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CRITICAL CONSCIOUSNESS AND POSITIVE YOUTH DEVELOPMENT: A GROUP-DIFFERENTIAL LONGITUDINAL STUDY AMONG YOUTH OF COLOR IN THE UNITED STATES

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Abstract

Critical Consciousness and Positive Youth Development: A Group-Differential Longitudinal Study Among Youth of Color in the United States

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Young people identifying as Black, Latino/a/x, Hispanic, Asian, and other races and ethnicities that are minoritized and marginalized have constrained opportunities for positive development in the United States due to oppression grounded in white supremacy (NASEM, 2019). Importantly, youth of color engage in critical consciousness: interrogating and dismantling systems of oppression (Freire, 1970/2016). My aim was to illuminate the variation within youth of color in their development of critical consciousness, and to consider the implications for their overall development as viewed from a positive youth development perspective (Lerner et al., 2015). Associations between patterns of critical consciousness development and two variables measuring youths' perceptions of their school context were examined.

Using latent profile transition analysis, I explored variation among a sample of youth of color (n = 335) in cognitive, socioemotional, and behavioral

processes of critical consciousness (Diemer et al., 2016; Watts et al., 2011) over a short longitudinal period. The mean age was fourteen at time 1 (which took place in 2016) and fifteen at time 2. Group-differential patterns in critical consciousness development were related to contribution—supporting the development of self and giving back to community; engagement in risk and problem behaviors; and emotional problems. Associations between patterns of critical consciousness development and (1) classroom discussions about social justice and (2) open classroom climate were estimated.

Multiple patterns of engagement with critical consciousness were identified. Some youth shifted in their patterns of critical consciousness over time. Many participants reported a pattern of low engagement in multiple components of critical consciousness across both time points; higher classroom discussions about social justice were associated with a lower likelihood of youth following this pattern. These youth concurrently reported low contribution. Young people who sustained high levels across all dimensions of critical consciousness had high levels of emotional problems and risk and problem behaviors.

Findings indicate broad involvement in critical consciousness can be associated with negative outcomes. Nevertheless, young people who were participating less in critical consciousness may struggle to promote positive development within themselves and their contexts through contribution. Implications for supporting the thriving of youth of color are discussed.

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Chapter 1: Introduction

In the Spring of 2016, Boston witnessed one of the largest student walkouts in the city's history (Warren & Goodman, 2018). Approximately 3,500 students walked out of class together and rallied at Boston Common, later marching to the statehouse and city hall. The students were protesting proposed budget cuts to the Boston Public Schools in an event organized entirely by young people through social media and word of mouth (Ayala et al., 2017). Many of the leaders of the walkout were youth of color who acknowledged the issue as one of racial justice: the city's budget cuts would have affected mostly non-white students, and signified continued disinvestment from the most marginalized communities in Boston (King et al., 2018; Warren & Goodman, 2018).

The walkout was successful in that it pressured the city to rescind a portion of the budget cuts; meanwhile, youth leaders who emerged from the movement continued to advocate for issues of educational equity affecting their communities (Ayala et al., 2017; King et al., 2018; Warren & Goodman, 2018). Qualitative studies conducted by Warren and Goodman (2018) revealed that engaging in activism was related to positive impacts among the student leaders from the movement: youth recounted developing a sense of purpose and agency.

I present the Boston Public School walkout and the subsequent educational equity activism by some of Boston's youth of color as just one example of a youth-led movement for social justice. The youth leaders of the walkout had examined

the disparities that affected their lives as students, then took individual and collective sociopolitical actions to counteract injustices and advance anti-oppression. As was the case in the walkout, young people of color can be powerful change agents in improving their communities, and their reflections and actions toward social change may be paired with psychological wellness. It is possible that when young people are engaged in their own liberation, they may experience beneficial outcomes both through a transformed context for their development as well as through direct impacts from engaging in processes of anti-oppression.

In this dissertation, I explored the development of youth of color as sociopolitical actors using the framework of critical consciousness (Diemer et al., 2016; Freire, 1970/2016; Watts et al., 2011), as well as a strengths-based perspective on youth development. Accordingly, I considered how critical consciousness development relates to engagement in activities where youth are supporting their own and others' development. In addition, how youth of color's sociopolitical development relates to engagement in risk and problem behaviors and having emotional problems was investigated. The aim was to contribute to the emerging literature on the relations between critical consciousness and other developmental outcomes (Diemer et al., 2016; Heberle et al., 2020).

The framework of critical consciousness posits there are multiple parts to critical consciousness including cognitive, socioemotional, and behavioral components (Diemer et al., 2016; Watts et al., 2011). To examine nuances in the

development of critical consciousness, I took a group-differential analytical approach to examine how the multiple components of critical consciousness manifest in potentially multiple, patterned ways among the sample. In other words, I investigated the presence and nature of subgroups within the sample of U.S. youth of color—subgroups which can be differentiated based on their pattern of responses to measures of critical consciousness components.

I extended the group-differential analysis longitudinally by considering how youth transition through different subgroups over a short longitudinal period during their middle and high school years. I then mapped specific longitudinal transitions to development outcomes and contextual assets. Youth engagement in critical consciousness can bring about positive transformations to youths' contexts and thereby youth themselves (Diemer et al., 2016; Heberle et al., 2020). However, it is important to examine how youths' involvement in critical consciousness may relate to youths' lives more generally, by exploring how they are functioning in other ways and how critical consciousness engagement may be supported by their contexts.

There is not consensus among scholars about how critical consciousness may affect youth development. Ogbu (1991, 2003), Ogbu and Simons (1998), and Fine (1991), make the argument that youth who are aware of how their life is affected by oppression may disengage from systems that perpetuate oppression instead of actively engaging in combating the injustice and inequity within that

system. They observed how Black youth and youth from lower-income households disengaged from their education, usually by dropping out, and posited that it comes as a result of awareness of inequity in opportunities. Youth disengaged when they realized that engaging in school may not always lead to desirable life outcomes due to barriers for people of color both in the educational system and other connected systems such as the labor market. Ogbu posited that youths' lack of trust in schooling may also be paired with an "oppositional" ideology—engaging in school betrays solidarity among those who are treated with injustice as they try to assimilate into a white and higher-income class. More contemporary literature begins to complicate this interpretation of the "consequences" of having a thorough understanding of systemic inequity. Studies are beginning to show that youth engaging in critical consciousness can experience myriad positive developmental outcomes (see Diemer et al., 2016 or Heberle et al., 2020 for a review). I closely examined when and how youth may be both aware of structural inequities and engaged in their own positive development such that their understandings of the oppressive systems in the world informs their persistence to succeed.

The positive youth development (PYD) literature (R. M. Lerner et al., 2015) and the concept of contribution informed my analysis of whether youth engaged in critical consciousness supported their own development in other ways. PYD is an approach to youth development that asserts all youth possess strengths

that can be harnessed towards advancing society (Geldhof et al., 2013). Every young person is viewed from a strengths-based perspective and is seen as possessing assets that, when supported by a nurturing environment, can result in positive development for the individual (Geldhof et al., 2013). This in turn benefits the public.

Within the framework of PYD, youth thriving can be measured as contribution: whether young people are contributing to supporting their own development and are making meaningful contributions to the world (R. M. Lerner et al., 2015). Contribution often measured as young people's involvement in activities that are supporting themselves and others (Hershberg et al., 2015), and is emphasized in PYD frameworks as an indicator of whether a young person is on their way to a generative adulthood (R. M. Lerner et al., 2003). In this study, I examined associations between young people's critical consciousness and their contribution as a strengths-based indicator of youth development. I also examined associations between critical consciousness and youth engagement in risk and problem behaviors and emotional problems; it was expected that youth who are thriving will report low engagement in risk and problem behaviors and low levels of emotional problems.

I also considered associations youth of color's critical consciousness development and characteristics of their school context. Young people may perceive their schools to have an open classroom climate (Campbell, 2008); that

is, they may feel empowered to express viewpoints that may differ from those of other members of the classroom. However, a drawback of prior studies linking an open classroom climate to both critical consciousness (Godfrey & Grayman) and other civic engagement outcomes among youth (Quintelier & Hooghe, 2013) is that the *content* of the discussions that are being fostered are not inspected. A classroom where healthy debate is encouraged may not bolster critical consciousness if the content of the discussions is not rooted in social justice and an acknowledgement of the basic humanity of all people. In concrete terms, an open dialogue that is racist or oppressive in other ways is counter to developing the deep analysis of inequity that is central to critical consciousness.

Consequently, in this dissertation I examined the content of the discussions in the school context as assessed by the students. Are discussions in the classroom about issues that are pertinent to a healthy democratic society? Do students discuss problems such as the unequal treatment of different social groups? Asking such questions helped evaluate whether the school context supported critical consciousness development through creating structures for critical dialogue.

In sum, I aimed to shed light on how youth of color differ in their longitudinal engagement in critical consciousness, and how these differences are related to their contribution, risk and problem behaviors, and emotional problems. Critical consciousness was examined as consisting of behavioral, cognitive, and socioemotional components. I also investigated associations

between youths' perceptions of open classroom climate and classroom discussions of social justice, and their critical consciousness development.

Critical Consciousness

Engagement in sociopolitical actions and behaviors by youth of color was examined through the conceptual lens of critical consciousness (Diemer et al., 2016; Freire, 1970/2016; Watts et al., 2011). The notion of critical consciousness was popularized across the world in translations of Paulo Freire's writings (Freire, 1998, 1974/2014, 1970/2016) and has been defined as "learning to perceive social, political, and economic contradictions, and to take action against the oppressive elements of reality" (Freire, 1970/2016, p. 35). The central idea of critical consciousness is that advancing toward liberation from oppression (Young, 1990/2011) involves both developing an understanding of how unjust societal hierarchies are maintained, and taking action to dismantle structures of oppression (Freire, 1970/2016; Watts et al., 2011).

The theoretical work on critical consciousness by Freire has inspired research on how critical consciousness manifests in young people, and how critical consciousness may be involved in youths' liberation from oppression (Diemer et al., 2016; Heberle et al., 2020). Much of this research has focused on the development of critical consciousness in young people experiencing racial oppression in the United States (e.g., Black youth, Latino/a/x youth).

I examined critical consciousness as consisting of three components: cognitive, socioemotional, and behavioral. Youths' understanding of systems of oppression was examined as the cognitive component. Having life goals that include challenging systems of oppression and feeling a sense of self-efficacy about bringing about sociopolitical change, was considered for the socioemotional component. Engagement in civic actions that may bring about systemic changes toward anti-oppression, were examined as the behavioral aspects of critical consciousness.

