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Variable Relationships Affecting Agriscience Teachers' Stages of Concern for Content Area Reading Strategies

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In spite of national initiatives such as the No Child Left Behind Act of 2001, American students continue to be struggling readers. Research on content area reading strategies (CARS) has shown that such strategies increase students' ability to read and comprehend text. The purpose of this research was to assess agricultural educators' implementation of content area reading strategies in their classroom. A tailored-design, web-based questionnaire was distributed to 371 Florida agriscience educators to complete this descriptive, census survey. The results indicated the total number of hours of CARS professional development was not related to progression through the stages of concern. This study also underscored the lack of consistency in the professional development programs these teachers completed. In order to better understand the differences of the professional development programs, research should be conducted to determine the characteristics of various CARS professional development programs. Practitioners should provide a consistent, in depth professional development program to provide ongoing training and support throughout a several year process.

Keywords: Reading strategies; teacher professional development; academic integration; Stages of Concern; Content Area Reading

The U.S. Department of Education [USDE] has reported over eight million struggling readers in the United States between fourth and twelfth grade (2003). Additionally, for over 20 years, math achievement and SAT scores have been increasing while verbal scores have remained stable or declined slightly (College Board, 2002; USDE, 2008). When comparing international reading proficiency, U.S. students have ranked toward the bottom, even below students from developing countries (Snow, 2002). These statistics have prompted a number of state and national reading initiatives. In an attempt to provide higher quality education to America's students, the No Child Left Behind (NCLB) Act has mandated a major change across the nation in education, with a large section of the NCLB Act focused on improving student literacy. However, a NCLB accountability report, published by the USDE, highlighted continuing literacy problems in spite of the earlier call for improvement. Only about 30% of fourth and eighth grade students performed at the proficient reading level, with students of low socioeconomic status and different ethnicities performing much lower. Two percent of the same students performed below basic levels (Mapping America's Educational Progress, 2008). Since 2002, students have made steady improvements in math scores. However, fourth graders have improved their reading scores minimally and eighth graders' reading scores have slightly declined. The Mapping Florida's Progress 2008 report shows that Florida's students rank below the national average for reading achievement.

Park (2008), in notes from a roundtable discussion at the National Agricultural Education Inservice regarding literacy in agricultural education, emphasized the unique ability agri-

science teachers possess to facilitate content area reading in students who are motivated to learn the content. If agriscience teachers purposefully introduce reading strategies into instruction, these teachers have the ability to increase student reading motivation and comprehension. These experiences provide students with opportunities to learn lifelong literacy skills and engage students in the content (Park, 2008; Fisher & Ivey, 2005). However, historically, agriscience teachers have been the most resistant group of educators to the adoption and implementation of Content Area Reading Strategies [CARS]. O'Brien and Stewart (1990) found that of the pre-service content area teachers included in their study, agricultural educators nationally were the most opposed to classroom reading implementation. Eighty-five percent of the pre-service agricultural educators rejected content area reading (O'Brien & Stewart). More recently, Park and Osborne (2006a) identified teachers' lack of knowledge and confidence in CARS implementation as the main obstacles to incorporating reading into agricultural education programs with agriscience teachers unable identify specific CARS to implement in their curricula (Park and Osborne, 2006b).

Successful implementation and continuation of CARS instruction relies on prolonged professional development and support for teachers (Vacca, 2002a; Vacca 2002b). A school-wide effort for CARS professional development relying on proper organization, leadership, scheduling, and development is needed (Meltzer, 2001). Meltzer noted the need for continuing cycles of "(1) examining the outcomes, (2), reviewing and improving program components, (3) seeking practical feedback, and (4) implementing improvements" to ensure successful professional development support for CARS (p.7).

Educators, politicians, and parents have investigated how to improve student performance in all areas of education, especially literacy. School systems have invested time and money in teacher CARS professional development. Park and Osborne (2006b) stated the need to research the effectiveness of CARS professional development programs and the utilization of CARS in agriscience. An objective evaluation of the success of teacher professional development programs in content area reading in agriscience is needed to validate the continuation of these programs. In order to evaluate the success of an innovation, documentation of implementation must be achieved (Hall & Hord, 2006). Have teachers who have completed CARS professional development programs implemented CARS into the classrooms? The problem under investigation in this study was, what factors have influenced agriscience teachers' implementation of CARS instruction?

