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The Nature, Meaning, and Measure of Teacher Flow in Elementary Schools: A Test of Rival Hypotheses

Karen Stansberry Beard¹ and Wayne K. Hoy²

Abstract

Purpose: This inquiry is the first comprehensive, empirical analysis of the nature and measurement of flow in elementary teachers. The clearest sign of flow is the merging of action and awareness, that is, the degree to which an activity becomes spontaneous and automatic and individuals lose conscious awareness of themselves as they perform a task such as teaching. The basic objective of the research was to examine the theoretical structure and measurement of flow in elementary teachers. Research Methods: A typical sample of 260 elementary teachers from rural, urban, and suburban elementary schools in Ohio was used to test two rival explanations about the nature of flow. Structural equation modeling was used to assess the goodness of fit of the two models. Findings: Two rival explanations of flow, the Jackson-Marsh and the Quinn models, were evaluated using confirmatory factor analysis and structural equation modeling. The Jackson-Marsh model of flow proved to be a better explanation of flow of elementary teachers.

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than the Quinn model. Consistent with Csikszentmihalyi’s explanation of flow, the construct consists of nine elements, all of which form an integrated whole. In addition, and as predicted, optimism was positively related to flow. **Discussion:** Because most flow research has been in sports and leisure, Quinn’s research in knowledge work seemed especially relevant for the study of flow in teachers. In spite of that fact, the Jackson and Marsh model was the better fit; the Quinn model provided insight into the dynamics of flow in elementary schools. Finally, although optimism was positively related to flow, it was academic optimism, not dispositional optimism, that was a strong predictor of flow in elementary teachers. **Conclusions:** The nature of flow in schools is instructive, offering insight into the elements of flow and how they collectively and individually inform us in pursuit of optimal teaching and learning conditions, but much more research remains to be done.

**Keywords**
flow, optimism, academic optimism, optimal learning, teacher beliefs

Most people intuitively know what others mean when they claim they are “in the zone,” “in the groove,” or “in flow.” Mihaly Csikszentmihalyi (1975, 1988, 1996, 1997, 2003), however, was first to methodically study flow as a state of mind in which a person feels fully engaged and immersed in what he or she is doing. A flow event is the merging of action and awareness. Such a merging, according to Csikszentmihalyi (1990, p. 53), is the degree to which an “activity becomes spontaneous almost automatic: [people] stop being aware of themselves as separate from the activity they are performing.” Although there is some evidence that flow leads to optimal performance in certain fields, there has been little systematic study of the nature and effect of flow in teachers. The goal of this research is to introduce the systematic study of flow into the educational literature. To that end, this inquiry has four objectives: (a) to examine the theoretical underpinnings of the concept of flow; (b) to measure and test two competing theories of flow when applied to elementary school teachers; (c) to explore the relationships among flow, academic optimism, and general life optimism; and (d) to foreshadow potential implications of flow for school leaders.

**Theoretical Framework**
The current inquiry evolved from the perspective of positive psychology. The focus of the study is on flow and optimism—two constructs that accentuate
positive qualities of teachers and teaching. In particular, the nature of both flow and individual academic optimism are the key concepts of this study; both are integral features of positive psychology, a relatively new perspective that extends the traditional focus on illness and pathology to individual well-being, fulfillment, and optimal human functioning. Although this movement in psychology is new, the concepts of the good life, well-being, and happiness are not; in fact, they have been around since Aristotle’s model of the good life, which he defined as “a state of doing well and doing well in being well” (MacIntyre, 1984, p. 148).

During the past decade, positive psychology has emerged as a clear redirection from a focus on treating pathologies to understanding how to enhance competence and capacity within a given context. Seligman and Csikszentmihalyi (2000) are major pioneers in the positive psychology movement, which they describe as “a science of positive subjective experience, positive traits and positive institutions” (p. 5). Seligman elaborates the description of positive psychology at the subjective level to be about well-being and satisfaction; flow, joy, sensual pleasures, and happiness; and the acquisition of knowledge about the future—optimism, hope, and faith (Snyder & Lopez, 2005). We first turn to Csikszentmihalyi’s notion of flow and then to Seligman’s concept of optimism.

Flow

In describing the flow experience, Csikszentmihalyi (2003) points to a familiar passage in Leo Tolstoy’s Anna Karenina. In this passage, Tolstoy describes how the wealthy landowner and Russian aristocrat Levin learns to move like the servant Titus while mowing hay with a scythe. In this description, Tolstoy vividly captures flow:

“I will swing less with my arm and more with my body,” he thought, comparing Titus’s row [of hay] which looked as if it had been cut with a line, with his own unevenly and irregularly scattered grass.

. . . He thought of nothing, desired nothing, except not to lag behind and to do the best job he could. He heard the clang of scythes and ahead of him saw Titus’s erect figure moving on. . . .

Levin lost all awareness of time and had no idea whether it was late or early. A change now began to take place in his work, which gave him enormous pleasure. In the midst of his work moments came to him when he forgot what he was doing and began to feel light, and in those moments his swath came out as even and good as Titus’s. But as soon
as he remembered what he was doing and started trying to do better, he at once felt how hard the work was and the swath came out badly.

In this hottest time the mowing did not seem so hard to him. . . . More and more often those moments of unconsciousness came, when it was possible for him not to think of what he was doing. The scythe cut by itself. These were happy moments.

The longer Levin mowed, the more often he felt those moments of oblivion during which it was no longer his arms that swung the scythe, but the scythe itself that lent motion to his whole body, full of life and conscious of itself, and, as if by magic, without a thought of it, the work got rightly and neatly done on its own. These were the most blissful moments.

. . . Levin came after him and often thought that he would surely fall, going up such a steep slope with a scythe, where it was hard to climb even without a scythe; but he climbed it and did what was needed. He felt that some external force moved him. (Tolstoy, 1878/2002, pp. 249-256)

Tolstoy provides an alluring artistic rendition of Csikszentmihalyi’s (2003) claim that “every experience we have—every thought, feeling, desire, or memory, every act, conversation, or accomplishment—must pass through the screen of attention for it to become real to us” (p. 78). Linley and Joseph (2004) conclude that

in flow, the demands of a situation match the individual’s ability and the individual is engaged fully in the act of doing the activity. In flow, the person loses self-consciousness and a sense of the passing of time and enters into a different level of experience. Flow is both an enjoyable and a much desired state. (p. 38)

Flow and flow experiences, then, can be viewed as being intricately related to an individual’s quality of experiences and therefore his or her quality of life. Csikszentmihalyi (1990) noted that optimal experiences are those extraordinarily rich epiphanies when

We do feel in control of our actions, masters of our own fate. On the rare occasions that it happens, we feel a sense of exhilaration, a deep sense of enjoyment that is long cherished and that becomes a landmark in memory for what life should be like. (p. 3)

Deci and Ryan (1985) theorized that when individuals engage in activity that satisfies their needs of autonomy, competence, and relatedness, they
experience genuine happiness, self-esteem, and more. “Maslow’s ‘peak experiences’ and De Charms’s ‘origin state’ also share many distinctive features with the flow process” (Csikszentmihalyi, 1975, p. 37).

