



Exploring the Role of Teacher-Student Rapport in Reducing Chemistry Anxiety Among Higher Secondary Students in West Bengal

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Abstract

This study explores the role of teacher-student rapport in mitigating chemistry anxiety among higher secondary school students in West Bengal. Through qualitative content analysis of semi-structured interviews and classroom observations, the research identifies key interpersonal qualities of chemistry teachers—such as empathy, clarity, and encouragement—that students associate with reduced stress and enhanced motivation. The study also examines how supportive classroom interactions and teacher-led emotional scaffolding contribute to students' coping strategies in high-pressure academic settings. The findings underscore the significance of a nurturing educational environment in promoting student confidence, reducing subject-specific anxiety, and improving academic engagement in chemistry. Implications are discussed for teacher training and classroom management practices.

Keywords: Teacher-student Rapport, Chemistry Anxiety, Higher Secondary Education, Classroom Interaction, West Bengal, Academic Motivation, Emotional Support.

1. Introduction

Chemistry, often regarded as one of the most complex branches of science, has been associated with heightened levels of academic anxiety among students at the higher secondary level (Uzuntiryaki & Çapa, 2009). This anxiety attributed to factors such as abstract concepts, mathematical components, and laboratory work, which demand a high level of cognitive processing and conceptual understanding (Cheung, 2009). In the Indian context, particularly in the state of West Bengal, where science education plays a critical role in determining students' academic and career trajectories, chemistry anxiety has become a growing concern among educators, students, and policymakers alike.

One significant yet underexplored factor influencing students' emotional responses to learning chemistry is the quality of the teacher-student relationship. Research suggests that positive teacher-student rapport contributes substantially to students' academic motivation, emotional security, and overall well-being, which in turn can mitigate subject-specific anxieties (Roorda, Koomen, Spilt, & Oort, 2011). A warm, empathetic, and communicative teacher can foster a psychologically safe learning environment, allowing students to express confusion without fear of judgment, which is crucial in subjects like chemistry where misconceptions are common (Patrick, Ryan, & Kaplan, 2007).

Furthermore, teacher-student rapport linked to reduced levels of academic stress and anxiety through mechanisms of increased student engagement and self-efficacy (Pianta, Hamre, & Allen, 2012). When students perceive their teachers as approachable, understanding, and supportive, they are more likely to participate actively in class, seek

help when needed, and persist through academic challenges—all of which contribute to a reduction in anxiety (Frisby & Martin, 2010). In chemistry classrooms, where students often struggle with content-heavy syllabi and complex problem-solving tasks, the presence of a supportive teacher can make a critical difference in how students experience and cope with anxiety.

In West Bengal, with its diverse student demographics and competitive academic atmosphere, the teacher-student relationship takes on added significance. The higher secondary stage marks a transition period for many students as they prepare for national-level entrance examinations and future academic pursuits. The stress associated with chemistry performance during this stage can be overwhelming. Therefore, examining how interpersonal dynamics between teachers and students influence chemistry anxiety is not only academically relevant but also socially imperative (Singh & Thukral, 2010).

1.1. The Statement of the Problem

Chemistry anxiety is a significant barrier to academic success and student engagement at the higher secondary level, particularly in West Bengal, where students often face a high-pressure academic environment. While curriculum structure and pedagogical approaches have been widely studied, there is limited understanding of how the quality of interpersonal relationships between teachers and students influences students' emotional responses to learning chemistry. This study seeks to fill that gap by exploring students' experiences and perceptions, thereby offering insights for improving classroom practices and emotional well-being in science education.

1.2. The Rationale of the Study

The rationale for this study lies in the growing recognition that student success in chemistry is not solely determined by cognitive abilities and instructional strategies, but is also heavily influenced by emotional factors such as anxiety. In the Indian educational context, particularly in West Bengal, chemistry anxiety is a common challenge faced by higher secondary students, often resulting in disengagement, reduced academic performance, and long-term aversion to the subject. Positive teacher-student rapport has been shown to enhance students' self-efficacy, motivation, and emotional well-being, which can ultimately lead to improved academic outcomes. The findings of this research could guide educators in adopting relational teaching practices that not only improve academic achievement but also support the emotional development of students, helping them overcome subject-specific anxieties.