Literature Review/Theoretical Framework

The Concerns-Based Adoption Model [CBAM] (Hall & Hord, 2006) (Figure 1) was chosen as the theoretical base of this study for three reasons: 1) it is based on 35 years of research focused on educational change, 2) it has been extended and tested in different settings, and 3) it is recognized as one of the strongest models for educational change (Hall & Hord; Anderson, 1997). This research-based model is designed to facilitate change and provide a diagnostic method to measuring implementation of an innovation (Hall & Hord). The model consists of the environment, the user system culture, resource system, change facilitator team, interventions, users and nonusers, and three diagnostic measures: stages of concern, levels of use, and innovation configurations (Hall & Hord).

Stages of Concern [SoC] is a diagnostic component which addresses the affective side of change (Hall & Hord, 2006). The feelings and perceptions of participants are known as concerns. The SoC was developed based upon research on the evolution of concerns throughout the change process and depict a progression of concerns through which people move during the implementation process. Knowing teachers' concerns can help judge implementation of change or can be used to develop focused workshops, provide individual coaching, and create strategic plans to more effectively facilitate change.

Based on Fuller's (1969) identification of concerns, Hall and Hord (2006) have developed seven Stages of Concern. George, Hall, and Stiegelbauer (2006) offered the following definitions for each of the Stages of Concern:

0 Awareness: Little concern about or involvement with the innovation is indicated.

1 Informational: A general awareness of the innovation and interest in learning more detail about it is indicated.

2 Personal: [The] individual is uncertain about the demands of the innovation, his/her inadequacy to meet those demands, and his/her role with the innovation.

3 Management: Attention is focused on the processes and tasks of using the innovation and the best use of information and resources.

4 Consequences: Attention focuses on impact of the innovation on clients in his or her immediate sphere of influence.

5 Collaboration: The focus is on coordination and cooperation with others regarding use of the innovation.

6 Refocusing: The focus is on the exploration of more universal benefits from the innovation, including the possibility of major changes or replacement with a more powerful alternative.

Research has shown "there is a quasi-developmental path to the concerns as the change process unfolds" (Hall & Hord, 2006, p. 141). Although, they stated that neither the progression of concerns nor the direction of the progression is guaranteed. When proper conditions exist (i.e. appropriateness of change, proper involvement from leaders, and effective facilitation) participants move from Stages 1 & 2 to Stage 3 during the first couple years, and ideally they will move to Stages 4 & 5 around three to five years into implementation. Undesirable conditions can cause participants to cease progression or regress. Hall and Hord (2006) highlighted, SoC "reflect the idealized, developmental approach to change" (p. 142). Anderson (1997) explains, "CBAM theory idealizes the Stages of Concern as a developmental progression in which teachers implementing a change have concerns of varying intensity across all seven stages at different points in the change process" (p. 334). However, teacher concern may not progress through all stages in the suggested order.

Based upon a thorough literature review, the researchers identified the conceptual framework variables and created a conceptual model pictured in Figure 1. The conceptual model depicts the internal and external variables related to agriscience teachers' concerns regarding the implementation of content area reading strategies.

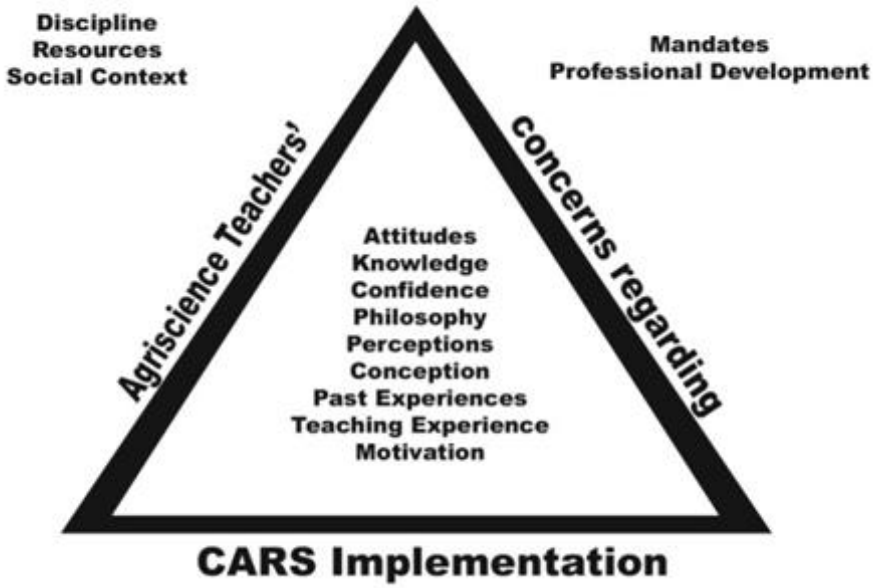

Figure 1. Conceptual model

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The researchers identified teacher attitudes, confidence, knowledge and experience, motivation, perceptions and conceptions, and teaching philosophy as internal variables for CARS implementation. Park and Osborne (2006a) studied agriscience teachers' attitudes concerning CARS and identified motivation, pressures, and barriers related to CARS implementation. Teachers were motivated to use CARS so students could establish background information. Pressures included the diversity of students and their reading abilities and the documentation of reading for administrators. Park and Osborne's findings identified that although teachers had a fundamental knowledge of CARS, several barriers concerning teachers' knowledge and confidence existed. However, the researchers found that positive teacher attitudes could also be passed to the students.