**Jackson-Marsh model of flow.** Flow is a positive state that most often occurs when a person perceives a balance between the challenges associated with a situation and his or her ability to meet those demands; however, experiencing flow is not easy (Jackson & Csikszentmihalyi, 1999, p. 4). Because flow is a state of consciousness wherein one becomes totally absorbed in what he or she is doing to the exclusion of all other thoughts and emotions, focus is key to experiencing flow. The merging of action and awareness is made possible when attention is centered on a limited stimulus field (Seligman & Csikszentmihalyi, 2000). Some call this process a “narrowing of consciousness,” a “giving up the past and future” (Maslow, 1971, p. 63). That peculiar dynamic state yields a holistic sensation people feel when they act with total involvement—the flow experience.

The fundamental elements of flow emphasize how important individual mental factors are in experiencing flow. Recognizing that flow is a psychological state is understanding that it can be achieved only through control of the mind. Jackson and Csikszentmihalyi (1999) acknowledged that that mindset allows for flow to occur in a variety of situations. They identified nine dimensions of flow:

1. Challenge-skill balance: a perceived balance between the challenges of the situation and one’s skill, with both operating at a personally high level
2. Action-awareness merging: an involvement in the flow activity so deep that it becomes spontaneous or automatic
3. Clear goals: obvious means and ends of an activity
4. Clear feedback: immediate and clear monitoring of one’s action
5. Concentration: complete and intense sense of focus when an individual is in a flow state
6. Sense of control: exercising of power over events
7. Loss of self-consciousness: lack of concern for or about oneself
8. Transformation of time: alteration in the way time passes—a sense that events are either slowing down or speeding up
9. Autotelic experience: an intrinsically rewarding experience

How do these nine dimensions of flow fit together? Do they form an integrated whole that can be measured? Jackson and Marsh (1996) developed a flow scale to test the empirical nature and structure of flow as measured by a series of questions and scales. Using confirmatory factor analysis, they studied
athletics and sports and provided evidence that the nine components of flow (Csikszentmihalyi, 1990; Jackson & Csikszentmihalyi, 1999; Jackson & March, 1996) did indeed form a holistic and integrated whole, which they called “flow” or a “flow experience.” We refer to this unified conceptual perspective of Csikszentmihalyi’s construct of flow as the Jackson-Marsh model (see Figure 1).

**Quinn model of flow.** The concept of flow is so sufficiently compelling that many scholars have invoked its study in a wide range of contexts. Ryan Quinn (2005) examined flow in the context of knowledge work and high-performance workers within the context of organizations. He noted,

> The problem with managing the performance of knowledge workers is that knowledge work is complex and situation-specific. It seldom has one single correct result, and there is seldom one correct way of doing it, so results are difficult to quantify. (p. 610)

This is also true of the dynamics involved in teaching and learning. There is little in the administration literature on flow to inform the practice of professionals and scant attention to quantifiable results to see how individuals use tacit goals, standards, and values to assess the quality of their work, judge the unique characteristics of a situation, adapt, and spawn creative—even goal-changing—insights (Quinn, 2005, p. 611).

Quinn (2005) argues that a problem with Csikszentmihalyi’s conception of flow is that the elements represent different types of concepts. Quinn explains that challenge-skill balance and goal clarity are structural features of an activity, whereas concentration is a type of effort, and feedback is a set of cues that the individual extracts from the activity. He goes on to say that “the remaining elements are subjective experiences: perceptions of undergoing particular psychological, biological, and contextual events” (p. 614).

Quinn (2005) attributes these differences in the constructs as the reason Jackson and her colleagues had some difficulty in modeling flow as a second-order factor consisting of all nine factors. He believed that structural features like the challenge-skill balance and goal clarity are more likely to precede the other elements in a causal model because they define the activity that a person invests effort in, derives feedback from, and has a subjective experience in. (p. 614)

Quinn proposes a model in which the nine elements of flow are separated into antecedents and consequences. He justified this proposal with the logic
Figure 1. Jackson-Marsh model of flow model
that “goal setting and other organizational research provide us with a conceptual framework for understanding what the causal model should be” (p. 614).

Quinn (2005) concluded that if the nine original elements could not serve as indicators of one flow construct, then the definition of flow has to be reconsidered. Csikszentmihalyi (1975) writes that the “clearest sign of flow is the merging of action and awareness” (p. 38). He argues that the merging of action and awareness is the degree to which an “activity becomes spontaneous, almost automatic; people stop being aware of themselves as separate from the activity they are performing” (Jackson & Csikszentmihalyi, 1999, p. 53). Although Quinn acknowledges that automatic cognitive processing plays a role, he suggests, “Flow may best be defined as the experience of temporally merging one’s situation awareness with the automatic application of activity-relevant knowledge and skills” (p. 615). Thus, for Quinn, flow is the merging of action and awareness; the other aspects of Csikszentmihalyi’s conceptualization are separate antecedents or consequents of flow. Furthermore, this new model no longer confounds activity characteristics with experiential outcomes.

In brief, flow is viewed as the merging of action and awareness in an activity that becomes spontaneous and almost automatic. The antecedents of flow are goal clarity, challenge-skill balance, concentration, and feedback clarity. It is the merging of action and awareness that produces flow. Flow in turn has consequences for other elements including sense of control and autotelic experience. Flow is placed in the context of a causal model in which the concepts are separated into antecedents and consequences. See Figure 2 for a summary of the Quinn model.

Optimism

Seligman (1998, 2006) was one of the first positive psychologists to analyze optimism. The traditional view of achievement in schools is that success is a function of talent and motivation. Seligman (1998), however, argues that optimism is just as crucial as talent or motivation; there are three potent forces for success. Moreover, optimism can be learned and developed, and learned optimism moves individuals over the wall of learned pessimism toward achievement and success. We are concerned with two kinds of optimism in this inquiry: a general disposition to be optimistic and academic optimism, which is optimism specific to schools and learning.

