personal*) and their students (*consequences*) as well as the level of willingness and feasibility they had or could afford for collaboration (*collaboration*). The greater variations of these stages of concern among individual teachers could be partially explained by the factors related to a teacher's professional preparation and experiences, as indicated by the regression analyses, though the results for the ELA groups were not statistically significant. The statistically significant and negative relationships between *age* and *personal*, *age* and *collaboration*, and *highest degree earned* and *information* indicate that mathematics teachers who were older and held higher degrees were less concerned about learning the new information or skills needed, the effects the standards would have on them personally, and the extent to which they could incorporate the new standards into their existing practice and collaborate with other educators. When age can be treated as a proximity of years in teaching and amount of experience with change at a larger scale—together with the highest degree obtained—it would be safe for the researchers to postulate that senior teachers tend to be in a better position academically, pedagogically, psychologically, and resources-wise in handling the demands associated with implementing the new standards.

Also worth noting is the results on *refocusing*, the final stage in CBAM. It scored the highest for both ELA and mathematics teachers with much smaller variation, as indicated by the standard deviations ($SD_{\text{math}} = 5.47$, $SD_{\text{ELA}} = 6.16$) relative to other stages of concerns. As Hall and Hord (1987/2001, 2015) noted, a person can experience multiple types/stages of concerns concurrently, as the stages are progressive to a great extent. The findings seemed to support multiple types/stages of concerns. The last three stages, *consequences*, *collaboration*, and *refocusing*, were scored the highest by the respondents in the study. The results, to some extent, echoed Ruchti et al.'s (2013) study where the researchers found that their participants considered tasks/components related to self-readiness, such as access to training, more pressing than components involved with others, such as collaboration, when needs for professional development or support for implementation were considered.

The results from the regression analyses seemed to suggest that only certain stages of concerns were significantly related to the educators' demographic characteristics, and grade level taught and highest degree earned were found to be the most influential variables correlated with the stages of concerns across teacher and administrator subgroups. A possible explanation for this could be that the new knowledge had yet to be internalized by our respondents and the comfort/confidence level of applying the new knowledge to practice had yet to be realized over time. Both were unlikely to be the case when this study was conducted in 2015, particularly for the grades (8th, 11th, and 12$^{\text{th}}$) that had just received their professional development on the CCRS in the summer of the 2014-2015 school year. While it is beyond the scope of the current study's data to address the non-significant regression results for the ELA respondents, the researchers of the current study suspect that a possible explanation could be related to the more complex and interrelated nature of the ELA standards under the CCRS, meaning more shifts were required from the previous standards than those related to mathematics (Barrett-Tatum, 2015). The literature also noted that challenges were greater in training ELA teachers on the CCS in serving students from low-income families (Gewertz, 2014). Given that the state of West Virginia has a substantial number of poverty-stricken schools, such differences between mathematics and ELA teachers concerning their characteristics and background relative to their views on concern stages could be a manifestation of such challenges and should be investigated.

Further research is needed to capture the interactions between teachers and between teachers and administrators, as they work to support one another in these concern areas. Implications for further research also include explorations that take into consideration the effects of the state's, districts', and schools' circumstances and provision of professional development and other resources on teachers' and administrators' sense of concern. This could mean engaging in longitudinal studies that investigate stages of concern on teachers and administrators throughout early, middle, and later phases of full implementation of the CCRS. Future collected data could be compared with the current ones. The current study involved participants in one state in the Appalachia region; future studies need to be conducted in different

geographic locations or with participants who hold different characteristics from those in the current study to see if the current findings are still applicable.

The perceptional differences between teachers and administrators in the findings also have implications for future studies. Qualitative research using focus groups, individual interviews, or in-depth case studies can allow for a more contextualized examination of the what, who, where, why, and how—the experience and sense-making of the change agents at various levels under a large-scale change. Qualitative data can complement the generated quantitative data, allowing for triangulation and a more holistic understanding of the mindset and factors that can be influential to the mindset.

For school districts and professional organizations that provide professional development and curricular support for teachers and administrators, better understanding of the SoC of educators as change agents can reveal specific areas for developing more targeted interventions to facilitate the change process. The study results shed light on how resources should be allocated to maximize support for building administrators and address concerns they have in implementing the CCRS. For teachers, resources would best be used to help with supporting lesson planning and professional development and understanding of the change. For administrators' concerns, help with attaining school-based outcomes and organizational change would be beneficial.

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