Teacher confidence and comfort with the innovation played a substantial role in implementation of information and communication technologies (Granger, Morbey, Lotherington, Owston, & Wideman, 2002) Park and Osborne (2004) acknowledged a lack of confidence in agriscience teachers' ability to use CARS and highlighted their lack of practice with CARS as a cause. Park and Osborne (2006a) identified a lack of confidence in utilization and lack of knowledge on the proper use of CARS as major implementation barriers.

In exploring agricultural educators' motivation to utilize CARS, Park and Osborne (2006a) found that no teachers "consciously implemented reading or CARS" (p. 43). They utilized reading assignments and corresponding questions as a way to establish baseline information or for substitute plans. Some of the participants did understand the importance of CARS. However, when participants knew they were in a study, teachers in a comparison group of a CARS study implemented twice the strategies as teachers in the treatment group (Park & Osborne, 2004). Park and Osborne (2004) concluded "with proper motivation, agriscience teachers may be willing to alter their preferred teaching methods and adopt new CARS."

Content teachers, including agriscience teachers, realized the importance of teaching specific comprehension skills for the content area (Bryant, Ugel, Thompson, Hamff, & Hougen, 2001; Park & Osborne, 2006b). Agriscience teachers believed reading was important for learning in agriscience, yet many teachers fail to assign individual texts to students which may "hinder reading development" (Park & Osborne, 2006b, p. 11). Park and Osborne recommend using trade journals and electronic texts in the agriscience classroom. They also suggested teachers focus more efforts on activities during the pre- and during-reading periods, model reading, and incorporate CARS into classroom instruction.

From the literature, the researchers identified discipline, mandates, professional development, and social context as external variables for CARS implementation. Aneke and Finch (1997) found no significant difference when comparing SoC based on vocational and academic teaching areas; however, they did not make comparisons within specific disciplines. Conversely, Bean (1997) found that preservice teachers' judgment of what CARS worked well for the discipline was a factor when selecting CARS. Moje (1996) found that students did not transfer CARS to other classrooms. She supported teaching domain specific content literacy methods in each discipline, so students develop social practices and knowledge necessary to apply them to that specific domain.

Park and Osborne (2004) found that agriscience teachers wanted additional professional development in CARS which addressed "where, how and why to use CARS in their agriscience courses" (p. 138-139). The teachers understood they needed further professional development and time to effectively incorporate CARS. Park suggested providing an opportunity for teachers to practice using and teaching the strategies during professional development.

Purpose and Objectives

The purpose of this research was to assess agricultural educators' implementation of content area reading strategies [CARS] in their classrooms. In order to meet the purpose of this study, the following objectives were investigated:

1. Determine the relationship between CARS professional development and the Stages of Concern of agriscience teachers.
2. Determine the relationship between CARS conceptual variables (age, involvement with other innovations, frequency of incorporation, gender, length of involvement, teaching experience, perceived level of expertise, & relationship with reading coach) and agriscience teachers' primary Stage of Concern.

Methodology

A descriptive census survey design was used in this study. The researcher used a web-based questionnaire to collect the Stages of Concern and contributing variables of Florida agriscience teachers towards the implementation of content area reading strategies (CARS).The population for this study was Florida agriscience teachers. The researcher obtained a list of current Florida agriscience teachers (N = 371) from the 2008 Florida Agricultural Education Directory which served as the population frame (Myers & Warner, 2008). The 2008 Florida Agricultural Education Directory was chosen as the population frame because it functioned as the only updated, comprehensive list of Florida agriscience teachers in the state at the time of this study (fall 2008) and thus was the best possible control of frame error. Two hundred fourteen questionnaires were completed for an overall response rate of 57.7% (n = 214).