Dispositional Optimism

Dispositional life optimism is a general attitude and outlook of expecting the best in the future. Peterson and Chang (2003) recognize optimism as an
inherent feature of all humans defined in one of two ways. Optimism was earlier defined by Tiger (1979) as a “mood or attitude associated with an expectation about the social or material future which the evaluator regards as socially desirable, to his [or her] advantage or for his [or her] pleasure” (Peterson, 2000, p. 44). Carver and Scheier (2002) see optimism as one’s positive expectation for the future and optimists as “people who expect to have positive outcomes, even when things are hard” (p. 233). It is the latter definition of optimism that we use in this research. As a personal disposition, optimism refers to the tendency to believe that one will generally experience good outcomes in life and avoid bad (Scheier & Carver, 1985).

**Academic Optimism**

Academic optimism is not the same as dispositional optimism. Academic optimism is specific to teaching and learning, whereas dispositional optimism is a general individual tendency. Academic optimism is a new concept that comes from the work of Hoy and his colleagues (Beard, Hoy, & Woolfolk Hoy, 2010; Hoy, Tarter, & Woolfolk Hoy, 2006). The term emanates from three strands of optimism in schools—self-efficacy, trust, and academic emphasis—and was initially developed as a collective school property. Collective efficacy provides teachers with confidence that they can be effective teaching students regardless of the difficulties involved. Such optimism motivates teachers to act to achieve challenging goals and persist until

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**Figure 2. Quinn model for flow**

![Quinn model for flow](image-url)
they are successful (Goddard, Hoy, & Woolfolk Hoy, 2000; Smith, Hoy, & Sweetland, 2001).

Collective trust in parents and students liberates teachers to take risks and innovate without fear of retribution when things do not succeed; it encourages cooperation and support between parents and teachers (Bryk & Schneider, 2002; Goddard, Tschannen-Moran, & Hoy, 2001). Such trust is represented in mutual respect and a shared optimism that parents and students have similar values for students—academic ones.

In schools, collective efficacy and trust are enacted in positive academic behaviors because students and parents trust the teachers. Both accept the means to realize academic performance. Not only do teachers and parents push for academic success, but students also come to value working hard, getting good grades, and achieving. Academic emphasis in schools becomes the norm rather than the exception.

In the end, the academic optimism of a school is the uniting of collective efficacy, trust, and academic emphasis into a powerful synergism that motivates, is optimistic, and channels action toward the accomplishment of high academic goals (Hoy et al., 2006). Academic optimism emphasizes a sense of the possible—the faculty believes that it can make a difference, students can learn, and high academic performance can be achieved.

Research on academic optimism of schools has produced encouraging results. It is one of the few organizational properties of schools directly linked to student achievement while controlling for socioeconomic status, previous achievement, and other demographic characteristics (Hoy et al., 2006; McGuigan & Hoy, 2006; Smith & Hoy, 2007).

Parallel research (Beard et al., 2010; Woolfolk Hoy, Hoy, & Kurz, 2008) at the individual level also has confirmed the construct of individual teacher academic optimism—a set of beliefs held by an individual teacher that he or she can teach effectively in spite of difficulties (self-efficacy): he or she trusts students to learn and parents to support learning (teacher trust in parents and students), and he or she can set the bar high and emphasize academics (academic emphasis). In this inquiry, we are concerned with individual academic optimism, which is an individual variable, not a collective one.

Similar Concepts

Although we refer to academic optimism as a new concept, there are other concepts that are closely related to it. One way to situate the concept is to examine its relation to teaching and learning. The facets of school culture that promote student achievement are beginning to become clearer. Based on their longitudinal research in the Chicago Public Schools, Bryk and
Schneider (2002) explain there are at least four social conditions in schools that directly promote student learning: (a) teachers with can-do attitudes, (b) school outreach to parents, (c) a professional community emphasizing collaborative work practices with a commitment to improve, and (d) high expectations.

The can-do attitude is captured in teachers’ sense of efficacy. Outreach to parents reflects, at least in part, faculty trust that leads to cooperation and collaboration with parents. A professional community seems critical in developing work practices and commitment to improve teaching and learning in much the same way as does teacher trust in parents and students. Academic press, introduced by Edmunds (1979) decades ago, is essentially the same as academic emphasis; both focus on high academic expectations. The advantage of academic optimism is that it folds all of these concepts into one general latent construct.

We theorize that schools and teachers with strong academic optimism have students who are highly motivated because of challenging goals and constructive feedback (Locke & Latham, 1990). In addition, optimistic teachers are persistent and resilient in working with students. Moreover, teachers who trust parents and students develop cooperative and collaborative relations with them. In brief, we propose that academic optimism influences student achievement directly through at least two mechanisms: motivation with high, challenging goals and cooperation among parents and teachers to improve student performance.

**Hypotheses: Rival Models**

First, we turn to two rival hypotheses of flow that guided the empirical phase of this investigation: the Jackson-Marsh model (Jackson & Marsh, 1996) and the Quinn model, both of which we alluded to above. Then we examine the optimism-flow relation.

**Jackson-Marsh Model: Hypothesis 1**

Based on the theoretical analysis of Csikszentmihalyi’s (1990) flow theory, Jackson and Marsh (1996) propose that flow was a holistic experience composed of Csikszentmihalyi’s nine elements. Flow is defined as a psychological state in which a person experiences all nine elements of flow. Jackson and her colleagues (Jackson & Eklund, 2002; Jackson & Marsh, 1996) tested this holistic model in sports settings by developing a Flow State Scale. The model received mixed support (Jackson & Eklund, 2002; Jackson & Marsh, 1996; Marsh & Jackson, 2000).
Flow in schools has not been tested empirically; hence, in keeping with
flow as a holistic and unitary construct, we advanced the following hypothesis
based on Jackson and Marsh’s (1996) work, also suggested by Quinn (2005).

_Hypothesis 1:_ Flow is a second-order latent factor consisting of nine
first-order factors: (a) challenge-skill balance, (b) clear goals,
(c) unambiguous feedback, (d) concentration, (e) the merging of action
and awareness, (f) sense of control, (g) autotelic experience, (h) loss of
self-consciousness, and (i) transformation of time (see Figure 1).

The Quinn Model: Hypothesis 2

Quinn (2005) defines flow differently than do Jackson and Marsh (1996). In
defining flow, Quinn rejects the holistic approach that combines the nine ele-
ments into one. He does so based on Csikszentmihalyi’s (1990) claim,
“Perhaps the clearest sign of flow is the merging of action and awareness”
(p. 54). Furthermore, Csikszentmihalyi (1990) notes that as people describe
their flow experiences, they do not always include all of the nine elements of
flow. Quinn suggests that it might make more sense to simply define flow as
the merging of action and awareness, rather than to claim that the merging is
the clearest sign of flow. In brief, in Quinn’s formulation, flow is defined as the
merging of action and awareness.