Instead of aggregating the three critical consciousness components, I allowed for variation within the sample in how each component manifests. In other words, I predicted subgroups with different patterns of critical consciousness engagement—for example, one subgroup may have high cognitive critical consciousness but low behavioral and socioemotional, whereas another subgroup may have high levels on all components. Parsing out the components of critical consciousness in this way allowed for a more nuanced understanding of how critical consciousness relates to contribution, risk and problem behaviors, and emotional problems. Similarly, associations between open classroom climate and classroom discussions about social justice and critical consciousness development could be examined in close detail.

Positive Youth Development

A primary aim of this dissertation is to examine connections between engagement in critical consciousness and the development of youth of color from a PYD perspective. PYD has been instrumental in shifting the narrative on how we talk about young people and their role in society, by stressing that all youth have strengths that will allow them to contribute to their contexts. According to PYD, programs and policies should focus on how to capitalize on youths' assets, instead of focusing on their potential for problems.

PYD as developmental theory is derived from a relational developmental systems paradigm (i.e., relational developmental systems is the meta-theory guiding PYD theory) (R. M. Lerner et al., 2015). Theories that are based in a relational developmental systems worldview consider developmental processes as bidirectional exchanges within and between levels of an integrated yet multi-tiered system (Overton, 2013, 2015). Furthermore, historicity is imbued throughout the system of human development (Overton, 2013, 2015). As such, in PYD, plasticity is viewed as inherent to human development, such that positive developmental trajectories for all youth result from optimizing the transaction of assets between individuals and their contexts (Geldhof, Bowers, Johnson, et al., 2014; R. M. Lerner et al., 2015). In other words, because there is the possibility for change during development, internal assets (strengths within youth) can be aligned with external assets (strengths in youths' contexts) to maximize youths'

potential to achieve positive developmental outcomes. Of note is the reciprocal nature of these developmental regulations: the bidirectional individual↔context relation, when optimized, can benefit both the individual and the context.

A model of PYD with significant empirical evidence is the Lerner and Lerner Five Cs model, which is so-called because it measures youth manifestation of PYD via five core competencies (Geldhof et al., 2015; R. M. Lerner et al., 2005). The five Cs of this model are: Connection (beneficial bonds with important individuals and institutions), Caring (a sense of sympathy and empathy for others), Character (standards for ethical behavioral conduct and respect for others), Competence (positive view of one's abilities), and Confidence (overall positive self-worth) (Geldhof et al., 2015; R. M. Lerner et al., 2005). In this particular instance of PYD theory, the five "Cs" capture what practitioners and scholars deem as characteristics important for adolescents to make an ideal transition to a generative adulthood (Geldhof et al., 2015; R. M. Lerner et al., 2005). Thus, a key tenet of the Five Cs model of PYD is that youth who are developing well are more likely to contribute in generative ways to self, others, and society. This sixth "C" of contribution is thus an important indicator of whether youth are developing positively. I investigated relations between critical consciousness and contribution to consider how young people who are engaged behaviorally and psychologically in a struggle for social justice may also be involved in actions to support their development (e.g., sports, academic

extracurriculars) and actions to support their community in other ways (e.g., community service).

Positive Youth Development for Youth of Color

The PYD perspective outlines how the narrative around youth development can shift from one focused on deficits to a strengths-based perspective for all youth irrespective of background. Yet, most research focused on youth of color tends to employ a deficit-focused perspective, emphasizing how development for youth of color is marred with deficiencies and problems when compared to white youth (Cabrera & The SRCD Ethnic and Racial Issues Committee, 2013). Indeed, the focus on "damage" in research on populations that experience oppression is often accompanied with and fueled by an obscuring of the significance of the context of racism and colonization in the U.S. (Tuck, 2009). Currently, models of PYD that are well-established in the literature, such as the Lerner and Lerner Five Cs model (Geldhof et al., 2015) do not yet take into explicit account how youth of color have to grapple with systems of oppression as part of their development. The Five Cs model and other PYD frameworks do not offer a narrative of how economic, historical, political, and cultural factors impact the lives of youth in different ways depending on their racial-ethnic background (Spencer & Spencer, 2014; Williams & Deutsch, 2015).

It is unquestionable that youth of color are a group that is systematically disadvantaged in the United States (National Academies of Sciences, Engineering,

and Medicine, 2019), as U.S. society is structured to confer privileges to those who were born white (Bonilla-Silva, 2001). Youth of color are disproportionately entrapped by the juvenile justice system (Rovner, 2016) and have inequitable access to employment opportunities (Spievack, 2019). There are disparities in education along racial lines as well: young people of color disproportionately attend schools with less funding (Morgan, 2018) and poorer school climates (Voight, 2013) than their white counterparts. Health outcomes and access to health care are worse for youth of color than white youth as well (Lau et al., 2012).

As conditions of systemic disadvantage are a reality for youth of color, a model of development for youth of color focused on positive trajectories in the youths' lives must take into account how young people contend with systemic barriers to their development. I used Margaret Beale Spencer's phenomenological variant of ecological systems theory (PVEST) (Spencer, 2006; Spencer et al., 2015) as a theoretical framework that considers how youth who experience oppression, such as youth of color in the United States, develop in context.

Theoretical Framework for the Dissertation

As a theory of human development, PVEST recognizes the role of individual and contextual factors in development, but also brings into focus phenomenology—individuals' meaning-making of self, others, experiences, and environment (which are shaped by the person's developing perceptual and

cognitive systems) (Spencer, 2006; Spencer et al., 2015). PVEST builds on existing ecological theories of human development, such as those by Bronfenbrenner (Bronfenbrenner & Morris, 2007) and García Coll (García Coll et al., 1996). Both models place development as occurring within multiple layers of context. PVEST adds an additional consideration, that of youths' perceptual processes and meaning-making (i.e., phenomenology). Incorporating how an individual's intersubjective experience influences the impact that contexts have on their development (as well as how the individual acts on their context) means that the interplay between individual and context is no longer deterministic from the barriers and supports in the context or the characteristics of inherent to the individual (Spencer, 2006; Spencer et al., 2015). Instead, it is the person's interpretations that shape development through coping processes that stem from the perceptions (Spencer, 2006).

PVEST is an important theoretical perspective for thinking about the development of youth of color from a strengths-based perspective as it disrupts assumptions about the developmental trajectory for youth of color. According to PVEST young people of color are not confined to following a "damaged" developmental trajectory even when there are significant barriers (or lack of supports) in their contexts. Instead, PVEST asserts there will be differences within groups of individuals that share similar contexts or similar individual characteristics due to how they make meaning of the world around them. Even

within a sample of U.S. youth of color that as a group are disadvantaged by racist policies and institutions, there may be differences that arise due to how the individual interprets self and context (Spencer, 2006; Spencer et al., 2015). It is with this theoretical framing that I approached the analysis of the development of critical consciousness among youth of color.

A Group-Differential Longitudinal Study Within the School Context

PVEST emphasizes how individuals' understanding of themselves and their contexts creates differences in life outcomes within groups of people sharing similar backgrounds. Thus, this dissertation, which is embedded in the PVEST framework, focused on group-differentials. I examined how critical consciousness development may relate to contribution, risk and problem behaviors, and emotional problems differently within a group. I also examined how critical consciousness development may be associated with open classroom climate and classroom discussions about social justice differentially. I used mixture modeling techniques to examine these within-group variations. In mixture modeling subgroups within a sample that share response patterns on a variable or set of variables can be identified. I examined whether different compositions of the components of critical consciousness (cognitive, socioemotional, behavioral) can be identified within the sample of youth of color, and the nature of these compositions. I used latent profile transition analysis (Collins & Lanza, 2009), a longitudinal extension of mixture modeling to model stability or change in the

critical consciousness patterns. I related patterns of critical consciousness development to contribution, an indicator of thriving from the PYD literature. I also examined how critical consciousness development was associated with risk and problem behaviors and emotional problems, as another method with which to examine the developmental outcomes among youth of transitioning through different patterns of critical consciousness engagement. To gauge how the school context was related to critical consciousness development, I examined associations between youths' perception of an open classroom climate and classroom discussions about social justice and the transition patterns of critical consciousness identified through latent profile transition analysis.

Aims

Making meaning of issues at a systemic level, being motivated and empowered to tackle root causes of issues, and doing the work of dismantling oppression, are core components of critical consciousness. Hence, critical consciousness encapsulates how youth of color engage in creating a more socially just world for themselves and those part of their communities. The first aim of the dissertation was to understand how critical consciousness manifests developmentally among youth of color, a group who experience oppression in U.S. society.

Young people who are analyzing and learning about social justice engagement and are creating social justice (such as by going to a protest against

unjust school funding policies) are already enacting development in a manner that is anti-oppressive. However, critical consciousness may also be paired with developmental outcomes that are constructive and positive in other ways. Contribution actions toward the self can ensure further positive development, as can contributing to the well-being of those around you (e.g., family, neighbors) who in turn can provide a healthy context. Lower incidences of risk and problem behaviors and a lack of emotional problems are alternative ways to determine whether a young person is on the path of healthy development. A second aim of this dissertation, then, is to shed light on how critical consciousness development is associated with contribution, risk and problem behaviors, and emotional problems.

How assets in youths' school context may be involved in the development of their critical consciousness was the third aim of this dissertation. I examined relations between critical consciousness and youth perceptions of whether their school fosters an open classroom climate, and youth perceptions of the whether there are classroom discussions centered around social justice.

Chapter 2: Literature Review

Critical Consciousness Processes Among Youth

What is Critical Consciousness?

The main phenomenon of study, critical consciousness, is a construct that refers to how those who experience oppression interrogate and disrupt the status quo to build a more equitable and just society for themselves and others. As a construct that has been studied in multiple disciplines ranging from psychology (Diemer et al., 2016; Heberle et al., 2020) to education (Shor, 2012; Souto-Manning, 2010), critical consciousness has various definitions (Jemal, 2017). Nonetheless, most scholars draw on the writings of Brazilian educator Paulo Freire, who first popularized the notion of critical consciousness through publications such as Pedagogy of the Oppressed (1970/2016) and others (Freire, 1998, 1974/2014).

In his writings, Freire established critical consciousness as the process by which those experiencing conditions of oppression reflect upon those conditions and become empowered to act towards transforming those conditions. Freire emphasized praxis in his writings (1970/2016); to him, critical consciousness consisted of the recursion of reflection and action upon the world, where reflection gave rise to action, which necessitates further reflection, and so on.