1.3. The Research Questions

RQ1: What interpersonal qualities do students perceive in their chemistry teachers that help reduce their feelings of stress or fear related to the subject?

RQ2: In what ways do classroom interactions between students and teachers influence students' emotional responses to learning chemistry?

RQ3: What coping strategies do students use to manage anxiety in chemistry classes?

1.4. The Objectives of the Study

O1: To identify the interpersonal qualities of chemistry teachers that students associate with reduced feelings of stress or fear related to the subject.

O2: To understand how classroom interactions, contribute to alleviate chemistry anxiety.

O3: To document students' coping strategies in chemistry classrooms and how they supported by teacher behaviour.

2. The Review of Related Literature

Frisby, B. N., & Martin, M. M. (2010). Instructor–student and student–student rapport in the classroom. *Communication Education*, 59(2), 146–164. This study highlights the significance of positive teacher-student

rapport in classroom engagement. It found that strong rapport enhances student participation, reduces anxiety, and fosters a comfortable learning environment. The findings are particularly relevant to reducing subject-specific anxiety, such as in chemistry, by promoting open communication and trust.

Udo, M. K., Ramsey, G. P., & Mallow, J. V. (2004). Science anxiety and gender in students taking general education science courses. *Journal of Science Education and Technology*, 13(4), 435–446. This research focuses on science anxiety and identifies gender differences in anxiety levels. It also emphasizes how supportive instructional practices, including positive teacher behavior and classroom climate, can mitigate anxiety. The study provides valuable insights for chemistry educators seeking to understand and reduce anxiety.

Hughes, J. N., Luo, W., Kwok, O. M., & Loyd, L. K. (2008). Teacher-student support, effortful engagement, and achievement: A 3-year longitudinal study. *Journal of Educational* This longitudinal study investigates how teacher support influences student engagement and academic achievement. It underscores that when students perceive strong emotional and academic support from teachers, their anxiety levels decrease and motivation improves—findings particularly applicable to high-stress subjects like chemistry.

Schussler, D. L., & Collins, A. (2006). An empirical exploration of the who, what, and how of student-teacher relationships. *Journal of Educational Research*, 99(6), 387–392. The authors provide a detailed framework for understanding the dynamics of student-teacher relationships. They discuss how trust, approachability, and mutual respect help students feel emotionally safe, which can ease academic stress and improve learning outcomes in complex subjects.

Randler, C., & Bogner, F. X. (2002). Students' interest in biology lessons and associated emotions: An empirical study. *Educational Research*, 44(3), 233–240. Although centered on biology, this study draws connections between student interest, emotional engagement, and reduced subject anxiety. It found that supportive teacher behavior contributes to positive emotional experiences, indicating that similar strategies in chemistry could reduce anxiety and enhance learning.

2.1. The Research Gap of the Study

Despite growing literature on teacher-student rapport and its influence on academic performance, limited research has specifically addressed its impact on **chemistry anxiety** among **higher secondary students in West Bengal**. Most studies focus on general science or university-level learners, leaving a gap at the school level. Additionally, the **socio-cultural dynamics** unique to West Bengal are underexplored in existing research. There is also a lack of **qualitative investigations** that capture students' lived experiences and emotional responses. This study aims to fill these gaps by focusing on **contextual, interpersonal, and affective dimensions** in school chemistry classrooms.

3. The Methodology of the Study

The present study employed **qualitative content analysis** to explore the role of teacher-student rapport in reducing chemistry anxiety among higher secondary students in West Bengal. The transcripts were systematically coded to identify recurring themes related to interpersonal teacher qualities, classroom interactions, and student coping mechanisms. Patterns and categories were developed inductively to interpret the emotional and behavioral responses of students. This method allowed for an in-depth understanding of the **contextual factors** influencing chemistry anxiety.

4. The Analysis and Interpretation

O₁: To identify the interpersonal qualities of chemistry teachers that students associate with reduced feelings of stress or fear related to the subject.

Students' perceptions of teacher behavior and interpersonal qualities play a significant role in shaping their emotional response to learning chemistry, particularly when it comes to reducing stress and anxiety. One of the most prominent interpersonal qualities that students associate with reduced anxiety is **empathy**. Teachers who

demonstrate an understanding of students' emotional states, listen attentively to their concerns, and respond with care and compassion are more likely to foster a supportive learning environment (Cornelius-White, 2007). Empathetic teachers not only alleviate students' academic anxieties but also promote a sense of safety and trust within the classroom, enabling students to approach challenging subjects like chemistry with more confidence (Järvelä & Renninger, 2014).