The researcher utilized the Stages of Concern Questionnaire (SoCQ) developed by George et al. (2006). The Stages of Concern Questionnaire (SoCQ) is the most rigorous and reliable form of SoC assessment (Hall & Hord, 2006). This questionnaire is composed of 35 Likert-type questions that assess the concerns of the individuals involved in the educational innovation change process – in this case the integration of Content Area Reading Strategies (CARS). This questionnaire allows respondents to indicate the relevance and intensity of their concerns towards CARS. In addition to the Likert questions, a free-response question was included to allow participants to express their concerns in their own words, as recommended by Hall and Hord (2006) and G. Hall, personal communication (2008).

In addition to the SoCQ, the researcher included several questions to determine the CARS professional development history of the teachers. Teachers were asked to indicate whether they had completed different levels of training, give the numbers of hours spent in each type of training, and provide a brief description of the training. Lastly, demographic questions were included to better understand the population and to assess the conceptual variables identified.

Upon IRB approval, the researcher proceeded with the survey guided by the Tailored Design Method (Dillman, 2007) for survey collection. Descriptive statistics, including frequencies and central tendencies, and correlational statistics were used to analyze the concerns of agriscience teachers towards CARS. Additionally, the SOCQ-075 Graph and Print program was used to create an overall concerns profile for the group (Scott & Persichitte, 2006).

Dillman (2007) recommended addressing nonresponse error in all survey-based research studies because the potential for this type of error exists in all survey research. Since it would be challenging to address the Stage of Concern variable in a brief phone survey with nonrespondents, concern profiles were created for early respondents and late respondents. Ary, Jacobs, Razavieh, and Sorensen, (2006) stated that research has shown that similarities usually exist between late respondents and nonrespondents. Pace (1939) found that nonrespondents and late respondents are similar. These similarities allow for researchers to estimate the responses of nonrespondents based upon late respondents. Thus, early and late respondents were compared to address nonresponse error. Early respondents (n = 66) were defined as the participants who responded to the cover letter with the first link to the survey, before the reminder e-mail was sent.

Late respondents (n = 42) were defined as participants who responded after the final contact was made. Concern profiles for both groups were non-user profiles showing resistance to change. Due to the similarity of the profiles, no significant difference between respondents and nonrespondents, in this population, is expected.

Findings

Of the respondents, 55.6% (n = 85) were male and 44.4% (n = 68) were female. The age range with the greatest number of participants was 51-60 with 29.4 % (Table 1). The age range with the least amount of participants was >60 with 5.9%.

Table 1
Ages of participants (n = 153)

Age Range	*f*	%
51-60	45	29.4
21-30	38	24.8
41-50	33	21.6
31-40	28	18.3
> 60	9	5.9

Note. f=frequency.

Teachers reported their number of years teaching to be between 0 and 40 with a mean of 15.2 years. When teachers were asked if they have taught any subjects in addition to agriculture, 53.2% (n = 82) responded yes, while 46.8% (n = 72) responded no. Participants were asked how long they have been involved with content area reading strategies, not counting this year. Of the responses, 48.4% (n = 74) responded they had never been involved with the innovation and 15.7% (n = 24) responded they have been involved for five or more years.

When asked at which level of expertise the participant considered himself/herself to be, over 60% of the participants considered themselves to be non-users or novice users. Almost 40% considered themselves intermediate users or old hands. None of the respondents considered themselves to be a past user of the innovation (Table 2).

Table 2
Teachers perceptions of their expertise with CARS (n=153)

Perception	*f*	%
Non-user	51	33.3
Novice	45	29.4
Intermediate	43	28.1
Old hand	14	9.2
Past user	0	0.0

Note. f=frequency.

Participants were asked how often they have been incorporating CARS into their lesson. Respondents indicated 16.3% (n = 24) incorporated CARS 3-4 times a week. A third of the respondents (n = 49) reported incorporating CARS< 1 per month. Concern profiles were developed based on teachers' frequency of use of CARS (Figure 2). Each of these profiles were *nonuser* profiles with a slight *negative one-two split*. According to concern profile interpretation guidelines provided by George et al. (2006), the *negative one-two split* occurs when personal concerns are higher than informational concerns. This indicated that teachers were more concerned about how the use of CARS would affect their position and job security than they were about learning more about the concern. Teachers with a *negative one-two split* may demonstrate resistance to the change. Their personal concerns need to be addressed for them to continue to progress through implementation. Weekly and monthly users had slightly higher intensity concerns than seldom and nonusers.