Contemporary scholars have been interested in examining the development of critical consciousness among young people experiencing oppression, such as

youth of color and youth from less privileged socioeconomic backgrounds (Diemer et al., 2016). Much of the research has focused on youth who experience oppression within the United States context (Heberle et al., 2020), a context in which ideologies such as that of meritocracy and the "American Dream" are prevalent. These ideologies perpetuate the maintenance of hegemonic structures, masking inequities of opportunity and unjust systems by ascribing the task and the outcomes of succeeding in society to individuals' efforts and hard work. By making attributions to individuals, systemic bigotry that may restrict certain groups' ability to succeed in the world is ignored. Consequently, research on indications of critical consciousness among youth in the U.S. context has focused on whether young people are critiquing these ideologies, both rejecting the deep inequalities that exist in society and acknowledging that the causes of the inequality are structures of oppression, not the inherent failures of entire groups in society.

Drawing on Freire's theoretical groundwork, recent literature on critical consciousness development focuses on how youths' critical analysis of systems of oppression can lead to acts that are aimed at disassembling those pernicious systems. Potential associations between these cognitive and behavioral dimensions have been examined in order to model the praxis between reflection on and action against oppression (Diemer et al., 2016; Watts et al., 2011). In addition to the cognitive and behavioral dimensions, scholars examine the

socioemotional facets of critical consciousness (Diemer et al., 2016; Watts et al., 2011).

Cognitive, Socioemotional, and Behavioral Components of Critical Consciousness

Research into whether youth are aware of and reject conditions of oppression is concerned with the cognitive domain of critical consciousness. This domain is often labeled the reflection component of critical consciousness, and has both evaluative and analytical subcomponents (Jemal, 2017; Watts et al., 2011). The evaluative factor deals with whether youth are aware of and oppose large societal inequalities. Sometimes referred to as "endorsement of egalitarianism," this element of critical consciousness is about youth making a judgment that significant disparities between groups are bad (Diemer et al., 2015; Watts et al., 2011).

The more analytical component, often called "critical reflection" refers to whether, in addition to being able to perceive that inequality exists, individuals are be able to recognize that the inequality is perpetuated through systems of oppression (i.e., an unjust society; Diemer et al., 2015; Watts et al., 2011)). Thus, critical reflection is often also operationalized as a capacity for making structural, instead of individual, attributions. Youth must discern that institutionalized structures, both historical and current, constrain the opportunities of some

groups. As a result, individuals cannot be blamed completely—or take full credit—for their life outcomes.

Both Freire (1998, 1970/2016) and contemporary scholars (Watts & Hipolito-Delgado, 2015) stress that actions are also needed for individuals to be involved in their own liberation. Simply thinking about how one is oppressed will not aid in dismantling that oppression. Individuals can engage in private and public acts—alone or with others—to combat the structures that are unjust. There is variation in what are counted as critical actions, but protest and organizing are often considered key to dismantling corrupt power structures (Diemer et al., 2016; Watts et al., 2011).

Both individuals and communities also need agency and self-efficacy in order to engage in actions. Without the ability to engage in various actions and the perceived capacity for success of those actions, people may not take action.

Relations Between Critical Consciousness Processes

Recent work has begun to explicate the relationships among the three major types of critical consciousness dimensions: cognitive, socioemotional, and behavioral. Diemer and Rapa (2016) closely examined how the reflection, action, and efficacy components are associated with a subsample (n = 761) drawn from a nationally representative study conducted in 1999 with U.S. ninth graders. Their subsample was restricted to Black and Latino/a/x youth who were from lower

socioeconomic status families, in order to focus on critical consciousness processes among youth belonging to groups that experience oppression in the United States.

In their analyses, they considered pathways between components of critical consciousness, including mediation or moderation of the critical reflection to critical action link by sociopolitical efficacy. In the data, however, critical reflection predicted critical action, but political efficacy did not mediate or moderate this linkage. This finding ran counter to the researchers' expectations about links between critical reflection and critical action being able to be explained by sociopolitical efficacy. Their incongruent findings may be due to the fact that their measure of sociopolitical efficacy focused exclusively on the domain of politics. It may be that young people's feelings of efficacy about standard political behaviors is not a part of the critical consciousness process. Other studies examining the efficacy component of critical consciousness considered youths' feelings about being able to be successful in social justice activities (Cadenas et al., 2018) or their sense of control over making changes in their community (Diemer & Li, 2011; Godfrey et al., 2019; Seider et al., 2019).

A study by Diemer and colleagues conducted in 2017 is an important contribution to the literature in that it developed and tested the Critical Consciousness Scale. This measure is now frequently used in studies of critical consciousness (Heberle et al., 2020). Measure development procedures (exploratory factor analyses, followed by confirmatory factor analyses) were

conducted with a sample of 326 students. The participants were all youth of color (63% Black) and ranged in age from 13 to 19 years old. Analyses of the students' responses revealed a three-factor structure, consisting of critical reflection, critical action, and "critical reflection: egalitarianism." The egalitarianism factor is similar to the belief in fairness scale in the Godfrey et al. (2019) study, in that it measures whether young people say that they are against hierarchical social structures. In fact, the items in the egalitarianism factor are the reverse of items from Pratto and colleagues' (Pratto et al., 1994) Social Dominance Orientation scale.

In the study, each factor in the Critical Consciousness Scale was distinct, in other words, there were limited associations among factors. This suggests that total scores of critical consciousness where the items are summed or averaged should not be computed, and points to a need to analyze critical consciousness using multivariate techniques that allow for more than one variable to be considered in unison without creating a summative score.

Other important findings from this study are that critical reflection correlated significantly with critical action, measured as participation in various sociopolitical behaviors ranging from involvement in a human rights group to participating in a protest march. However, the egalitarianism factor had negative associations with critical action. Further, critical reflection and egalitarianism had no association. These findings support critical consciousness theory that suggests

reflection about inequity in society can lead to engagement in actions that are aimed at dismantling the perceived inequities. However, it is important to note that egalitarianism seems to be a distinct factor, operating in a divergent manner to the critical reflection factor. Consequently, in this dissertation I will take into account the full multi-dimensionality of the critical consciousness construct by including both a factor that assesses youth's critical reflection as well as a factor about youths' endorsement of egalitarianism. Without looking at both youths' awareness of disparities in U.S. society as well as youth's beliefs about fairness in U.S. society, we cannot know if youth hold an anti-oppressive stance. Specifically, in this dissertation the critical reflection questions will ask: are some groups doing worse in society?; while the beliefs in fairness questions will ask: does U.S. society provide fair opportunities for all groups?

Critical Consciousness and Positive Youth Development

Critical consciousness has been linked to various positive developmental outcomes among youth who experience oppression (Diemer et al., 2016; Heberle et al., 2020). However, prior studies often examined links between single critical consciousness components and youth outcomes, seldom looking at the relationships between positive youth development and critical consciousness as a multi-dimensional construct. An important exception is a recent study by Godfrey and colleagues (2019), discussed later in this chapter, which examined links between profiles of multiple key critical consciousness components and youth

academic and psychological outcomes. Lastly, no study thus far has examined how critical consciousness relates to the construct of contribution from the Five Cs model of positive youth development. In this dissertation, links between critical consciousness as a multidimensional construct and youth of colors' engagement in contribution behaviors will be examined.

Because scholars have been interested in how critical consciousness may act as an "antidote" against oppression, empowering youth to achieve at school and in other settings, much prior work has examined how critical consciousness relates to academic and vocational outcomes. In a 2006 study by Diemer and Blustein, two components of critical consciousness – critical reflection, measured as the inverse of a social dominance orientation, and sociopolitical control – were examined for links to vocational development among a sample of predominantly young people of color. Results showed a positive relationship between critical reflection and clarity of vocational identity; and between sociopolitical control and salience of work roles and commitment to one's vocational future (Diemer & Blustein, 2006). A 2009 longitudinal study examined the third component of critical consciousness, critical action, and its links to vocational outcomes (Diemer, 2009). In this study, critical action at grade 12 predicted prestige of occupations eight years after high school, even after controlling for academic achievement. Critical action in Diemer (2009) was measured through items asking about participation in "community centers, neighborhood improvement, or

social-action associations or groups", the importance of "working to correct social and economic inequalities," and the importance of "helping other people in my community" (Ingels, 1994).

A more recent study provides further evidence that the critical action component of critical consciousness on its own can generate social mobility pathways among youth who experience marginalization: Rapa, Diemer and Bañales (2018) investigated whether critical action, measured with items capturing "individual or collective action to protest, draw attention to, and/or promote change with regard to social, economic, or political inequality" was related to the attainment of higher status occupations. Their analyses of four waves of data from the Maryland Adolescent Development in Context Study (N = 261) indicated that critical action was predictive of greater expectancies for career success during late adolescence (1 year after high school). In turn, the higher career expectancies predicted prestige of participants' occupations when they were 29 years old. Clear links over time between critical action and positive vocational outcomes replicate the prior findings (Diemer, 2009) and attest to how youth experiencing marginalization may experience career success through engaging in critical action.

In a study of 368 undergraduate students, which included 89 Hispanic DACA recipients, Cadenas, Bernstein and Tracey (2018) explored links between a socioemotional component of critical consciousness and academic outcomes. They

found that outcome expectations about social justice activities, or a belief that social justice activities would bring about positive change, was predictive of intent to persist in college. The researchers proposed that students' greater confidence around navigating and changing political systems transferred over to confidence in navigating higher education systems, which are also highly political. For example, a student who is confident about their ability to affect changes to immigration policy may also be confident that they can change conditions of oppression as it applies to them in colleges and universities, motivating them to persist despite inequities in institutions of higher education.

Is important to note however, that in Cadenas and colleagues (2018), associations typically theorized in critical consciousness work did not hold for the 89 Hispanic DACA recipients, and instead only held for students (white and Hispanic) who were not on DACA. Specifically, for Hispanic DACA students, there was no connection between critical action (e.g., engaging in civil disobedience) and self-efficacy or outcome expectations about sociopolitical engagement. Further, more supports for engagement in critical action did not translate to higher engagement in critical action, as it did for students with citizenship. Thus the study points to possible limitations within critical consciousness theory in accounting for high-risk activism. Hispanic DACA students, who face grave risks – including deportation – when engaging in critical actions, may prefer to engage in

more conventional forms of sociopolitical activities and may need different supports (such as legal advice).