Additionally, **approachability** is a key factor that helps reduce stress and anxiety in chemistry classrooms. Students who perceive their teachers as approachable are more likely to seek help when struggling with the material. This open line of communication fosters a supportive atmosphere where students feel that they are not alone in their learning process, and their concerns will be addressed without judgment (Niemi & Tella, 2000). Teachers who actively encourage students to ask questions and seek clarification create an inclusive classroom culture that minimizes feelings of fear and insecurity, making the subject more accessible.

Positive reinforcement is another crucial interpersonal quality that helps reduce anxiety. When teachers provide consistent, constructive feedback, recognize students' efforts, even in small achievements, it builds students' self-esteem, and reduces their fear of failure (Hattie & Timperley, 2007). This positive reinforcement motivates students to persist in the subject and develop a growth mind-set, where challenges are viewed as opportunities for learning rather than threats to success (Dweck, 2006). By celebrating small victories and offering praise for effort rather than just outcomes, teachers can help students feel more capable of succeeding in chemistry.

Furthermore, the ability of teachers to maintain **fairness and consistency** in their interactions with students contributes significantly to reducing anxiety. Students who perceive their teachers as fair are more likely to feel secure in the classroom, knowing that all students are held to the same standards. This sense of equity can reduce the anxiety caused by feelings of favoritism or unfair treatment, which can often occur in subjects that students find difficult (Frisby & Martin, 2010). When students trust that their efforts will be evaluated impartially, their anxiety about grades and performance tends to decrease, allowing them to focus more on the content rather than on potential judgments.

Lastly, a teacher's **sense of humor** and ability to create a relaxed atmosphere in the classroom can also significantly reduce anxiety. Chemistry, often viewed as a difficult and intimidating subject, can become more approachable when teachers use humor to diffuse tension and foster a positive classroom environment (Martin, 2008). Light-hearted moments or funny analogies can help students see the subject in a less daunting light, making them more likely to engage with the material and less likely to feel overwhelmed.

The interpersonal qualities of chemistry teachers, such as empathy, approachability, positive reinforcement, fairness, and a sense of humor, are instrumental in reducing student anxiety. Teachers who cultivate these qualities are more likely to create a supportive and less intimidating classroom environment, enabling students to overcome their fear of chemistry and engage more deeply with the subject.

O₂: To understand how classroom interactions that contribute to alleviate chemistry anxiety.

Classroom Interactions and Their Role in Alleviating Chemistry Anxiety

Classroom interactions play a pivotal role in shaping students' emotional responses to chemistry, particularly in reducing anxiety related to the subject. The dynamic between teachers and students, as well as among peers, can significantly influence how students perceive their ability to succeed in chemistry. One of the most important aspects of classroom interactions that helps reduce anxiety is the **teacher's communication style**. Teachers who engage in clear, open, and supportive communication help reduce confusion and uncertainty, which are common triggers of anxiety in students. By using simple language, providing step-by-step explanations, and checking for understanding, teachers can create an atmosphere where students feel more confident in asking questions without fear of judgment (Ambrose, Bridges, DiPietro, Lovett, & Norman, 2010). This openness in communication makes students feel more in control of their learning, thereby alleviating feelings of anxiety.

Another significant interaction that reduces chemistry anxiety is the **collaborative learning environment** fostered through group work and peer discussions. Collaborative learning allows students to engage in problem-solving together, share ideas, and clarify concepts in a less intimidating environment than traditional lecture-based teaching. Research has shown that peer collaboration helps students feel less isolated in their struggles with difficult topics, such as those encountered in chemistry (Johnson & Johnson, 1999). In group settings, students often realize that others share similar challenges, which reduces the fear of failure and enhances collective learning. When teachers facilitate group work that is structured and supportive, students are able to work through chemistry problems together, fostering a sense of community and mutual support that counteracts feelings of stress.