If flow is simply the merging of action and awareness, what becomes of the
other eight elements? According to Quinn (2005), the other eight elements are
divided into antecedents and consequences. Goal clarity, challenge-skill bal-
ance, and unambiguous feedback are antecedents, and sense of control, autotelic
experience, loss of self-consciousness, and time transformation are conse-
quences (see Figure 2). Quinn’s theoretical reasoning is logical and compelling;
we summarize it briefly.

Flow yields high-performance behavior and performance that improves
when individuals have challenging and specific goals because such goals
motivate; they produce extra effort, persistence, and resilience (Locke &
Latham, 1990). Furthermore, clear goals should have a positive influence on
concentration because goals focus attention by helping individuals select rel-
evant cues without being distracted by irrelevant ones (see Figure 2, Arrow 1).
A balance between challenge and skills should also produce a greater focus
on concentration. If the task is too challenging (beyond the skill set of the
individual), most people give up and lose interest; if the task is too easy,
individuals are likely to get bored; but if the challenge is achievable, the likely
response is extra effort and concentration on the task (see Figure 2, Arrow 2).
Moreover, the clearer the goal, the clearer is the feedback (see Figure 2,
Arrow 3); similarly, the greater the concentration, the clearer the feedback is likely to be (see Figure 2, Arrow 4).

Clear feedback, clear goals, and concentration should all increase flow. Flow increases with unambiguous feedback (see Figure 2, Arrow 5) because the clarity reduces the time required to process and interpret the feedback information. Clear goals increase flow (see Figure 2, Arrow 6) because such clarity helps define the situation, which is necessary to achieve situational awareness. Finally, increased concentration increases flow (see Figure 2, Arrow 7) because the mental effort required for maintaining situation awareness is complex and dynamic.

Not only does concentration positively affect flow; it also influences the transformation of time and self-consciousness: The more an individual focuses attention (concentrates), the less attentive he or she likely is to either time (see Figure 2, Arrow 8) or what other people think about them (see Figure 2, Arrow 9). Flow itself has two basic consequences. The greater the flow experience, the greater is the sense of control individuals feel (see Figure 2, Arrow 10) because each appropriate response to a spontaneous cue or problem increases their confidence in their ability to perform the activity successfully (Wood & Bandura, 1989). Furthermore, flow increases the intrinsic enjoyment individuals find in the activity (autotelic experience) (see Figure 2, Arrow 11) because people find great satisfaction in achieving goals (Locke & Latham, 1990) and repeated successes should “generate bursts of satisfaction” (Quinn, 2005).

With this model (see Figure 2), Quinn (2005) proposes a rival hypothesis about the nature, meaning, and measure of flow as follows:

**Hypothesis 2:** Flow is a first-order factor—the merging of one’s situation awareness with the automatic application of his or her knowledge and skills—with antecedents that include challenge-skill balance, clear goals, concentration, and clear feedback and consequences that include a sense of control and autotelic experience.

**Optimism-Flow Hypothesis**

The first two hypotheses were the primary focus of this inquiry. Nonetheless, we conclude with a third, related hypothesis that emerges from the positive psychology perspective. Recall that two of the pioneers in the movement were Csikszentmihalyi and Seligman. Both scholars were concerned with positive outcomes that enhance competence and capacity within a given context. We are concerned with activities that improve competence and capacity within schools, hence our interest in flow and optimism. Both have the
capacity to improve the fundamental activities of the school (student learning and achievement) as well as the social-emotional development of school participants. Given the similarity of the theoretical roots of these two concepts, it seemed reasonable to expect that they would be positively related. In fact, the final hypothesis of this study suggested the following:

**Hypothesis 3:** Dispositional optimism and academic optimism are positive predictors of the flow experiences of elementary teachers.

Although we have stated the hypothesis to suggest that optimism influences flow, we believe that the relation is reciprocal; that is, aspects of optimism increase the likelihood of flow in school, and that flow reinforces the academic optimism of teachers. The relationship between flow and optimism is included in this article to provide predictive validity evidence for the concept of flow and to suggest direction for future research.

**Method**

The sample, data collection procedures, and measures for the main study are outlined and summarized next.

**Sample**

The goal for our sample selection was to get a typical cross section of elementary teachers in Ohio. We considered a random sampling approach of all elementary teachers in the state but rejected that option for two reasons. First, we would have had to rely on mailing questionnaires to teachers. Second, getting a high percentage response by mail and thus avoiding the problem of self-selection were unlikely. Moreover, evidence from other research using a random technique and mail yielded less than a 40% return even after several follow-ups (Kurz, 2006). Hence, we decided to identify a set of schools that seemed representative of the elementary schools in Ohio in that they included rural, urban, and suburban teachers and that were within 100 miles’ driving distance from the research site. Of the 16 schools contacted, 14 (87.5%) agreed to participate.

The teacher sample for the study consisted of 260 elementary school teachers in these 14 schools in central Ohio. All participants were full-time elementary teachers from rural, urban, and suburban districts. The sample included 58 rural elementary school teachers, 112 suburban elementary school teachers, and 90 urban elementary school teachers, all with elementary school licensure. Although the sample in this study was not random, as noted
above, we selected a reasonably representative cross section of elementary teachers from the central Ohio area; in fact, when we checked the sample against the state demographics in terms of gender, age, years of experience, and educational level, we found the sample similar to the population of Ohio elementary school teachers (see Table 1).

### Data Collection

Teachers from schools in this sample were asked to participate voluntarily in the survey; all responses were completely anonymous, and no school or teacher was identified in the report and analysis of this research. School
superintendents from districts in this sample were contacted to solicit permission for schools in their districts to participate in this study. Then the researcher contacted the principal of each school either by phone or in person to request teacher participation in the data collection. Once granted informed consent, teachers were asked to participate voluntarily in the study. Data were collected during regularly scheduled faculty meetings. Teachers were assured of the anonymity of their responses and encouraged simply to give their candid views on the questions asked. No identifiers were linked to the participants. The researcher briefly described the purpose of the study, guaranteed the anonymity of the teachers’ responses, and gave directions for completing the measures of the research. Only 3 teachers were absent from the faculty meetings, and the participation rate of teachers was high for those present: 260 out of 263 teachers in school that day returned usable questionnaires (a return rate of 98.8%).

**Measures**

The measures used in this study were the nine elements of flow, dispositional optimism, and academic optimism. All teachers responded to all of the scales, which were all components of a single questionnaire that was machine scored.