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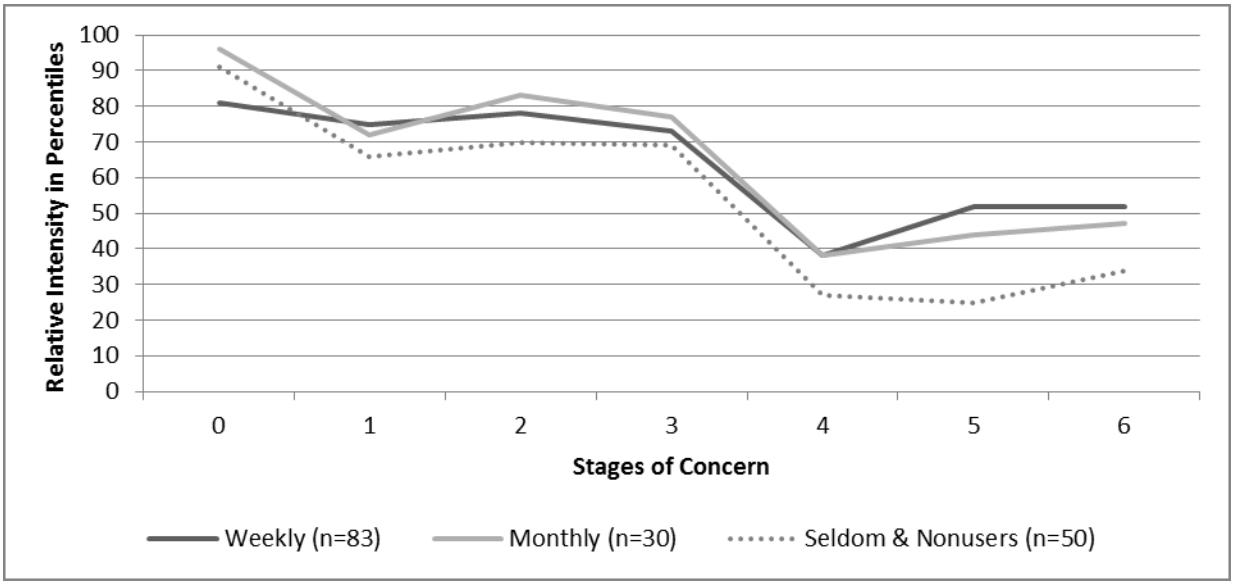

Figure 2. Concerns profile for teachers based on frequency of use.

The major difference in these three profiles, was the direction of the tail of the graph at Stage 6. The weekly users score for Stage 6 was the same as their score for Stage 5, thus the profile neither tailed up or down. Monthly users had only a slight *tailing-up* of three points, which indicated that they have other ideas which may be competing with the innovation, but these ideas have not caused much resistance to the innovation (George et al. 2006). Seldom and nonusers have a *tailing-up* of 9 points. This indicated a resistance to the implementation of CARS.

Participants were asked to rate their working relationship with the reading coach from their school. One-third of respondents indicated they had a weak or very weak relationship with the reading coach. Only about 26% (n = 39) of respondents considered their relationship to be strong or very strong, but two-thirds rated their relationship average or higher.

Participants were asked if they have been currently involved in the first or second year of another major innovation or program. In response to this question, 55.6% (n = 85) of the respondents indicated they were involved in the first or second year of another major innovation and 44.4% (n = 68) of the respondents indicated they were not involved in the first or second year of another major innovation. These innovations focused on incorporating reading, science, math, technology, active learning strategies, and differentiated instruction in the classroom.

The teachers were asked what they believed to be the biggest barriers to CARS implementation in their school (Table 3). Of the respondents, 5.4% (n = 6) were unsure what barriers existed. The number one barrier identified by the respondents was time (33.9%; n = 38).

Table 3
Teacher perceived barriers to school-wide CARS implementation (n = 92)

Barrier	*f*	%
Time	38	41.3
None	15	16.3
Other demands	10	10.9
Training needs	8	8.7
Unsure	6	6.5
Planning and preparation	5	5.4
Materials/resources	4	4.3
Student interest and motivation	4	4.3

Note. f=frequency. % = > 100 due to teachers identifying multiple barriers.

Stages of Concern profiles were developed based on the number of professional development hours completed (Figures 3-5). Overall, a general pattern did not emerge from the profiles based on the amount of professional development they received. Each profile was characterized by a high relative intensity (88-99) in Stage 0, Awareness, with the exception of teachers with 81-90 hours of professional development. Of the 14 profiles developed, between 1 and >130 hours of professional development, 9 of them *tail-up*. The *tailing-up* indicates that teachers have other ideas which compete with the innovation (George et al. 2006). From the 9 profiles which *tail-up*, 6 of them increase more than 10 percentile points. Some of the profiles identified strong peaks, such as those with 61-70 hours of research in management and those with > 130 hours in collaboration. According to standards set by George et al., all profiles for all levels of professional development were classified *nonuser profiles*.