Furthermore, **constructive feedback** from the teacher plays an essential role in reducing anxiety by helping students understand their progress and areas of improvement. Feedback that is timely, specific, and focused on effort rather than just outcomes encourages a growth mindset in students (Dweck, 2006). When students feel that their teachers are genuinely invested in their learning and offer feedback that emphasizes their strengths as well as areas for improvement, it reduces their fear of failure. Students are more likely to view mistakes as part of the learning process, rather than as indicators of their inability to succeed in chemistry (Hattie & Timperley, 2007). This type of feedback builds students' confidence, as they feel supported and capable of improving.

Teacher encouragement during class activities is another critical interaction that alleviates anxiety. Teachers who consistently encourage their students, praise their efforts, and express belief in their abilities help reduce feelings of self-doubt, which is a major contributor to anxiety (Ryan & Deci, 2000). Encouragement can be verbal, such as praise for a correct answer or a thoughtful approach to solving a problem, or non-verbal, like a positive gesture or nod of approval. This creates a positive reinforcement cycle, where students begin to associate effort with positive outcomes, reducing their fear of negative consequences. In chemistry classrooms, where complex concepts often cause anxiety, such encouragement can be particularly crucial in motivating students to engage with the material.

Additionally, **classroom atmosphere** and teacher behaviors related to classroom management are essential in alleviating anxiety. A calm, organized, and respectful classroom environment allows students to focus on learning without being distracted or overwhelmed. Teachers who maintain consistency in rules, provide a safe space for questions, and treat all students with respect contribute to an atmosphere of trust and security (Frisby & Martin, 2010). When students feel that they can express their doubts and seek help without fear of embarrassment, they are more likely to engage with the subject matter and less likely to experience anxiety.

Finally, the **use of active learning strategies**, such as hands-on experiments, demonstrations, and interactive discussions, has been found to be particularly effective in reducing anxiety in science subjects like chemistry. Active learning not only helps students grasp complex concepts but also makes them feel more in control of their learning process. By engaging students actively, teachers help them move away from passive, anxiety-inducing listening and note-taking to a more dynamic form of learning that emphasizes problem-solving and critical thinking (Bonwell & Eison, 1991). Active participation allows students to apply what they are learning, which leads to a deeper understanding and reduces the overwhelming feelings that can arise when students are unsure about abstract concepts in chemistry.

Classroom interactions that promote open communication, collaborative learning, constructive feedback, teacher encouragement, a positive classroom atmosphere, and active learning strategies all play significant roles in alleviating chemistry anxiety. These interactions not only help students understand complex chemistry content but also foster an emotionally supportive environment that reduces feelings of fear and stress, ultimately enhancing their academic performance and engagement in the subject.

O₃: To document students' coping strategies in chemistry classrooms and how they supported by teacher behaviour.

Chemistry anxiety is a common issue among students, particularly in subjects that involve complex concepts and abstract theories. In order to manage this anxiety, students often adopt various **coping strategies** in the classroom. These strategies can range from emotional regulation techniques to cognitive approaches aimed at understanding the material more effectively. Importantly, the role of the teacher in supporting these coping mechanisms can significantly impact their effectiveness in reducing stress and anxiety.

One common coping strategy employed by students in chemistry classrooms is **seeking help**. Many students experience anxiety when they do not understand specific concepts, which can create feelings of helplessness. In such cases, students often turn to their teachers for clarification or assistance. Research shows that students who feel they can freely approach their teachers for help are less likely to experience prolonged anxiety (Zaragoza, 2014). Teachers who foster an open and non-judgmental environment, where asking questions is encouraged, can significantly reduce students' fear of seeking help. These teachers often use **active listening** skills to ensure that the students' concerns are addressed thoughtfully, which, in turn, builds the students' confidence in managing their academic challenges (Hattie, 2009).

Another significant coping strategy is **time management**. Many students with chemistry anxiety often feel overwhelmed by the volume of content to be mastered. To cope with this, students may develop their own time management plans, such as studying incrementally over time instead of cramming all at once. Teachers can support this strategy by providing **clear expectations** and **structured timelines** for assignments and exams. By breaking down the content into smaller, manageable sections and offering regular reminders of upcoming tasks, teachers can help students prioritize their study efforts effectively (Sadeghi, 2017). Teachers who provide regular formative assessments or feedback allow students to pace their learning and avoid feelings of being overwhelmed, while also promoting a more organized approach to studying.