*Elements of flow.* Flow was measured in this study using the 40 items developed by Jackson and Marsh (1996) and Quinn (2005). The items describe thoughts and feelings individuals have experienced during a flow event. All of the flow items were assessed along a seven-point Likert-type scale. The responses ranged from 1 (*strongly disagree*) to 7 (*strongly agree*). Examples of the items included the following: “I was challenged, but I believed my skills would allow me to meet the challenge”; “I could sense why the decisions I made were correct”; and “My attention was focused entirely on what I was doing.” A complete list of the flow items is found in Table 2, along with alpha coefficients of reliability for this sample. The measures of the elements of flow were basically the same in all three studies—the current one, Jackson and Marsh, and Quinn—that is, the Jackson and Marsh questionnaire was used in all of the studies. We did not modify the items for use in schools because in our early exploratory and informal work, we found teachers had no difficulty answering all the questions. The greater the score on each dimension of flow, the greater the degree of flow for that element was judged to be.

Validity of the measure was also supported in a series of factor analytic studies (Jackson & Marsh, 1996; Marsh & Jackson, 2000; Quinn, 2005). The confirmatory factor analysis approach was the chief method used to examine
Table 2. Means, Standard Deviations, and Reliabilities of Survey Items for Flow

<table>
<thead>
<tr>
<th>Variable</th>
<th>Obs.</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Reliability</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Challenge-skill balance</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>“The challenge and my skills were at an equally high level.”</td>
<td>260</td>
<td>5.88</td>
<td>0.823</td>
<td>.738</td>
</tr>
<tr>
<td>“I felt I was competent enough to meet the high demands of the situation.”</td>
<td>260</td>
<td>6.32</td>
<td>0.640</td>
<td></td>
</tr>
<tr>
<td>“My abilities matched the high challenge of the situation.”</td>
<td>257</td>
<td>6.14</td>
<td>0.662</td>
<td></td>
</tr>
<tr>
<td>2. Goal clarity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>“My goals were clearly defined.”</td>
<td>260</td>
<td>6.23</td>
<td>0.714</td>
<td>.807</td>
</tr>
<tr>
<td>“I knew what I wanted to achieve.”</td>
<td>260</td>
<td>6.42</td>
<td>0.593</td>
<td></td>
</tr>
<tr>
<td>“I knew clearly what I wanted to do.”</td>
<td>260</td>
<td>6.35</td>
<td>0.618</td>
<td></td>
</tr>
<tr>
<td>3. Feedback clarity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>“It was really clear to me that I was doing well.”</td>
<td>257</td>
<td>6.04</td>
<td>0.807</td>
<td>.758</td>
</tr>
<tr>
<td>“I could tell by the way I was performing how well I was doing.”</td>
<td>260</td>
<td>5.95</td>
<td>0.846</td>
<td></td>
</tr>
<tr>
<td>“My abilities matched the high challenge of the situation.”</td>
<td>260</td>
<td>6.03</td>
<td>0.711</td>
<td></td>
</tr>
<tr>
<td>4. Concentration</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>“I was completely focused on the task at hand.”</td>
<td>260</td>
<td>6.23</td>
<td>0.807</td>
<td>.792</td>
</tr>
<tr>
<td>“My attention was focused entirely on what I was doing.”</td>
<td>260</td>
<td>6.03</td>
<td>0.844</td>
<td></td>
</tr>
<tr>
<td>“I had total concentration.”</td>
<td>260</td>
<td>5.94</td>
<td>0.810</td>
<td></td>
</tr>
<tr>
<td>5. Sense of control</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>“I felt in total control of my body.”</td>
<td>259</td>
<td>6.03</td>
<td>0.855</td>
<td>.787</td>
</tr>
</tbody>
</table>

(continued)
<table>
<thead>
<tr>
<th>Variable</th>
<th>Obs.</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Reliability</th>
</tr>
</thead>
<tbody>
<tr>
<td>“I felt like I could control what I was doing.”</td>
<td>260</td>
<td>6.14</td>
<td>0.727</td>
<td></td>
</tr>
<tr>
<td>“I felt in total control of what I was doing.”</td>
<td>258</td>
<td>6.06</td>
<td>0.764</td>
<td></td>
</tr>
<tr>
<td>6. Loss of self-consciousness</td>
<td></td>
<td></td>
<td></td>
<td>0.827</td>
</tr>
<tr>
<td>“I was not concerned with what others may have been thinking of me.”</td>
<td>259</td>
<td>5.63</td>
<td>1.338</td>
<td></td>
</tr>
<tr>
<td>“I was not worried about my performance during the event.”</td>
<td>260</td>
<td>5.60</td>
<td>1.596</td>
<td></td>
</tr>
<tr>
<td>“I was not worried about what others may have been thinking of me.”</td>
<td>260</td>
<td>5.62</td>
<td>1.390</td>
<td></td>
</tr>
<tr>
<td>7. Transformation of time</td>
<td></td>
<td></td>
<td></td>
<td>0.746</td>
</tr>
<tr>
<td>“Time seemed to alter (either slowed down or speeded up).”</td>
<td>256</td>
<td>5.46</td>
<td>1.334</td>
<td></td>
</tr>
<tr>
<td>“It felt like time stopped while I was performing.”</td>
<td>258</td>
<td>4.65</td>
<td>1.596</td>
<td></td>
</tr>
<tr>
<td>“The way time passed seemed to be different from normal.”</td>
<td>257</td>
<td>5.14</td>
<td>1.390</td>
<td></td>
</tr>
<tr>
<td>8. Autotelic experience</td>
<td></td>
<td></td>
<td></td>
<td>0.853</td>
</tr>
<tr>
<td>“I found the experience extremely rewarding.”</td>
<td>260</td>
<td>6.46</td>
<td>0.665</td>
<td></td>
</tr>
<tr>
<td>“The experience left me feeling great.”</td>
<td>260</td>
<td>6.37</td>
<td>0.715</td>
<td></td>
</tr>
<tr>
<td>“I really enjoyed the experience.”</td>
<td>260</td>
<td>6.53</td>
<td>0.592</td>
<td></td>
</tr>
<tr>
<td>9. Merging of awareness and application</td>
<td></td>
<td></td>
<td></td>
<td>0.857</td>
</tr>
<tr>
<td>“I did things spontaneously and automatically without having to think.”</td>
<td>259</td>
<td>5.99</td>
<td>0.982</td>
<td></td>
</tr>
<tr>
<td>“Things just seemed to be happening automatically.”</td>
<td>259</td>
<td>5.96</td>
<td>0.916</td>
<td></td>
</tr>
<tr>
<td>“I performed automatically.”</td>
<td>259</td>
<td>5.83</td>
<td>0.952</td>
<td></td>
</tr>
<tr>
<td>“I made the correct movements without thinking about trying to do so.”</td>
<td>260</td>
<td>5.78</td>
<td>1.049</td>
<td></td>
</tr>
</tbody>
</table>

Obs. refers to observed responses or number of respondents to the specified item.
the validity of the constructs; all of the studies consistently supported the construct validity of the flow.