A study by McWhirter and McWhirter (2015) offers additional support for the findings in Cadenas and colleagues (2018): that the socioemotional component of critical consciousness can foster educational outcomes. In their research with Latino/a/x high school students, McWhirter and McWhirter (2015) first developed a 17-item measure of critical consciousness (MACC; Measure of Adolescent Critical Consciousness). They conducted exploratory factor analyses (n = 476), followed by confirmatory factor analyses among a new sample of 870 students. Their measure development work diverged from the tripartite model of critical consciousness: the MACC has a two-factor structure consisting of critical agency (similar to sociopolitical efficacy) and critical behavior. The critical agency factor in their measure includes two items about awareness of inequity, thus critical reflection was folded into this socioemotional factor. This hybrid critical agency factor was strongly associated with post secondary plans to attend a 4-year college among both samples, offering further evidence that critical consciousness can foster an intent to persist through higher education. Additionally, across both samples, McWhirter and McWhirter (2015) found that high scores on critical agency and critical behavior were related to higher engagement in prosocial behaviors related to supporting the students' families and communities, such as translating for family members, caring for younger children, and helping others at

school. The authors propose that engagement with families and communities may enhance their awareness of and motivation to challenge systems of inequality in society that affect their group.

A recent study by Seider, Clark, and Graves (2019) examined links between critical consciousness and academic achievement using longitudinal data from 364 youth of color during their high school years. Their findings both extend and complicate prior findings on how critical consciousness is related to academic achievement. In their study, latent growth modeling was used to show that adolescents' level of critical reflection and critical action at the start of the study when they had just entered high school significantly predicted their SAT scores at the end of high school (12th grade), but did not predict 12th grade GPAs. Further, growth in critical reflection and critical action over the course of high school predicted GPA, but not SAT scores. These results provide some evidence of links between the reflection and action components of critical consciousness and academic achievement. However, the equivocal findings between GPA and SAT scores complicates the evidence base. One interpretation, in light of the studies by Cadenas and colleagues (2018) and McWhirter and McWhirter (2015), is that critical consciousness may be especially powerful for youths' intent to pursue and persist in higher education settings when they are older, but may be less predictive of youths' performance in their current middle- or high-school settings.

In Seider et al. (2019), sociopolitical efficacy was not related to later academic outcomes, which is surprising given prior findings showing strong cross-sectional links between sociopolitical efficacy and academic outcomes (Cadenas et al., 2018; McWhirter & McWhirter, 2015). The equivocal findings between the longitudinal study by Seider and colleagues (2019) and the cross-sectional studies may be due to the ordering of the variables. The civic engagement literature has shown that academic achievement in the civic domain (civic knowledge) precedes sociopolitical efficacy (Pasek et al., 2008); thus, while sociopolitical efficacy may eventually manifest where there is high academic achievement, earlier sociopolitical efficacy may not predict later academic achievement.

In addition to studies that have looked at how critical consciousness is related to academic and vocational outcomes, scholars have examined how critical consciousness may be related to indicators of youth thriving based on the Five Cs model of positive youth development (Geldhof et al., 2015). A cross-sectional study by Tyler and colleagues (2019) examines whether critical reflection was connected to the Five Cs. Comparisons were made between white and Black adolescents, and, within white adolescents, further distinctions were made between those attending middle-income versus low-income schools. Measurement invariance between the three groups was tested, including for the Five Cs and critical reflection separately (C. Tyler, personal communication, February 29, 2020). The researchers did not find that critical reflection was

associated with the Five Cs among Black youth. Among white youth, it was negatively correlated to Character, Caring, Connection. In other words, the study points to a weak or negative relationship between critical consciousness and thriving as operationalized through the Five Cs. However, this study is limited in that it only examined critical reflection and not other components of critical consciousness. For example, it is possible that among the group exhibiting high scores on critical reflection, there was considerable variation in their critical action, and the socioemotional components of critical consciousness. Thriving may differ depending on how youth are doing in those other components of critical consciousness, which is masked in this study.

A limitation of this study is that the operationalization of critical reflection here focused only on awareness of inequity in opportunities and ignored what participants judgments may be about inequity in society. This creates limitations to the conclusions that can be drawn from the critical reflection items. Indeed, for the items about critical reflection of race, it is problematic to not ask whether participants endorse racial equity and justice, as the items asking about the awareness of race-based inequity are ambiguous as to what should happen to the disparities between racial groups in areas such as education and work. For example, the item “Certain racial or ethnic groups have fewer chances to get good jobs.” may have been interpreted to mean that white people experience inequity in job opportunities. Without knowing what participants’ judgments are of the

inequity, a possible implication of awareness of racial/ethnic disparities is that instead of advancing racial equity and justice the privilege that whites have on the labor market should be even more pronounced.

Lastly, the Five Cs themselves may not be reflective of thriving among Black adolescents and other adolescents who experience oppression, as they were not explicitly developed to account for the ways in which some youth need to contend with contextual barriers, including racism. Particularly problematic are the Character and Connection components of the Five Cs, which are contingent on the youth being a valued member of society. Items such as "Enjoying being with people who are of a different race than I am." (Character) and "Teachers at school push me to be the best I can be." (Connection) are premised on the fact that society values youth of color and are not treating them in a prejudiced manner.

Lastly, a study by Godfrey and colleagues (2019) provides an important precedent for the current study: the researchers examined how critical consciousness related to positive developmental outcomes among youth of color, treating critical consciousness as a multidimensional construct. In the study, 448 seventh-graders, all of whom identify as not white, answered questions about critical consciousness and outcomes including measures of depression, academic engagement, school grades, and academic competence. Latent class analysis was performed on six indicators of critical consciousness: critical reflection of racial disparity, critical reflection of economic disparity, critical action, beliefs about

fairness in the U.S., sociopolitical efficacy, and contentment. Here, contentment is referring to youths' beliefs about the responsiveness of the government to their needs, which is sometimes termed external political efficacy. Four classes were identified.

Comparisons of classes showed that youth in a class characterized as "critical and discontented but efficacious" had worse socioemotional and academic outcomes than youth in an "acritical, contented, and efficacious" class. Given the presence of sociopolitical efficacy, critical reflection without trust that the government is responsive to them is associated with poor youth outcomes, but a lack of critical reflection and trust in the government is related to better youth outcomes. These findings add another dimension to the relationships within critical consciousness theory, and between critical consciousness and developmental outcomes.

First, it suggests that youth who have critical reflection in the context of being a non-white youth in the United States may also have dissatisfaction with the responsiveness of government, which is not surprising given the historical and ongoing disenfranchisement of communities of color from political processes (Anderson, 2018). Second, the results suggest that critical reflection may result in worse socioemotional and academic outcomes even in the presence of sociopolitical efficacy, especially for youth whose critical reflection is augmented by discontentment with government. This finding stands in contrast to prior

studies (Cadenas et al., 2018; McWhirter & McWhirter, 2015) that demonstrated the strength of the relationship between sociopolitical efficacy and positive youth outcomes. The divergence may be due to assessing concurrent youth outcomes instead of youths' intentions to persist in higher education. Youth who have critical reflection may not be doing well both in school and other settings, despite having strong hopes for the future. In fact, their lack of positive socioemotional and academic outcomes in the presence of critical reflection may be directly related to their critical reflection: youth who are aware of the inequities may be struggling in youth settings such as schools and after-school programs where their admonishment of unjust policies and procedures may be harming their well-being due to retaliation from authority figures. More research is needed to determine whether youth who are engaged in critical reflection will have positive outcomes over time, when engagement in critical actions and building of sociopolitical efficacy may enhance their motivation and ability to negotiate societal systems.

Supporting Critical Consciousness

Several studies provide insight into how the development of critical consciousness within youth may be supported. The prior investigations point to how resources within youths' family, school, and peer contexts may be leveraged to promote critical consciousness development and point to ways interventions and programming may aid in youths' efforts to engage in critical consciousness.

In a 2006 study, Diemer and colleagues investigated how the people in youths' contexts, such as peers, family, and community members, can support the development of youths' critical consciousness. The participants' open-ended responses to questions about what the different categories of people in their lives say about racism, sexism, and unfairness in society were coded by the researchers based on the degree of support that the youth were receiving in challenging these societal issues. The coded responses were then related to critical consciousness outcome variables that encompassed the components of reflection and sociopolitical control. Results showed that the support by key individuals in the lives of youth were related to the critical reflection component of critical consciousness, but not the sociopolitical control component. The authors suggest that the school context, which was unexamined in that study, may be more instrumental in building youths' sociopolitical control than the other contexts that were examined including family, peers, and community members (Diemer et al., 2006).

Information about how key figures in youths' contexts can support the critical action component of critical consciousness comes from analyses of the 1988 National Educational Longitudinal Study Survey (NELS:88) by Diemer and colleagues (2009). In this study, they limited the NELS:88 sample to youth of color from lower socioeconomic backgrounds and conducted structural equation modeling. The authors found that parental support for youths' sociopolitical

development predicted their critical action. Critical action was conceptualized as both intent to transform social and economic inequity and engagement in social change and service actions in one's community. In this study, parental support for youth sociopolitical development was operationalized as parent-child discussions of current events and parents' beliefs that it is important for their children to stand up for their beliefs. Together these studies show how actors in youths' environment can actively support critical consciousness processes (both reflection and action) through their interactions with youth.

Another study (Diemer & Li, 2011) looked specifically at the school context, which had not been examined in the above-mentioned studies. Further, support for the development of the socioemotional component of critical consciousness was investigated. In this study of 665 youth aged 15 to 25, 57.3% identified as a person of color, and all youth in the study had lower socioeconomic status as indicated by a maternal educational attainment of high school graduate or lower. Structural equation modeling showed that perceived support for sociopolitical participation from parents and peers predicted sociopolitical efficacy, which is a finding distinct to the previously referenced Diemer study (2006), where perceived support for sociopolitical participation from parents and peers predicted critical reflection but not sociopolitical efficacy.

However, in Diemer and Li's 2011 study, perceived support for sociopolitical participation from teachers did not relate to this important

socioemotional aspect of critical consciousness. The items measuring support for sociopolitical participation from teachers relates to teachers' roles in building an open classroom climate. The finding that teachers' building of an open classroom climate did not support youth sociopolitical efficacy can be due to several reasons. First, an open classroom climate may not translate to sociopolitical efficacy unless youth are given opportunities to engage in critical actions, which allow them to develop skills and receive feedback that can build their confidence. Second, an open classroom climate may not support sociopolitical efficacy among youth when the content of the discussions is not aimed at helping young people understand social issues from a critical lens. In the study, an item asking specifically about whether "racism and other forms of injustice in the American system" were emphasized in classes was not part of the open classroom climate factor. Thus, ideas that are racist or otherwise oppressive may have been encouraged in these classrooms; a lack of connection between an open classroom climate not explicitly focused on anti-oppression and sociopolitical efficacy is unsurprising for youth who experience marginalization.