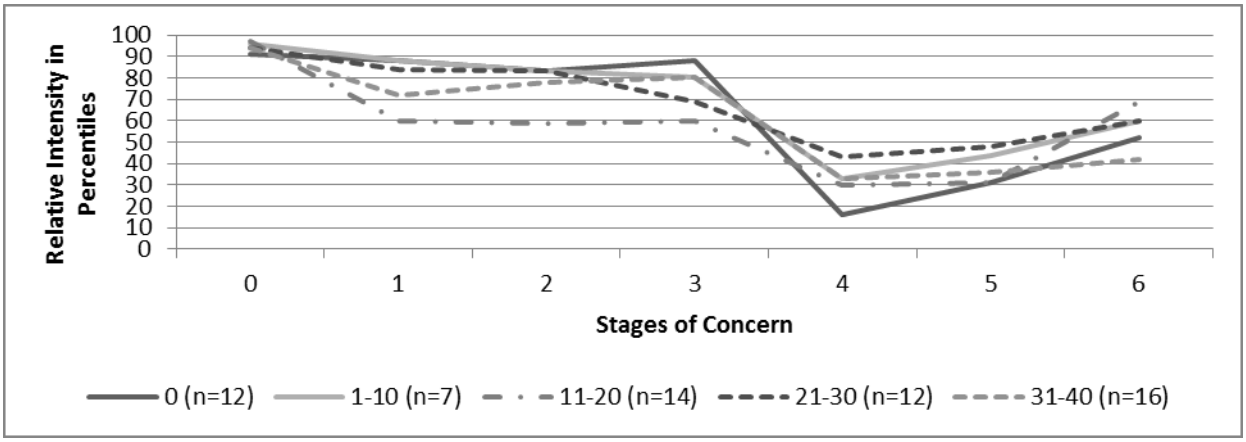

Figure 3. Group concerns profiles for teachers with 0-40 hours of CARS professional development.

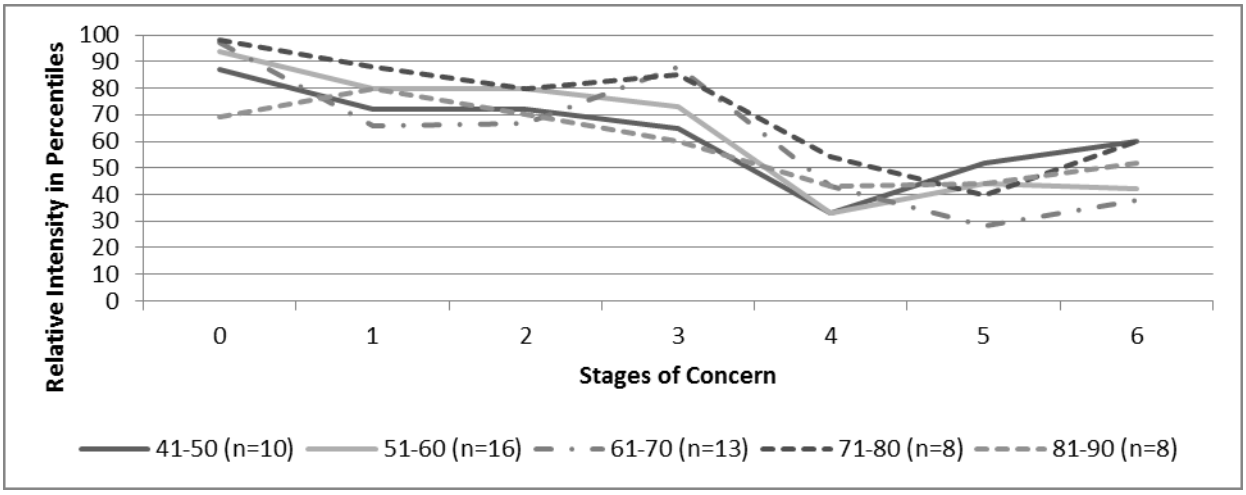

Figure 4. Group concerns profile for teachers with 41-90 hours of CARS professional development