**Dispositional optimism.** Dispositional optimism is the general set of expectations, perceptions, thoughts, and feelings that individuals have in response to life events. Much of the research on dispositional optimism has used the Life Orientation Scale (LOT), which has established reliability and validity (Scheier & Carver, 1985; Terrill, Friedman, Gottschalk, & Haaga, 2002). The latest version of the LOT is the short form with six items (Scheier, Carver, & Bridges, 1994). This short version correlates in the .90s with a longer version (Scheier et al., 1994). The short form was used in this research. Each of the items was measured along a five-point Likert-type scale from 1 (strongly disagree) to 5 (strongly agree). The items include the following: “In uncertain times, I usually expect the best”; “If something can go wrong for me, it will”; “I’m always optimistic about my future”; “I hardly ever expect things to go my way”; “I rarely count on good things happening to me”; and “Overall, I expect more good things to happen to me than bad.” The higher the LOT score, the greater the dispositional optimism the teacher was judged to have.

Reliability for the LOT has been consistently in the $\alpha = .72$ to .83 range (Carver & Gaines, 1987; Scheier & Carver, 1985; Woolfolk Hoy et al., 2008). In the current study, the alpha coefficient was .79. Validity of the LOT has been supported in a number of studies (Terrill et al., 2002).

**Academic optimism.** Academic optimism was measured as a second-order factor. The three factors of teacher sense of self-efficacy, trust in parents and students, and academic emphasis each had three or four indicators. Together they formed the second-order factor of academic optimism, which is an individual trait. The details of the structural equation model and the confirmatory factor analysis are reported elsewhere (Beard et al., 2010). Standard fit indicators and statistics supported the validity and reliability of this latent construct. The indicators for each of the first-order factors are reported in Table 3. All of the indicators have a five-point Likert-type response set varying from strongly disagree to strongly agree—the higher the score, the greater the academic optimism.

**Statistical analysis.** To test the first two hypotheses of the study, we used structural equation modeling (SEM). SEM performs two tasks, sometimes simultaneously: confirmatory factor analysis (measurement model) and testing of structural models (path analysis of latent variables). For the first hypothesis, the Jackson-Marsh model, SEM was used to perform a second-order confirmatory factor analysis. For the second hypothesis, the Quinn model, SEM was used to test both the measurement model and the structural model (path analysis of the latent variables). Finally, multiple regression analysis was used to test the third hypothesis, the flow-optimism hypothesis.
Results
We tested the three hypotheses and report the results.

Jackson-Marsh Model: A Test of Hypothesis 1
To test the Jackson-Marsh hypothesis that flow was a second-order factor consisting of the nine elements, we used SEM and did a confirmatory factor analysis.
of the model (see Figure 1). In the first test of the model the fit test statistics were marginal. The goodness of fit indices reported for this analysis (Model 1) include a $\chi^2$ test of statistical significance, with a $\chi^2$ value of 587.292 ($p = .00$) with $df = 341$. $\chi^2$ in and of itself is not a good indicator of good model fit because it is so sensitive to sample size, usually significant with large $N$ and usually not significant with small $N$, and it is also sensitive to nonnormality. The root mean square error of approximation, or standardized measure of $\chi^2$, was .0531, only slightly higher than .05 and therefore a reasonable fit. The nonnormed fit index, also called the Tucker Lewis Index, was .972, which is excellent. The root mean square residual (RMR) score was .0691, indicating only a marginally acceptable fit. The standardized RMR was .0651, which is slightly greater than .05 but less than .08; thus, the fit was only marginally acceptable. The two fit indices were the goodness-of-fit index (GFI) and the adjusted goodness-of-fit index (AGFI); the GFI value was .859, and the AGFI for this model was .832; neither met the .90 threshold of reasonable fit.

Because the first test of the hypothesis provided only a marginal fit, the modification indices that could theoretically be supported were used to improve model fit. Using the same sample data, the second model, with correlated error terms (see Table 4) yielded a better result.

First, all of the factor loadings were significant. The goodness-of-fit indices included a $\chi^2$ test score of 511.850 ($p = .00$) with $df = 322$. Although still significant, $\chi^2$ was smaller than it was in the first model. The root mean square error of approximation for this model was .0437, and the Tucker Lewis Index was .981. RMR and standardized RMR were .0653 and .0613, respectively. Finally, the GFI was .879, and the AGFI was .852, slightly less than .90.

In sum, the fit indices for the second model produced two measures indicating a good fit for the data. Two others yielded reasonable fit for the data,
and two measures just missed acceptable levels. Based on the analysis, we concluded that there is reasonably good evidence that flow of individual teachers is a second-order factor consisting of nine first-order factors: (a) challenge and skill that are high and in balance, (b) clear goals, (c) clear feedback, (d) concentration, (e) the merging of action and awareness, (f) a sense of control, (g) an autotelic experience, (h) the loss of self-consciousness, and (i) the transformation of time; the Jackson-Marsh model of flow was supported. Figure 3 pictorially summarizes a confirmatory factor analysis of the model with factor loadings (all significant), and Table 5 compares the goodness-of-fit statistics for the two models.

**The Quinn Model: A Rival Hypothesis on the Nature of Flow**

SEM was also used to test the second hypothesis that flow was a first-order factor (the experience of merging one’s situation awareness with the automatic application of activity-relevant knowledge and skills) with antecedents that included (a) challenge and skill balance, (b) clear goals, (c) concentration, and (d) clear feedback and with consequences that include a sense of control and an autotelic experience (see Figure 2). The first modeling of this hypothesis did not yield good fit statistics.

The $\chi^2$ was 747.26 ($p = .00$) with $df = 338$. The root mean square error of approximation was .0688, and the Tucker Lewis Index was .96. The RMR was .074, and the standardized RMR was .097. The GFI and the AGFI were .827 and .793, respectively. These initial results were not encouraging.

Using the same modification indices that were theoretically justified, Quinn’s flow model was retested with the same sample data with slightly better results. The standardized weights for the path from goal clarity to concentration was not significant, and the path from goal clarity to flow was negative, but all of the other standardized weights for the remaining paths were found to be significant. The goodness-of-fit indices included a $\chi^2$ test score of 646.257 ($p = .00$) with $df = 321$. Although still significant, it is a little lower than the reported $\chi^2$ from the first model. The root mean square error of approximation for this model was .0618, and the Tucker Lewis Index was .967. The RMR was .0767, and the standardized RMR was .104. Finally, the GFI and the AGFI were .846 and .810, respectively. In brief, the analysis provided some support for the Quinn model; the data are summarized in Figure 4 and Table 6.