Seider and colleagues (2018) also examine relations between the school context and critical consciousness, by comparing two types of pedagogical approaches. Using both quantitative and qualitative data, the authors investigated critical consciousness among high school students (N = 458) attending either progressive charter schools or "no-excuses" charter schools. Progressive charter

schools are those that emphasize social justice and inquiry-based learning in their curriculum, and strive to foster a collaborative and caring school climate. In contrast, “no-excuses” charter schools, in their aim to address opportunity gaps facing youth who experience marginalization, implement a culture of high performance standards. This culture manifests in “no-excuses” charter schools through policies such as extended school time, strict discipline, and explicit instruction in social skills. Preparation for entry into higher education is a core focus.

In the quantitative portion of the study, analyses of survey data collected over four time points revealed that students attending progressive charter schools had greater growth in their critical reflection compared to the students in the study from “no-excuses” charter schools (Seider et al., 2018). The researchers’ qualitative analyses shed light on why these between-school differences may have emerged over time. In the progressive charter schools, there were structures in place to facilitate discussion of societal inequity including racial disparities. These structures sometimes took the form of specific classes or lessons within classes, or spaces reserved outside of class time for discussions and dialogue about racial and economic justice.

In addition to the differences in critical reflection by school context, the authors found the two school types differentially related to critical action. In this study, the researchers measured critical action as commitment to activism and

"achievement as resistance." Achievement as resistance can be thought of as an individual critical action, as items gauged whether students felt that their success will uplift their communities. Although students in the progressive charter schools had increased growth in their "achievement as resistance," students in the "no-excuses" charter schools had more sizable growth in their commitment to activism. Interviewed students from the "no-excuses" schools reported engaging in examples of critical action, such as a "die in" to protest police violence and murders.

The evidence from this study points to the powerful role that schools can play in shaping youths' critical consciousness. Yet, it is important to note that the educational context less frequently associated with sociopolitical development, the "no-excuses" model, was the context that fostered youths' critical action to a greater extent than the progressive-type schools. The progressive-type schools were able to foster critical reflection through scaffolding discussions and learning about systems of inequity, however, growth in critical action was limited to personal acts of resistance (achievement as resistance) and larger collective actions saw very little growth. On the other hand, the "no-excuses" schools gave opportunities for students to practice critical action, but their students did not experience further growth in critical reflection nor individual forms of critical action. In fact, in "no-excuses" schools, achievement as resistance decreased over the study period. Schools may both act as opportunity structures and barriers to

critical consciousness development: further research is needed to determine how school contexts in early adolescence impact youths' critical consciousness development.

Open Classroom Climate

A school environment characterized by an open classroom climate (Ehman, 1980; Hahn, 1998) may support critical consciousness processes among youth experiencing oppression. Open classroom climates are considered contexts in which dialogue is actively fostered, such that students feel encouraged to share differing issues and opinions on topics of social importance, including topics that may be controversial. Instead of teachers, peers, and other school staff signifying that there is only one direction on sociopolitical matters, a classroom that is open supports individuals expressing their own diverging opinions.

An open classroom climate's support of dialogue is important for critical consciousness, because dialogue is the principal way in which a problem-posing pedagogy is enacted. Problem-posing methods of education were theorized by Freire to be essential for liberation from oppression (1970/2016). Posed as a solution against "banking" models of education which perpetuate oppression, problem-posing styles of education make space for teachers and students to construct knowledge together through dialogue. In contrast, in "banking" pedagogical methods teachers are seen as holding knowledge that needs to be deposited into students, who are seen as blank vessels. In Freire's model, dialogue

is an important lever for fostering critical consciousness, because it can support students to expand their understandings of their place in the world. Through dialogue, students can actively name, critique, and reimagine the sociopolitical realities that make up their lives.

Open classroom climates have also been studied for their potential role in preparing youth to participate in civic life. Within societies that resemble participatory democracies, such as the United States, discourse and debate is an important part of the political process. Thus, it is important for young people to be exposed to and develop an affinity for public discussions. The school setting, often the primary community institution that youth belong to, can be a place where young people learn to appreciate dialogue as part of civic life.

In a 2008 paper, Campbell examined how an open classroom climate may impact youths' civic knowledge, intention to be an informed voter, and appreciation of disagreement, free speech, and organized activity in the political process. Analyzing a nationally representative U.S. sample taken from the 1999 IEA Civic Education Study (CIVED:1999), Campbell found that even after accounting for various home and other school factors, an open classroom climate was associated with civic knowledge. Further, there was moderation by youths' socioeconomic status such that open classroom climate had a greater association with civic knowledge for those from a lower socioeconomic status than those from a higher socioeconomic status. The relation between open classroom climate and

civic knowledge has been found in 21 other countries participating in CIVED:1999 (Torney-Purta & International Association for the Evaluation of Educational Achievement, 2001), 27 out of 38 countries in the 2009 version of the Civic Education Study (ICCS:2009; Schulz et al., 2010), and 19 out of 21 countries in the 2016 iteration (ICCS:2016; Schulz et al., 2018).

However, what is important in critical consciousness is advancing not just young people's knowledge in the civic domain, but also their willingness to engage civically. In CIVED:1999, students' perceptions of an open classroom climate predicted intentions to vote in adulthood in 20 out of 28 countries, including the United States (Torney-Purta et al., 2001). The ICCS:2009 and ICCS:2016 data showed similar patterns (Quintellier & Hooghe, 2013; Schulz et al., 2010; Schulz et al., 2018). Manganelli and colleagues (2015) delved in-depth into the Italian nationally representative sample from the ICCS:2009 study, and tried to explain how the positive influence of open classroom climate developed the students' willingness to participate in civic activities. They found the association between an open classroom climate on willingness to become civically involved was mediated by students' self-efficacy around citizenship. These findings suggest an open classroom climate can support civic engagement by building youths' feelings of competence and capability around performing various skills related to participating in civic affairs. The skills range from being able to effectively advocate for issues, organizing into groups in order to fight for change,

and understanding media messages. In this study, civic engagement included both participation in electoral politics (voting, joining a political party, helping a political candidate) and sociopolitical involvement requiring more non-traditional participation, such as boycotting products, gathering signatures for a petition, and participating in a rally or protest.

In a 2014 paper, Godfrey and Grayman examined relationships between an open classroom climate and critical consciousness among U.S. ninth-graders who participated in the 1999 IEA Civic Education Study (N = 2,774). In this study, components of critical consciousness were further differentiated by context. For example, sociopolitical efficacy in the school context was measured separately from sociopolitical efficacy in the overall community context where electoral politics takes place. Their analyses showed an open classroom climate was associated with sociopolitical efficacy in both the school and community domain. Moreover, these associations were stronger for students of color compared to white students. Open classroom climate was also associated with critical action, but only for the community domain, and not the school domain. There were no associations between open classroom climate and critical reflection. The authors suggest that the lack of association between open classroom climate and critical reflection may be due to the fact that open classroom climate focuses on "process, but not content" (Godfrey & Grayman, 2014, p. 1814). That is, teachers may be cultivating a place where students can express diverging opinions but may not be

directing students to think about systemic oppression and how it disadvantages some groups while benefiting those with more power. This echoes prior studies that found links between measures of whether peers, family, and community members foster discussions about current issues, and measures of sociopolitical efficacy and critical action (Diemer & Hsieh, 2008; Diemer et al., 2009; Diemer & Li, 2011). Again, as the content of the discussions is unexamined, links to critical reflection were not found in these studies. An exception is a study by Diemer and colleagues (2006) that looked explicitly at whether peers and community members encourage young people to challenge social injustice (Diemer et al., 2006).

Contribution

In order to measure the positive youth development of the young people of color in this dissertation, I examined their engagement in contribution behaviors. Contribution is a construct that is defined in positive youth development (PYD) theory, to encompass the ways in which youth give back to themselves and the various contexts in which they are embedded (Hershberg et al., 2015). According to PYD, youth who are thriving may contribute in generative ways to themselves and others.

As a construct, contribution is considered to consist of both ideology and action. Contribution ideology is about youths' commitment to contributing to their context, whereas contribution actions are those behaviors that reflect this

ideology (Hershberg et al., 2015). In regard to actions, youth may act in ways that contribute to self, others, and community (Hershberg et al., 2015). Contribution to self can appear as self-care (e.g., exercising) or learning new skills, and is an important way that youth can maintain their own development. Nonetheless, much of the research on contribution has focused on youths' contributions beyond the self. Such actions can take the form of helping people immediately around them (e.g., providing assistance to elderly relatives, helping with childcare), as well as actions that affect the wider world (e.g. engaging in community service, campaigning for a social issue).

Contribution is related to positive development in a number of ways. It is at once a signifier of achievement of positive development, as well as a source of further growth. According to PYD theory, those who are developing positively, will likely be engaged in contribution. Models of PYD such as the Lerner and Lerner Five Cs model of PYD thus place contribution as the outgrowth of PYD as measured by the Five Cs, and considers it the "sixth C" in the model (Geldhof et al., 2015; Lerner et al., 2005). Empirical evidence supports this notion of contribution as the sixth C: in the 4-H study of PYD, PYD earlier in adolescence as indexed by the five Cs predicted later contribution (Jeličić et al., 2007; Lewin-Bizan et al., 2010). Additionally, contribution is an important aspect of the recursive nature of PYD in that youths' contribution can feed back into the PYD process and promote further development. When youth contribute to themselves,

they strengthen their potential for further positive development, and when youth contribute to their families and communities, they are enhancing the contexts that support them, making further positive development possible. Although a direct examination of how contribution feeds into further development has not been conducted, findings that PYD and contribution are highly correlated across the entire period of adolescence suggest a recursive process is indeed occurring (Geldhof, Bowers, Boyd, et al., 2014).

In addition to considering how contribution may relate to PYD, scholars have examined contribution as an outcome variable in studies looking at the impact of assets within youth and resources in youths' contexts (Hershberg et al., 2015). These studies show that contribution can be fostered by these internal and external assets, further strengthening the definition of this construct as an important indicator of positive development. Analyses of data from the 4-H study showed that an external asset, participation in activities (Agans et al., 2014), and the internal assets of intentional self-regulation (Zimmerman et al., 2008) and hope (Schmid et al., 2011) all directly predict contribution.