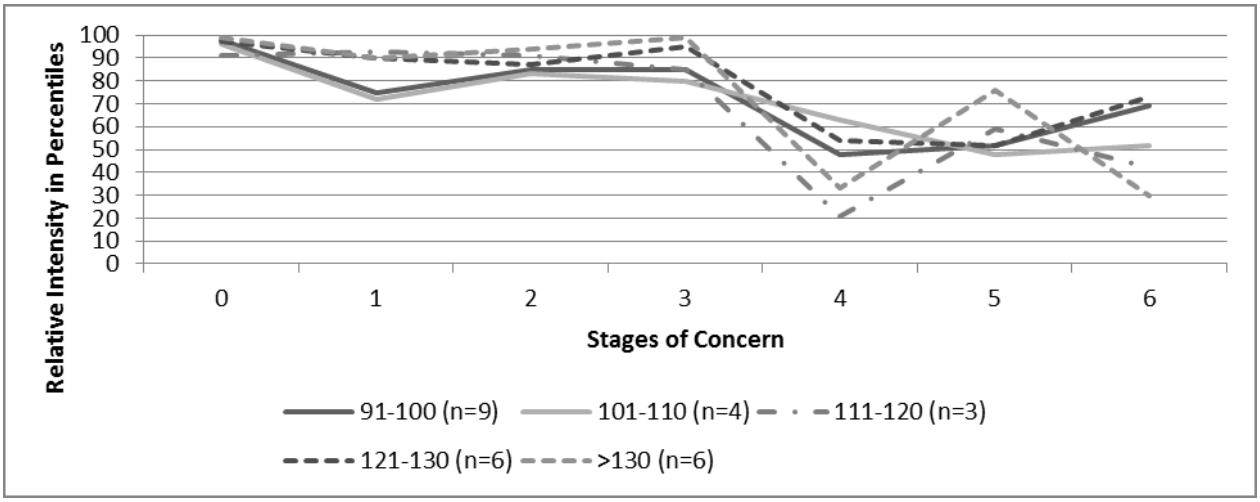

Figure 5. Concerns profile for teachers with 91->130 hours of CARS professional development.

George et al. (2006) suggested analyzing the primary Stage of Concern of participants. Frequencies were calculated on the primary Stage of Concern for participants (Table 4). The majority of participants' (51.3%, n = 96) primary Stage of Concern was in the awareness stage, Stage 0.

Table 4
Primary Stage of Concern frequencies (n = 187)

Primary Stage of Concern	*f*	%
Stage 0 – Awareness	96	51.3
Stage 2 – Personal	29	15.5
Stage 3 – Management	28	15.0
Stage 1 – Informational	23	12.3
Stage 5 – Collaboration	7	3.7
Stage 6 – Refocusing	4	1.9
Stage 4 – Consequences	0	0.0

Note. f = frequency.

Correlations were calculated to determine the magnitude and direction of the relationship between conceptual variables and the primary Stage of Concern. Correlations between variables with ordinal data were calculated using Spearman's rho (Table 5). All of the correlations were determined to be positive with the exception of frequency of incorporating CARS, past teaching experiences, and current involvement in other innovations which were determined to be negative correlations.

Teachers perceived level of expertise had a moderate correlation coefficient above 0.30. Frequency of incorporating CARS and relationship with the reading coach had low correlation coefficients between 0.10 and 0.29. Current involvement in other innovations, number of years teaching, and gender had negligible correlation coefficients between 0.01 and 0.09.

Table 5
Spearman's rho correlation coefficient between demographic variables and primary Stage of Concern

Demographic	n	r
Perceived level of expertise	153	.30
Frequency of incorporating CARS	147	-.29
Length of involvement with CARS	153	.26
Relationship with reading coach	144	.20
Age	153	.18
Past teaching experiences	154	-.14
Current involvement in other innovations[1]	148	-.09
Number of years teaching	152	.09
Gender[2]	153	.07

[1] Coded: 1 = involved in other innovations; 2 = not involved in other innovations
[2] Coded: 1 = male; 2 = female

Conclusions & Recommendations

Gender of the participants, other teaching experiences, nor certification area had a strong relationship to their primary Stage of Concern. This study concurred with Aneke and Finch's (1997) conclusion that years of teaching experience did not affect teachers' SoC. This conclusion indicates teachers with different areas of certification and various levels of teaching experience can successfully implement CARS. Researchers should further investigate if specific types of experiences find it easier to integrate CARS.

Length of involvement with the innovation and participants' primary Stage of Concern had a low magnitude correlation (r = .26) indicating, as teachers have more experience with the innovation, their concerns had a slight tendency to progress to higher stages. These findings reinforce the 3-5 year time frame Hall and Hord (2006) identified for an innovation to be implemented at a high level and the first change principle "Change is a process, not an event" (p. 4). However, the correlation only explains 6.86% of the variance. Additionally the finding corroborated Aneke and Finch's (1997) conclusion that teachers with more innovation-related experience had further progressed concerns. However, the correlation between the frequency of CARS incorporation and teachers' primary Stage of Concern contradicted Aneke and Finch's finding. This negative correlation indicated that teachers who incorporated CARS more frequently tended to have lower primary Stages of Concern.