**Hypothesis 3: The Optimism-Flow Relation**

The last hypothesis of the study examined the relationship between optimism and flow, which we predicted would be related. We performed two multiple
Figure 3. Confirmatory factor analysis of the Jackson-Marsh hypothesis

*Standardized Factor Loadings Significant at $p < .01$. 
Table 5. Comparison of the Fit Statistics for the Tests of the Jackson-Marsh Model

<table>
<thead>
<tr>
<th>Model Fit Statistic</th>
<th>Criteria</th>
<th>Model 1</th>
<th>Model 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\chi^2$ test</td>
<td>Nonsignificance</td>
<td>587.292</td>
<td>511.850</td>
</tr>
<tr>
<td>Root mean square error of approximation</td>
<td>&lt;.05</td>
<td>.053$^a$</td>
<td>.0437$^b$</td>
</tr>
<tr>
<td>Nonnormed fit index or Tucker Lewis Index</td>
<td>&gt;.95</td>
<td>.972$^b$</td>
<td>.981$^b$</td>
</tr>
<tr>
<td>Root mean square residual</td>
<td>&lt;.05</td>
<td>.0691$^a$</td>
<td>.0653$^a$</td>
</tr>
<tr>
<td>Standardized root mean square residual</td>
<td>&lt;.05</td>
<td>.0651$^a$</td>
<td>.0613$^a$</td>
</tr>
<tr>
<td>Goodness-of-fit index</td>
<td>&gt;.95</td>
<td>.859</td>
<td>.879</td>
</tr>
<tr>
<td>Adjusted goodness-of-fit index</td>
<td>&gt;.95</td>
<td>.832</td>
<td>.852</td>
</tr>
</tbody>
</table>

a. Marginal fit.  
b. Excellent fit.

Figure 4. Summary of the test of Quinn’s flow model

regression analyses to examine the relation between (a) dispositional optimism and academic optimism and (b) flow. In the first analysis, we used the Jackson-Marsh model measure of flow, whereas the second analysis used
Quinn’s definition of flow. The results were similar regardless of the flow model. For the Jackson-Marsh model of flow, the two types of optimism explained 26% of the variance in flow (adjusted $R^2 = .26$, $p < .01$), with academic optimism explaining most of the variance ($\beta = .445$, $p < .01$) and dispositional optimism having a nonsignificant beta of .11 ($p > .05$). For Quinn’s measure of flow, the results were similar; adjusted $R^2 = .21$ ($p < .01$), academic optimism had a significant beta of .416 ($p < .01$), and dispositional optimism had a nonsignificant beta of .079 ($p > .05$).

**Discussion**

The first two hypotheses tested two competing conceptions of the nature of flow. Csikszentmihalyi’s flow theory has been a useful construct for explaining the behavior of people who love their work and their play (Quinn, 2005). The first model (Jackson-Marsh model) is consistent with Csikszentmihalyi’s (1975) definition of flow as a holistic experience consisting of nine elements. The second, rival model (Quinn model) defines flow as the merging of awareness and application, which is predicted by four antecedents and has a number of consequences.

Quinn (2005) argues that this holistic model neglects to specify which of the nine or whether all nine indicators are necessary for a flow experience. He further argues that because there is no agreed-on definition of flow and no consistent approach to modeling relationships between the elements of the flow experience, there is a need to explain how the flow state is different from

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**Table 6. Comparison of the Fit Statistics for the Tests of the Quinn Model**

<table>
<thead>
<tr>
<th>Model Fit Statistic</th>
<th>Criteria</th>
<th>Model 1</th>
<th>Model 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\chi^2$ test</td>
<td>Nonsignificance</td>
<td>747.26 ($p &lt; .00$)</td>
<td>646.257 ($p &lt; .00$)</td>
</tr>
<tr>
<td>Root mean square error of approximation</td>
<td>&lt;.05</td>
<td>.0688&lt;sup&gt;a&lt;/sup&gt;</td>
<td>.0618&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Nonnormed fit index or Tucker Lewis Index</td>
<td>&gt;.95</td>
<td>.96&lt;sup&gt;b&lt;/sup&gt;</td>
<td>.967&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>Root mean square residual</td>
<td>&lt;.05</td>
<td>.074</td>
<td>.0767&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Standardized root mean square residual</td>
<td>&lt;.05</td>
<td>.097</td>
<td>.104</td>
</tr>
<tr>
<td>Goodness-of-fit index</td>
<td>&gt;.95</td>
<td>.827</td>
<td>.846</td>
</tr>
<tr>
<td>Adjusted goodness-of-fit index</td>
<td>&gt;.95</td>
<td>.793</td>
<td>.810</td>
</tr>
</tbody>
</table>

<sup>a</sup> Marginal fit.  
<sup>b</sup> Excellent fit.
its indicators. He argues that what is needed is a causal explanation of flow. The third argument Quinn posits is that quantitative research on flow in work contexts is rare and “none focused on knowledge work” (p. 613). Most flow research is on sports and leisure and is constrained by the language of physical activity; thus, Quinn’s research seems particularly relevant for the study of flow in teachers, and we juxtaposed the two models as rival explanations of flow for elementary teachers.

The results were a little surprising to us. We anticipated Quinn’s (2005) explanation would be a better one because his study of knowledge workers seemed closer to teacher’s work than Jackson’s (1999) research on sport. Notwithstanding our expectations, in our study of elementary teachers, the results for teachers fit the Jackson-Marsh model of flow better than the Quinn model. The data provided good support that flow of individual elementary teachers is a second-order factor consisting of nine first-order factors, whereas Quinn’s model of flow, conceived of as a first-order factor with antecedents and consequences, received only limited support for teachers.

For our elementary teachers, flow was a holistic concept with nine aspects (challenge-skill balance, goal clarity, concentration, feedback clarity, awareness, sense of control, autotelic experience, transformation of time, and loss of self-consciousness). Nevertheless, Quinn’s (2005) analysis of the nature of flow is instructive because it gives insight into the dynamics of flow. The process of flow for teachers, however, is apparently much more seamless, holistic, and integrated than Quinn described for his knowledge workers.

Given the results of this analysis, a tentative picture of the dynamics of flow in teachers can be sketched based on both Quinn’s (2005) and Csikszentmihalyi’s (1975) explanations of flow. Flow is a high-performance experience that likely improves performance when people are engaged in difficult but specific goals because difficult goals motivate them to exert extra effort and specific goals focus attention on the task at hand (Locke & Latham, 1990). Similarly, goal clarity should have a positive impact on a person’s ability to concentrate because goals direct attention, which enables an individual to identify appropriate cues and disregard others. Without clarity, individuals are prone to get overwhelmed and distracted by issues that are irrelevant to the task (Miller, 1978).