However, a more complex picture arises when looking at the assets of hopeful future expectations in conjunction with parental trust, conceptualized here as adolescents' expectations for warm, supportive, and reliable interactions between themselves and their parents (Callina et al., 2014). In this study, the lowest contribution scores were associated with a pattern of decreasing hopeful

future expectations and parental trust. This finding is as expected and shows that poor scores on internal and external assets are related to low contribution. However, the highest contribution scores in this study were related to a pattern of consistently moderate hopeful future expectations and a U-shaped parental trust pattern (Callina et al., 2014). Overall, the findings suggest that more research is needed to understand how internal and external assets may behave in tandem to support contribution.

In fact, further studies on contribution emphasize the importance of looking at youths' contexts for how they support youth in their engagement in contribution. A study by Mueller and colleagues (2011) found that it was only in the presence of youth development program participation that the internal asset of intentional self-regulation predicted contribution action and ideology (Mueller et al., 2011). Furthermore, analyses of qualitative data from the 4-H study by Hershberg and colleagues (2014) revealed that youth often identify contribution as a meaningful part of their future selves, but few youth describe contribution activities as a meaningful part of their current lives (Hershberg et al., 2014). This disparity between contribution ideology and contribution action may be due to youth facing barriers to enacting contribution in their contexts (Hershberg et al., 2014). Even if youth have the drive to engage in contribution, contextual resources may be necessary to aid in the youths' contribution goals.

In this dissertation, contribution will be examined to understand whether youth are experiencing positive youth development, as evidence shows that contribution is often visible both in the presence of internal and external assets, and when PYD is occurring. However, interpretations must take into account that contribution behavior, in particular, may be limited by the availability of opportunities for youth to engage in supporting themselves and others.

Research Questions and Hypotheses

Research Question 1

The first research question investigated heterogeneity in participants' responses to measures about the critical consciousness components, at each time point. Whether there were mixtures (multiple profiles) of the critical consciousness dimensions at each time point was explored.

I expected to find multiple profiles within youth that differ in levels of the critical consciousness components, at both time points. I predicted profiles where youth are high on all dimensions or low on all dimensions will be identified. Additionally, I expected there will be youth who have dissimilar levels of the behavioral and cognitive components of critical consciousness. Further I hypothesized that the socioemotional component may distinguish between such profiles. That is, based on critical consciousness theory it is likely that young people with low levels of socioemotional dimensions of the critical consciousness, mainly, a sense of sociopolitical control, could have high critical reflection but low

critical action. Conversely, youth with high levels of sociopolitical control may have high critical action regardless of levels of critical reflection.

Research Question 2

The second research question asked: What does the development of critical consciousness look like? Precisely, this was an examination of whether participants stay in the same profiles over each time point, or transition to different profiles, given multiple profiles were identified.

I expected that participants will transition in stages from a profile where they are low on all dimensions to a profile where they are high on all dimensions. Intermediate profiles may appear as youth having higher critical reflection and sociopolitical control.

Research Question 3

The third research question was about estimating associations between the patterns of development of critical consciousness and three outcomes: contribution behaviors, risk and problem behaviors, and emotional problems.

I hypothesized that those youth who are high on all dimensions will also be engaged in contribution, have lower risk and problem behaviors and emotional problems. However, those youth who are not engaged in actions but have high critical reflection may experience risk and problem behaviors or emotional problems.

Research Question 4

In research question 4 I assessed correlations between patterns of critical consciousness development and youths' perceptions of the school context. School context was measured in two distinct ways: openness of the classroom climate, and the classroom discussions about social justice.

I expected that school supports in the form of an open classroom climate and discussions about social justice topics will support youths' development of critical consciousness especially in the dimensions of critical reflection and sociopolitical control.

Chapter 3: Method

Description and Procedures of Overall Study

Data for this dissertation came from the Connecting Adolescents' Beliefs and Behaviors (CABB) study, an investigation of the positive development of adolescents that took place between February 2015 and April 2017 (Johnson et al., 2016; J. V. Lerner et al., 2020). In the CABB study, four waves of survey data were collected from youth, their parents, and teachers or other members of staff at youths' schools. Not all youth participated in all waves, and new youth were recruited at every wave. This dissertation focused on survey data from youth from the last two waves of the CABB study, wave three and wave four. Accordingly, wave three is referred to as time 1 and wave four as time 2.

Three different procedures were used to collect data from youth in the CABB study during time 1 and time 2: in-school data collection, out-of-school data collection, and Qualtrics data collection. Regardless of the data collection method, youth who participated received a $20 gift card in time 1 and a $25 gift card in time 2.

For in-school data collection, youth were recruited via a two-step procedure. In the first step, schools in the Boston area were contacted and invited to participate in the study. Middle and high schools were contacted as the target grade levels of participants were 6th through 12th grade. Once a school administrator agreed that their school would participate in the study, the CABB

study team provided them with consent forms to distribute to parents and guardians of potential participants. Once the CABB study team had received signed consent forms, trained research staff were scheduled to administer the surveys in schools. During data collection, youth provided written consent, then completed a paper-and-pencil survey. At least one member of the CABB study team was available throughout survey administration to answer any questions. Schools who agreed to participate through this sampling procedure received a $200 gift card in time 1 and a $300 gift card in time 2.

The CABB study team also conducted “out-of-school” data collection, where the team collected data from youth who had participated in a prior wave, but who had aged out of the school or transferred schools. The CABB study team also reached out to students individually if their school had stopped participating in the CABB study. These students were given online surveys via email or a mail-in survey via mail, depending on the contact information they had provided.

Lastly, the CABB study team also recruited using Qualtrics Panels, a company that maintains a panel of potential survey respondents. Through Qualtrics Panels the CABB study team distributed consent forms to parents/guardians of youth aged 11-17 who lived in Massachusetts, Connecticut, or Rhode Island. Once the CABB study team received a consent form from a parent or guardian, online surveys were emailed to the youth.

Dissertation Sample: Data and Participant Demographics

In the overall CABB study, 795 youth participated in time 1 and/or time 2. A subset of the 795 youth who identified as a person of color were included in the analyses for this dissertation.

In order to determine those who were youth of color, I referred to youths' responses to the question asking about their racial-ethnic self-identification. The CABB study team asked youth "How would you describe yourself? (Place a checkmark next to your response—you can check more than one.)" and then gave them the following options:

- White, Caucasian, or European American
- Black, African American, or of African descent
- Asian or Asian American
- Hispanic or Latino/a
- Native American/Alaskan Native
- Arab or Middle Eastern
- Pacific Islander (for example, Filipino)
- Caribbean
- Other (please specify):

Of the 795 total participants who took the survey in time 1 and/or time 2 of the CABB study, 458 youth (57.61%) identified as belonging exclusively to the "White, Caucasian, or European American" group. These participants were

excluded from the dissertation sample. Two participants (0.25%) did not provide any information about their racial-ethnic self-identification and were excluded as well. Youth who identified as “White, Caucasian, or European American” along with some other race and/or ethnicity were included. The remaining 335 participants constitute the analytic sample for this dissertation. The racial-ethnic breakdown of this subsample is presented in Table 1. Further, of the 335 participants, 199 identified as girls, and 136 identified as boys.

Of the 335 total participants, 100 youth participated in time 1 only, 30 youth participated in time 2 only, and 205 youth participated in both time 1 and time 2. At time 1, participants were 14.64 years old on average (SD = 2.01) and at time 2, they were on average approximately 10 months older (mean age = 15.44, SD = 2.08).

Data for time 1 were collected between May 18, 2016 and November 18, 2016 while data for time 2 were collected between December 22, 2016 and May 13, 2017. The mean time span between time 1 and time 2 was 243.04 days (SD = 56.05). The minimum time span was 121 days, while the maximum time span was 343 days. A full histogram of the time spans can be seen in Figure 1. The histogram depicts that a large number of participants had a time span of between 180 and 209 days or a time span of between 270 and 299 days. Overall, these time spans constitute a length of several months passing between participants’ first and second data point.

Measures

A summary of the measures used in this dissertation is presented below. All survey items are attached in full in an appendix.

Cognitive Component of Critical Consciousness (Critical Reflection)

The cognitive component of critical consciousness that was measured is youths' critical reflection about inequality. Critical reflection is about whether youth perceive disparities in opportunities between groups.

Three items adapted from the Critical Consciousness Scale (Diemer et al., 2017) and one item adapted from Hope and Jagers (2014) were used to assess critical reflection. The three items from the Critical Consciousness Scale were: "In the U.S., certain racial or ethnic groups have fewer chances to get a good high school education," "In the U.S., poor children have fewer chances to get a good high school education," and "In the U.S., women have fewer chances to get good jobs." The item from Hope and Jagers (2014) was "In the U.S., it is harder for people of certain racial or ethnic groups to get ahead because they face discrimination."

Participants were first presented with the following question header: "Here are some questions about the way things might be in the United States. The questions are only about whether you think the statements are true. You can think some things are true even if you don't like them." The four critical reflection items were presented after the header, with the response options "Almost Never True,"

"Usually Not True," "Sometimes True," "Usually True," "Almost Always True," and "I don't know/I'm not sure." Responses of "I don't know/I'm not sure" were treated as missing data.

Socioemotional Components of Critical Consciousness

Critical Purpose

Youth's sense of critical purpose was measured using three items from McWhirter and McWhirter (2015). Participants rated, on a response scale of "Not Important" to "Extremely Important," three life goals related to combatting social issues: "Fight for equality, fairness, and justice," "Work to fight social and economic inequality," and "Do something about racism or other forms of discrimination."

Sociopolitical Control

A three-item scale was created, using items from two prior scales, to capture feelings of self-efficacy in the sociopolitical domain, or sociopolitical control.

The first item was drawn from the Civic Engagement Questionnaire developed by Zaff and colleagues (2010) and read: "I believe I can make a difference in my community." The five response options ranged from Strongly Disagree to Strongly Agree, with a mid-point of "Neutral (Don't have a strong opinion)." Participants could also select "I don't know/I'm not sure" and those responses were treated as missing.

The other two items were from the Profiles of Student Life – Attitudes and Behaviors survey (Leffert et al., 1998): “I feel like an important member of my local community.” and “Adults in my town or city listen to what I have to say.” These items had 5 response options, “Not at all like me,” “A little like me,” “Kind of like me,” “A lot like me,” and “Just like me.”