When profiles were developed based upon weekly, monthly, and seldom/never use of CARS, no substantial differences were found, which did not support any of the literature or other findings. Although social desirability bias, when respondents answer the way they think they are supposed to answer, rather than responding with the truthful answer, may offer one explanation to this oddity (Ary et al., 2006). If teachers misreported the frequency with which they utilize CARS based on how often they are suppose to use CARS rather than reporting their actual usage, they could have biased the information collected and caused the peculiarity in the findings. More research should be completed to determine if this correlation can be supported or not.

The third of participants (n = 48) who reported a weak or very weak relationship with their reading coach may have an opportunity to progress through the Stages of Concerns by developing a stronger relationship. The reading coach should participate on the change facilitator team for the CARS innovation to provide their expertise and develop relationships with the teachers. Teachers with a better working relationship with the reading coach will most likely feel more comfortable to approach the reading coach for support or more confident in the information the reading coach provides them. Hall and Hord (2006) underscore the importance this interaction plays in successful im-

plementation. Close working relationships between agriscience teachers and reading coaches should be nourished and researchers should investigate the effects of these relationships to CARS implementation.

Teachers tend to move through the Stages of Concern as their perceived level of expertise increases. This self-perceived expertise accounted for 9.12% of the variance. This supports Aneke and Finch's (1997) conclusion that teachers' concerns progressed as their experience with the innovation increased. Teachers can improve the effectiveness and efficiency of their use of CARS from their experiences. As these teachers become more effective in their use of the strategy and it becomes a natural teaching tool, they can focus more on the high level concerns and less on the lower level concerns. Building experiences through professional development programs may enable teachers to progress through the Stages of Concern faster.

The large standard deviation (SD = 52.20) and range (312) between the total number of professional development hours indicated a lack of consistency in professional development programs completed by agriscience teachers. The results have clearly indicated that the total number of CARS professional development hours is not related to progression through the Stages of Concern. These results contradict Aneke and Finch (1997) who found that Stages of Concern profiles and the intensity of the concerns changed when grouped by "hours of reform-related training" (p. 10). However, Aneke and Finch underscored the importance of these trainings to address the personal concerns of the participating teachers. This observation may indicate that it is more important to focus on the quality of the professional development and its ability to meet the needs of the teachers, rather than just the number of hours spent in professional development.

Baker, Gersten, Dimino, and Griffiths (2004) identified three key components of a professional development program which led to sustained success of an educational innovation. These components included: (1) an initial training to establish the *big picture*, (2) on-going, on-site support for the first 5 years, and (3) school investment of funds. The authors emphasized the importance of providing on-going support throughout the implementation process which supports similar suggestions made by Hall and Hord (2006). Agriscience teachers have acknowledged that implementing this innovation will require time to adapt (Park, 2005). On-going support during this adaptation period should make the process more effective and more efficient.

Based on this study, the researcher suggests that practitioners consider the following recommendations:

1. A consistent, in depth professional development program should be implemented to provide ongoing training and support of the innovation throughout a several year process.
2. Professional development should provide an opportunity for teachers to demonstrate and practice their CARS skills.
3. Schools should utilize Stages of Concern questionnaires measure the effect of professional development on Stages of Concern and measure the success of implementation.

This study has identified the need for research in the following areas:

1. Research should be conducted to verify the concern profiles developed for the participants in this study.
2. In order to better understand the differences of the professional development programs, research should be conducted to determine the characteristics of various CARS professional development programs.
3. Research should be completed on the effectiveness of different professional development programs in order to be able design more effective and efficient programs.
4. To better meet the professional development needs of teachers, research should be conducted to identify the specific CARS professional development needs of agriscience teachers.
5. Further research should examine these variables and their relationship to the CARS innovation.

6. Motivation levels of agriculture teachers to participate in the CARS innovation implementation.

Professional development theory holds that successful implementation and continuation of CARS instruction is relies heavily on sustained consistent teacher professional development and support (Vacca, 2002a, Vacca 2002b). The findings of this study suggest that professional development opportunities provided to agriscience teachers in the area of Content Area Reading Strategies is neither sustained nor consistent. This incongruence must be addressed by the profession in order or any real impact to be realized in the agriscience classrooms. Without consistency in the method and message of teacher professional development, research in assessing the impact of such activities will continue to be very difficult.

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