The balance between challenges and skills needed to meet those challenges is also likely to be positively related to concentration. Individuals exert more effort to achieve challenging goals, but only when those goals are attainable (Locke & Latham, 1990). If the goals are unrealistic or extremely easy, then people are prone to give up, lose focus, or get bored.
Clear goals facilitate useful feedback because they provide a frame against which a person can evaluate the information (Westley, 1990). Such effort is similar to the vigilance shown by people in mindful organizations, who consciously seek to find and respond to cues that could threaten the achievement of an organization’s objectives (Weick & Sutcliffe, 2001). Although feedback clarity, goal clarity, and concentration are all part of flow, flow itself should also increase goal clarity because goals and objectives help to define the activity and people need to define events clearly if they are to have situational awareness (Endsley, 1995).

Simultaneously, as the process of flow is enacted, part of that experience is a sense of control over one’s performance, an enjoyment of the activity (autotelic experience), a loss of self-consciousness, and a transformation of time in that particular activity (teachers lose track of time). A teacher’s sense of control increases with flow because sense of flow increases confidence in an individual’s ability to perform an activity (Wood & Bandura, 1989). In addition, the enjoyment people find in an activity is inextricably bound to their experience of flow. This explanation of the dynamics of flow is drawn largely from Quinn’s (2005) theorizing; however, the process is much more holistic and integrated than Quinn believed. For our elementary teachers, the flow process is simultaneous, seamless, and more holistic.

The third hypothesis that optimism and flow are positively related, as expected, was confirmed regardless of which model and measure of flow was used. The relation between academic optimism and flow is substantial; optimism accounts for about a quarter of the variance in teacher flow. Moreover, it is academic optimism rather than dispositional optimism that is important in flow. Academic optimism is specific to the teaching context, and dispositional optimism is not. Context and specificity are important in both flow and optimism. The positive possibilities of both concepts help explain their linkage; there is a sense of fulfillment and achievement in both. Although flow is a natural consequence of optimism, it seems likely that flow reinforces the optimism; that is, the relation is reciprocal.

Flow as conceived in this study is related to self-efficacy and thus to academic optimism because these constructs describe behaviors that are both productive and enjoyable (autotelic). As positive psychological concepts, the similarities are clear. Both involve perceptions about performing well. Moreover, autotelic experience is similar, if not identical, to intrinsic motivation—“doing an activity for the inherent satisfaction of the activity itself” (Ryan & Deci, 2000).
Conclusions and Implications

Our study breaks new ground in the analysis of teachers and schools. To our knowledge, this is the first comprehensive, quantitative study of flow in schools. We provided evidence that the Jackson-Marsh measure of flow is a reasonably reliable and valid measure of flow for elementary teachers, and we invite others to join us in the refinement of the measure and in its application to schools. One note of caution follows: Although the Jackson-Marsh model and measure of flow were better in this study of elementary teachers, the Quinn model also had some support, so we encourage researchers to continue to assess that model also, particularly as study is extended to middle and secondary school teachers.

Academic optimism of schools has been strongly related to school achievement in mathematics, reading, English, and social studies (Hoy et al., 2006; McGuigan, & Hoy 2006; Smith & Hoy, 2007), even controlling for such variables as socioeconomic status, previous achievement, and other demographic variables. We expect that individual academic optimism of teachers will similarly explain classroom achievement of students, but that conclusion awaits further empirical testing. The reciprocal connection between academic optimism and flow—its potential for optimal performance and positive outcomes—is encouraging.

Developing models and strategies to improve schools is no simple matter because teaching and learning are intricate processes that happen within the complex contexts of schools. There are no quick and easy solutions to improving schools, but evidence-based alternatives are essential. We advance flow and academic optimism as two important tools that leaders should be aware of and that researchers should use in their exploration of ideas about schools, teaching, and learning that make a positive difference.

The art of teaching is complex and situation specific, with multiple ways to succeed. Teaching consists of goal-oriented activities that require high levels of competency to complete. By bringing the experiential concept of flow and its measure into the educational literature, we see how teachers can use tacit goals, standards, and values to judge the quality of their work. Teachers need to consider the unique characteristics of a situation, then adapt and generate productive and creative insights. At this point, we believe that flow has practical potential, but clearly more research on the construct and its relationships to other important variables is merited. For example, we expect that flow is more likely to occur in schools with cultures of trust, efficacy, and optimism. Similarly, we expect teacher flow is more likely to occur in cohesive and productive faculties. We also speculate that teacher flow is likely related to higher student performance because the construct is consistent with the
motivational models of goal theory, expectancy theory, efficacy theory, and self-regulation theory.

The nature of flow in schools is instructive, offering insight into the elements of flow and how they collectively and individually inform us in pursuit of optimal teaching and learning conditions. This work should help school leaders because the results have implications for how principals can promote flow and optimism in teachers as well as success in helping students engage, persist, overcome difficulties, and succeed in learning and school achievement.

Teachers need school conditions that enable them to focus on teaching and learning. Thus, principals play a pivotal role; they need to understand the importance of balancing the challenge of the task with the skills of individual teachers and lead accordingly. If goals are either too difficult or too easy, teachers give up or lose focus and interest. Clear, challenging goals that are consistent with teachers’ skill sets motivate them to engage and persist until successful (Locke & Latham, 1990). Such goals facilitate constructive feedback and enable teachers to concentrate on the task at hand. As teachers become successful, flow theory suggests that they will experience a greater sense of control over and enjoyment of their teaching. Furthermore, effectiveness will become spontaneous and automatic as teachers lose conscious awareness of themselves and focus on teaching and student learning. Some possible ways for principals to balance the challenge of the task with the skill of individual teachers and promote flow include the following:

- Be mindful of the skills of teachers, including outside abilities and interests; teachers have many untapped talents.
- Match those skills with the difficulty and challenge of the task; appropriate matching is a key to success.
- Provide support for new teachers (e.g., mentors, limited number of preparations, access to needed resources); new teachers can be overwhelmed by the challenge.
- Challenge experienced teachers (create new courses, advanced professional development, mentoring responsibilities, curriculum revisions); the leadership of experienced teachers needs to be harnessed.
- Facilitate professional communities through such activities as critical friends, lesson study, and collaborative projects; professional communities enhance individual performance.
- Provide “safety valves” in cases in which teachers are mismatched in the task-skills challenge (e.g., support-teachers, formative supervision, scaffolding); mistakes need to be addressed quickly and positively.
- Welcome teacher innovations; teachers are often the source of creative ideas.
The fundamental flow principle is to match the skills of the teachers with the challenges of the task and to continue monitoring the match as abilities and tasks change.

In conclusion, educational researchers now have reliable and valid measures of flow and academic optimism to continue this important line of inquiry and to develop strategies to improve teaching and learning in schools. This inquiry is a modest first step to explore flow and the extent to which it is useful in the analysis of schools. We hope that many will join us in this research odyssey to improve teaching and learning in schools.

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**References**


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