Behavioral Component of Critical Consciousness (Critical Action)

Critical action, or the behavioral component of critical consciousness, was indexed via two items that asked about the participants’ frequency of participation in political activities and social activism over the past 12 months. Participants first read the following prompt: “Here is a list of different types of activities people can get involved in. Please tell us how much you did each kind of activity over the past 12 months.” Then they were presented with the following definition for political activities: “Political activities are things like voting for or supporting a leader, candidate, or issue you believe in. These activities could be in your school, your city, or your state.” The definition for social activism was: “Social activism includes things like going to a demonstration about an issue you care about, trying to get others to recycle, or sharing your opinions or beliefs through messages on your clothing or buttons.” Participants responded on the scale “Never,” “Sometimes (every few months),” “Often (a few times a month),” and “All the time (at least once a week).” These items were developed for the CABB study by the project team.

Contribution

To measure participants' contribution behaviors, youths' involvement in various activities where they are contributing to self and others was assessed. All items measuring contribution were created for the CABB study.

The question header for the items were: "Here is a list of different types of activities people can get involved in. Please tell us how much you did each kind of activity over the past 12 months." Participants then saw a list of activities that they may be involved in. Each activity was accompanied by a brief definition with examples.

The activities were: community service, cultural activities, organized sports or other physical activities, organized arts-based activities, and academic clubs. The response scale was "Never," "Sometimes (every few months)," "Often (a few times a month)," and "All the time (at least once a week)."

Community service was defined as "things like helping organize a neighborhood or community event, volunteering with an organization to do things like tutor younger children or help out an animal shelter, or doing things to help improve your neighborhood." Cultural activities were defined as "things like going to meetings about your culture as part of being in a club or organization, or learning a language from your culture." Organized sports or other physical activities were presented as "things like being on a sports team, or going to sports lessons or exercise classes." Organized arts-based activities were defined as

"things like theater or music group, painting or other art lessons, or band." Lastly, academic clubs were "things like math club, mock trial, or debate team. "

Emotional Problems

Youths' experiences of emotional problems were measured using a single item. This item consolidated multiple questions from the Strengths and Difficulties Questionnaire (Goodman, 1997) into one item: youth were asked to self-report how much they experience negative emotions such as unhappiness, tearfulness and feeling depressed. Thus, this item gave us an approximation of youth's experience of depressive symptoms. After reading the statement "I am often unhappy, depressed, or tearful.", participants selected one of five response options – "Not at all like me," "A little like me," "Kind of like me," "A lot like me," and "Just like me."

Risk and Problem Behaviors

The CABB study team created items for assessing youths' frequency of engagement in risk and problem behaviors based on items in the Search Institute's Profiles of Student Life–Attitudes and Behaviors scale (Leffert et al., 1998) and the Monitoring the Future questionnaire (Miech et al., 2000).

Participants were asked how many times they had done the following things in the past 12 months: "Stolen something from a store;" "Hit or beat someone up;" "Damaged property (for example, breaking windows, scratching a car, putting paint or graffiti on walls);" and "Carried a gun, knife, or something

else as a weapon to hurt another person." The beginning of this section of the CABB study survey included a reminder to participants that their survey responses will be kept private. The response scale for all items were "Never," "1 time," "2 times," "3-4 times," and "5 or more times."

School Context

Both the openness of the classroom climate and whether there were classroom discussions that were based in issues of social justice were measured as part of determining participants' school context.

Open Classroom Climate. The openness of the classroom climate was assessed using two items adapted from the Classroom Climate Index (Campbell, 2008): "Students can give their opinions in class, even when their opinions are different from other people's opinions." and "Adults encourage students to make up their own minds about issues." Response options for both items were "Never," "Rarely," "Sometimes," "Most of the time," and "Always."

Discussions About Social Justice. Three items were used to assess the content of discussions in the classroom. Two items were adapted from the California Civic Index (Kahne et al., 2005): "In my classes, we learn about people and groups who work to make society better." and "In my classes, we learn about problems in our society and what causes them." The third item was developed by the CABB study team: "In your school, do you discuss or hear discussions about groups of people who are treated unfairly because of their characteristics?"

Response options for all three items were “Never,” “Rarely,” “Sometimes,” “Most of the time,” and “Always.”

Missing Data

There were four types of missing data present in the data: planned missing data, optional non-response, missing data due to participant exclusion, and unplanned missing data. The rates of missing data for all of the study variables broken down by type of missing data are presented in Table 2.

Planned Missing Data

The first type of missing data was planned missing data, which was deliberately used by the CABB study team to reduce the length of the survey for each participant (Graham et al., 2006). The CABB study employed a planned missing design with three versions, or forms, of surveys. In this design, each participant randomly receives one of three versions of the survey, where each version contains only a subset of items for some scales on the survey. Thus, missing data are intentionally introduced. A number of the variables in the critical reflection construct and the sociopolitical control construct were subjected to planned missingness. Because the planned missing data can be assumed to be missing completely at random (MCAR), full information maximum likelihood estimation can be used to account for this missing data, and this was the approach used in the analyses for this dissertation (Graham et al., 2006).

Optional Non-Response

The study also had missing data that was due to giving the participants an option to select "I don't know" to the question. The critical reflection construct, the sociopolitical control construct, and the discussions about social justice construct had variables that had this option. This type of missingness was also treated as MCAR. For the critical reflection and sociopolitical control constructs which are constructs that were used as indicators for the mixture models in this dissertation, full information maximum likelihood estimation was employed to account for the optional non-responses. For the discussions about social justice construct, which is a construct that was a predictor of latent transitions, multiple imputation was employed. More information about the use of full information maximum likelihood estimation versus multiple imputation are detailed later in this chapter.

Participant Excluded from Receiving Item

A third type of missing data exists, wherein some participants were excluded from receiving the item due to the constraints of data collection. For the constructs critical purpose and discussions about social justice, youth who were in middle school did not receive some of the items in their versions of the survey in order to keep their survey length to a minimum. These particular items were excluded as they are more complex in terms of their wording compared to other items. Additionally, items assessing risk and problem behaviors were excluded

from surveys that were taken at home by participants. This was necessary due to privacy concerns—the Institutional Review Board did not approve that we ask students about engaging in illegal activities when the research team could not guarantee that students could take and return their survey in private.

The pattern of missingness here is missing at random (MAR): participants who did not receive the item are a certain subset of all participants identifiable by their age or their recruitment method (which dictate whether they would take the survey at home or at school). However, due to the complexity of the analytical model, missing data mechanisms best suited for MAR could not be implemented. I explored the use of auxiliary variables to provide supplemental information to the full information maximum likelihood estimation, as well as model-based missingness procedures such as pattern-mixture modeling. However, these methods could not be used in conjunction with the types of models I was running. Therefore, full information maximum likelihood estimation and multiple imputation were utilized to account for data missing due to participants being excluded from receiving the item.

Unplanned Missing Data

The last form of missing data is unplanned missing data, which is when a participant skips the item. Unplanned missing data affected all constructs in the study. Rates of item skipping were low—between 0.33% and 2.55%. Unplanned missing data were assumed to be MCAR and were accounted for using full

information maximum likelihood estimation or multiple imputation during analyses (Little et al., 2014).

Data Analysis

In this section, I will report the analytic strategies that I used to answer the research questions in my dissertation. A flowchart of the process of analysis is included as Figure 2. The flowchart details both the main analysis path that was taken (highlighted in bold) as well as an analytic plan that served as an alternative path for when data behaved in a way that precluded certain modeling strategies. The alternative analytic strategies that I did not make use of will only be mentioned briefly, while the main analytic process in bold will be explained in full.

Preliminary Analyses

Before embarking on analyses to address the research questions, several preliminary analyses were conducted which include: (1) descriptive statistics of study items; (2) multifactor confirmatory factor analyses; (3) longitudinal measurement invariance; (4) descriptive statistics of scale variables; and (5) correlations of scale variables. Viewing the descriptive statistics of the study items allowed for checking for any anomalies in the data and for understanding the central tendencies and variation of the data. Multifactor confirmatory factor analyses were conducted to ensure that scale scores created for study constructs met certain minimum requirements in terms of their measurement properties.

Longitudinal measurement invariance was conducted to establish whether the study constructs could be considered as equivalent across the two time points. Finally, the properties of the scale variables were investigated by examining their descriptive statistics and bivariate correlations between scale variables. All descriptive statistics and correlations (preliminary analyses steps 1, 4, and 5) were calculated using IBM SPSS Statistics 27.0. All other preliminary analyses were conducted in M*plus* 8.5 (L. K. Muthén & Muthén, 1998-2017).

Multifactor Confirmatory Factor Analyses. Confirmatory factor analysis is conducted within a structural equation modeling framework to test the properties and goodness-of-fit of a hypothesized measurement model, where one or more observed variables (e.g., scores on survey items) are linked to a latent variable (Brown, 2015). A latent variable in structural equation modeling is an unobserved variable that accounts for correlations among multiple observed variables. In this study, confirmatory factor analysis was conducted to assess whether the individual items that were a priori marked as measuring study constructs are sufficiently related to the latent variable for that construct; this is important as later models uses scale scores which take the mean of the items and therefore a single latent variable should be able to account for the correlations among the items for that construct. Furthermore, as was done in this dissertation, a multifactor approach can be taken to the confirmatory factor analyses wherein multiple latent variables each with their own set of observed variables (survey

items) are specified all in one model. This allows for examining discriminant validity of the latent constructs: that each latent construct is a distinct construct from the other constructs (Brown, 2015).

Two sets of multifactor confirmatory factor analyses were estimated in this dissertation, one for each time point. All constructs in the study were specified in each model. A diagram of the model that was estimated at each time point is depicted in Figure 3.

To assess the model fit of the multifactor confirmatory analyses at each time point, several absolute and relative fit indices were consulted. These include the model χ^2, the root mean square of approximation (RMSEA), the standardized root mean square residual (SRMR), and the comparative fit index (CFI). Standardized residuals were also inspected.

Longitudinal Measurement Invariance. After assessing the measurement properties of the constructs in the study at each time point using multifactor confirmatory factor analyses, further analyses were conducted to establish measurement invariance across the two time points (Millsap & Cham, 2012; Widaman et al., 2010). The testing of measurement invariance is a test of whether the relationship between items and the construct are unchanging over time. This is important when constructing longitudinal models, in order to have confidence that changes to mean levels and relationships between variables that are estimated are not due to changes in the measurement characteristics.