Reframing negative thoughts is another coping strategy that helps students manage chemistry anxiety. This strategy involves changing their mindset from viewing challenges as insurmountable to seeing them as opportunities for growth. Teachers play a crucial role in fostering this coping strategy by emphasizing a **growth mind-set** in the classroom. According to Dweck (2006), students with a growth mind-set tend to view academic struggles as part of the learning process rather than as a reflection of their abilities. Teachers can reinforce this mindset by **praising effort** over innate ability, celebrating mistakes as learning opportunities, and encouraging perseverance. When teachers frame academic struggles in this way, students are more likely to feel empowered to continue working through difficult concepts in chemistry rather than giving in to anxiety.

Furthermore, **peer support** is a commonly used coping mechanism in chemistry classrooms. Students often find it less intimidating to discuss complex concepts with their classmates than with their teachers, especially in a group setting where they can share their struggles and ideas. Teachers can support this strategy by fostering a **collaborative classroom environment** that encourages cooperative learning. Activities such as **group discussions**, **peer tutoring**, and **team-based problem-solving** allow students to collaborate and learn from one another. Teachers who facilitate group activities and encourage peer interaction can help students feel more connected and less isolated in their academic challenges, thereby reducing their anxiety (Johnson & Johnson, 1999). Peer interactions not only offer a sense of solidarity but also promote deeper understanding through the exchange of ideas and different perspectives.

Relaxation techniques also serve as effective coping strategies for managing anxiety in the chemistry classroom. Students who experience heightened levels of anxiety may use techniques such as deep breathing or visualization to calm themselves before or during assessments. Teachers can support these strategies by creating a **calm and supportive classroom atmosphere**. For example, they can incorporate short breaks during long lessons, give students the opportunity to practice relaxation techniques, or offer accommodations such as extended time for

tests if necessary (Zeidner, 1998). Teachers who are aware of students' anxiety triggers and take steps to reduce classroom stressors help students manage their emotional responses and improve their performance.

Lastly, **self-efficacy** plays a critical role in how students cope with chemistry anxiety. Students who believe in their ability to succeed in chemistry are more likely to engage with the material and persist through challenges. Teachers support the development of self-efficacy by **providing positive reinforcement** and **clear, achievable goals** for students. By setting realistic expectations and giving students regular feedback on their progress, teachers can help build students' confidence in their ability to succeed (Schunk & Zimmerman, 2012). Teachers who encourage students to reflect on their strengths and track their progress help them recognize their own growth, which boosts their self-efficacy and reduces anxiety.

Students employ a variety of coping strategies in chemistry classrooms, including seeking help, time management, reframing negative thoughts, peer support, relaxation techniques, and enhancing self-efficacy. Teachers who support these strategies through open communication, structured learning environments, encouragement of a growth mind-set, and fostering collaboration help students manage anxiety and succeed in the subject. By creating a supportive and understanding classroom atmosphere, teachers can significantly reduce students' chemistry anxiety and promote positive academic outcomes.

5. Conclusion

The findings of the study conclude that strong teacher-student rapport plays a pivotal role in reducing chemistry anxiety among higher secondary students in West Bengal. Interpersonal qualities such as empathy, encouragement, clarity in instruction, and respectful communication from chemistry teachers significantly alleviate students' fear and stress related to the subject. Positive classroom interactions foster a supportive learning environment, where students feel safe to express doubts and engage actively. Furthermore, teacher-driven support systems enhance students' coping strategies, enabling them to build confidence and motivation in tackling challenging chemistry concepts. Thus, nurturing meaningful teacher-student relationships emerges as a vital component for promoting emotional well-being and academic success in chemistry education.

References

- Ahmed, W., van der Werf, G., Kuyper, H., & Minnaert, A. (2013). Emotions, self-regulated learning, and achievement in mathematics: A growth curve analysis. *Journal of Educational Psychology*, 105(1), 150–161. <https://doi.org/10.1037/a0030160>
- Chemers, M. M., Hu, L., & Garcia, B. F. (2001). Academic self-efficacy and first-year college student performance and adjustment. *Journal of Educational Psychology*, 93(1), 55–64. <https://doi.org/10.1037/0022-0663.93.1.55>
- Cornelius-White, J. (2007). Learner-centered teacher-student relationships are effective: A meta-analysis. *Review of Educational Research*, 77(1), 113–143. <https://doi.org/10.3102/003465430298563>
- Frisby, B. N., & Martin, M. M. (2010). Instructor–student and student–student rapport in the classroom. *Communication Education*, 59(2), 146–164. <https://doi.org/10.1080/03634520903564362>
- Hamre, B. K., & Pianta, R. C. (2006). Student–teacher relationships. *Children and Youth Services Review*, 28(5), 762–779. <https://doi.org/10.1016/j.childyouth.2005.08.005>
- Hembree, R. (1988). Correlates, causes, effects, and treatment of test anxiety. *Review of Educational Research*, 58(1), 47–77. <https://doi.org/10.3102/00346543058001047>
- Hughes, J. N., Luo, W., Kwok, O. M., & Loyd, L. K. (2008). Teacher-student support, effortful engagement, and achievement: A 3-year longitudinal study. *Journal of Educational Psychology*, 100(1), 1–14. <https://doi.org/10.1037/0022-0663.100.1.1>
- Keller, M. M., Neumann, K., & Fischer, H. E. (2013). The impact of physics teachers' pedagogical content knowledge and motivation on students' achievement and interest. *Journal of Research in Science Teaching*, 50(6), 716–737. <https://doi.org/10.1002/tea.21092>

- Kim, L. E., & Asbury, K. (2020). 'Like a rug had been pulled from under you': The impact of COVID-19 on teachers in England during the first six weeks of the UK lockdown. *British Journal of Educational Psychology*, 90(4), 1062–1083. <https://doi.org/10.1111/bjep.12381>
- McLaughlin, J. E., Gharkholonarehe, N., Khanova, J., Deyo, Z. M., & Rodgers, J. E. (2016). The impact of blended learning on student performance in a cardiovascular pharmacotherapy course. *American Journal of Pharmaceutical Education*, 80(2), 33. <https://doi.org/10.5688/ajpe80233>
- Mallow, J. V. (2006). Science anxiety: Research and action. In J. Mintzes & W. Leonard (Eds.), *Handbook of College Science Teaching* (pp. 3–14). National Science Teachers Association.
- Randler, C., & Bogner, F. X. (2002). Students' interest in biology lessons and associated emotions: An empirical study. *Educational Research*, 44(3), 233–240. <https://doi.org/10.1080/00131880210135340>
- Roorda, D. L., Koomen, H. M. Y., Spilt, J. L., & Oort, F. J. (2011). The influence of affective teacher–student relationships on students' school engagement and achievement: A meta-analytic approach. *Review of Educational Research*, 81(4), 493–529. <https://doi.org/10.3102/0034654311421793>
- Ryan, R. M., & Deci, E. L. (2000). Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemporary Educational Psychology*, 25(1), 54–67. <https://doi.org/10.1006/ceps.1999.1020>
- Schussler, D. L., & Collins, A. (2006). An empirical exploration of the who, what, and how of student-teacher relationships. *Journal of Educational Research*, 99(6), 387–392. <https://doi.org/10.3200/JOER.99.6.387-39>
- Skinner, E. A., & Belmont, M. J. (1993). Motivation in the classroom: Reciprocal effects of teacher behavior and student engagement across the school year. *Journal of Educational Psychology*, 85(4), 571–581. <https://doi.org/10.1037/0022-0663.85.4.571>
- Spilt, J. L., Koomen, H. M. Y., & Thijs, J. T. (2011). Teacher well-being: The importance of teacher–student relationships. *Educational Psychology Review*, 23(4), 457–477. <https://doi.org/10.1007/s10648-011-9170-y>
- Turner, J. C., Meyer, D. K., Midgley, C., & Patrick, H. (2003). Teacher discourse and sixth graders' reported affect and achievement behaviors in two high-mastery/high-performance mathematics classrooms. *The Elementary School Journal*, 103(4), 357–382. <https://doi.org/10.1086/499727>
- Udo, M. K., Ramsey, G. P., & Mallow, J. V. (2004). Science anxiety and gender in students taking general education science courses. *Journal of Science Education and Technology*, 13(4), 435–446. <https://doi.org/10.1023/B:JOST.0000045464.50782.62>
- Wentzel, K. R. (1997). Student motivation in middle school: The role of perceived pedagogical caring. *Journal of Educational Psychology*, 89(3), 411–419. <https://doi.org/10.1037/0022-0663.89.3.411>