Measurement invariance, in both cross-sectional and longitudinal contexts, is determined in an iterative manner whereby model constraints representing increasingly stringent levels of invariance are added step-by-step. In the first step, configural invariance is evaluated to examine whether the same number of factors exist at each time point, and the same items load on to the same factors at each time point. Next, metric invariance (sometimes referred to as weak invariance) is tested by constraining to equality across timepoints the loadings of a given item on a factor. The goal is to determine whether the relationship between the observed variables and the latent variables are equivalent across measurement occasions. In the next step, strong invariance (also referred to as scalar invariance) is determined by implementing an additional constraint in the model equating the item intercepts across time. Such a constraint assesses whether participants who had the same value on the latent construct have equivalent values on the items the construct is based on. Strong variance is important to establish before comparing mean differences over time. The final level of invariance, called strict invariance, is evaluated in order to demonstrate that item residuals are equal across timepoints, signifying unchanging precision of measurement over time.

Models can be considered to have good model fit if the comparative fit index (CFI) is larger than 0.95, and if the root mean square error of approximation (RMSEA) is smaller than 0.06 (Hu & Bentler, 1999). A

standardized root mean square residual (SRMR) below 0.08 is further evidence for a good fitting model (Hu & Bentler, 1999). Nested models can be compared using the χ^2 difference test and by assessing whether a change in CFI was less than 0.01 or a change in RMSEA was less than 0.02 (Chen, 2007). A non-significant χ^2 difference test and acceptably small changes in CFI and RMSEA suggests the more restrictive model and the less restrictive model are equivalent. A smaller Akaike information criterion value suggests the more restrictive model is better fitting (Akaike, 1974). For these tests, a null model was specified that is different to the default null model in M*plus* (Little, 2013; Widaman & Thompson, 2003). In this alternative null model, no covariances are estimated, and the means and variances are constrained to be equal across time.

To conclude the preliminary analyses, scale variables were computed by taking the mean of items for each construct (with listwise deletion) and descriptive statistics were examined for the scale variables. Bivariate correlations between all scale variables within each time point were then calculated, as well as bivariate correlations for the same scale variable across time points.

Analyses for Research Question 1: Latent Profile Analyses

To address the first research question, I conducted latent profile analysis (Gibson, 1959; Lazarsfeld & Henry, 1968; Vermunt & Magidson, 2002) in M*plus* 8.5 (L. K. Muthén & Muthén, 1998-2017). I conducted two sets of analyses, one for each time point. Latent profile analysis is part of the suite of methods called

mixture modeling (Stephanie T. Lanza & Cooper, 2016; Masyn, 2013) and allows researchers to determine whether there exists heterogeneity within the sample in their phenomena of interest. A heterogenous sample in mixture modeling refers to an overall distribution that is best described as a mix of smaller distributions—this points to the presence of unobserved subgroups in the data. Thus, this method is suited to addressing the first research question which asks whether the sample of youth of color can be described as heterogeneous in their manifestations of critical consciousness. If heterogeneity is determined, the mixtures can be examined further to determine the size and nature of each identified subgroup.

In latent profile analysis, analyses are performed to assess whether a latent categorical variable can encapsulate the underlying heterogeneity within a sample, given information about how the sample responded to various indicator variables (Masyn, 2013). In other words, depending on people's response patterns on a set of questions (called indicator variables), the group is subdivided into previously unobserved groups such that those individuals within a subgroup have similar response patterns to each other on the indicator variables. The categorical variable that splits the sample into subgroups based on the indicator variables is latent, or hidden, as it is not observable. In latent profile analysis, the indicator variables are continuous, whereas categorical indicator variables can be analyzed using latent class analysis. As the variables of interest capturing the distinct critical consciousness dimensions are all continuous, I conducted latent profile

analysis. The indicator variables that were entered into the LPA are the scale scores for each of the four critical consciousness components being examined: critical reflection, critical purpose, sociopolitical control, and critical action.

Latent profile analysis is conducted in an exploratory manner in which multiple models are estimated, representing variations in how the variances and covariances within and between subgroups are structured, as well as variations in the number of subgroups represented by the latent categorical variable. Using model fit statistics, all of the estimated models are compared in order to select the best fitting model for the data. The variance-covariance structures that were explored are (1) a class-invariant diagonal structure, in which covariances of indicators within profiles are fixed to 0, and their variances are constrained to be equal across profiles; (2) a class-varying diagonal structure, in which the covariances of indicators within profiles are fixed to 0, but their variances are allowed to vary across profiles; (3) a class-invariant non-diagonal structure, in which indicators are allowed to covary within profiles, but their variances are constrained to be equal across profiles; and lastly (4) a class-varying non-diagonal structure, in which variables are allowed to covary within profiles, and variances and covariances are estimated freely across profiles. Within each variance-covariance structure, models were estimated with an increasing number of profiles (starting from a 1 profile model representing no heterogeneity), until the model no longer converged. During the model comparison process, the best fitting

models within each variance-covariance structure were selected and then compared.

To compare models with different numbers of profiles within and across variance-covariance structures, multiple model fit statistics based on the model log-likelihood, classification diagnostics for models, and model interpretability (separation and homogeneity) were considered (Masyn, 2013). The model fit statistics consulted were the Akaike information criterion (Akaike, 1974), the consistent Akaike information criterion (Bozdogan, 1987), the Bayesian information criterion (Schwarz, 1978), the sample size adjusted Bayesian information criterion (Schwarz, 1978) and the approximate weight of evidence criterion (Banfield & Raftery, 1993), the approximate Bayes factor (Nagin, 1999). Plots of the abovementioned model fit indices were created to compare the appropriateness of each variance-covariance specification (Masyn, 2013). Furthermore, adjusted Lo-Mendell-Rubin likelihood ratio tests were conducted between models with k verus k-1 profiles (Lo et al., 2001) to determine whether increasing the number of profiles improved model fit. The approximate correct model probabilities (Kass & Wasserman, 1995) were calculated for the set of models within a variance-covariance structure, and later for the set of models identified as the best fitting model from within each variance-covariance structure. This test gives a probability value between 0 and 1 indicating how likely it is that a given model is the best fitting model from within a set of models

(Masyn, 2013). Another commonly used test of model fit called the bootstrap likelihood ratio test (McLachlan & Peel, 2000) could not be computed for these models as they were estimated with adjustments for the complex sampling (clustering) in the data. Classification diagnostics that were consulted were the average posterior class probability (Nagin, 2005), a comparison of the modal class assignment proportion to the 90% confidence interval of the estimated posterior class probabilities (Masyn, 2013), the odds of correct classification (Nagin, 2005) and the relative entropy value (Ramaswamy et al., 1993). Model separation and homogeneity was assessed by consulting plots of estimated profiles. The number of participants in each profile was also examined as models with very small profiles may be an indication of extracting too many profiles due to landing at an incorrect model solution (Hipp & Bauer, 2006).

It was possible during this process that a 1-profile model fit the data best, meaning heterogeneity among the sample does not exist. An alternate analysis plan was made (see Figure 2) wherein I would have instead explored whether there may be multiple trajectories of growth for each of the critical consciousness dimensions, using growth mixture modeling. Additionally, if multiple trajectories of growth did not exist within the sample for each critical consciousness dimension, I would have instead conducted latent growth modeling, which models the best fitting growth curve on average for the entire sample. I would

have run four latent growth models, one for each dimension of critical consciousness under study in this dissertation.

To account for nesting of the data wherein students were clustered in schools, I conducted latent profile analyses with the TYPE = COMPLEX setting in M*plus* enabled, which calls the use of a robust maximum likelihood estimator. This adjusts all standard errors with a Huber-White sandwich estimator and adjusts the model χ^2 values so that they are asymptomatically equivalent to the Yuan-Bentler T_2* test statistic (Yuan & Bentler, 2000). Missing data was accounted for using full information maximum likelihood estimation (Enders & Bandalos, 2001).

Analyses for Research Question 2: Latent Profile Transition Analyses

The second research question was about exploring the patterns of development of critical consciousness among youth of color. In order to answer this research question, I conducted a longitudinal extension of latent profile analysis called latent profile transition analysis (Collins & Wugalter, 1992; Graham et al., 1991; S. T. Lanza et al., 2003). All analyses for research question 2 were conducted in *Mplus* 8.5. In latent profile transition analyses, probabilities of transitioning between different profiles over time are estimated. In other words, transition probabilities are estimated for every profile at time 2, which is the probability of being in a particular time 2 profile conditional on profile membership at time 1.

The type of latent profile transition analysis (LPTA) model that was estimated for research question 2 was an unconditional model, meaning that there were no covariates added to the model. Nevertheless, there are multiple specifications possible for the unconditional LPTA model, and the best fitting model among these specifications was pinpointed by comparing model fit indices and conducting likelihood-ratio tests between nested models (Nylund, 2007).

One possible variation to the default LPTA model structure is a model with residual correlations between the same indicators across time (Asparouhov & Muthén, 2015; B. O. Muthén & Asparouhov, 2020). Adding these residual correlations allows for the LPTA to accommodate participants' responding in particular ways to the same item administered over time. Unfortunately, this specification could not be pursued as residual correlations between the same indicators across time could not be accommodated in the analyses required for subsequent research questions.

Another variation that was investigated was models with and without constraints equating the profiles over time (Nylund, 2007). Several LPTA models with an increasing number of constraints were estimated. The least constrained model assumed all profiles were different between time 1 and time 2, a second model constrained one pair of profiles between time 1 and time 2 to be equal, a third model constrained two pairs of profiles between time 1 and time 2 to be equal, and so on. These successively more constrained models were compared

using the likelihood ratio test, and by examining the values of the Akaike information criterion, the Bayesian information criterion, and the sample-size adjusted Bayesian information criterion.

All LPTA models were estimated with TYPE = COMPLEX to account for nesting of the data (see analysis details under research question 1 for more information) and missing data was accounted for using full information maximum likelihood estimation (Enders & Bandalos, 2001).

The characteristics of the chosen unconditional LPTA model was examined in several ways. First, the means and variances of the indicator variables within each profile, at each time point, was examined. The mean scores of the indicator variables in each profile, at each time point, were converted to z-scores to aid interpretation. The formula used for converting to z-scores was:

$$\frac{x - \mu}{\sigma}$$

In the LPTA interpretations, x represented the mean scores on each indicator variable for each profile at each time point, μ represented the mean score for the indicator variable for the entire sample at that time point, and σ represented the standard deviation of μ. In this way, a standardized score for all of the mean values of the indicator variables were able to be calculated, telling us in standard deviations how different the mean score for that indicator in that profile was from the mean score of that indicator in the entire sample from which the profiles were identified.

Mean scores on the indicators were also compared to each other within profiles, using Wald χ^2 tests. Because multiple comparisons were made within each profile, the family-wise error rate was adjusted using the Holm-Bonferroni method (Holm, 1979). The Holm-Bonferroni method is a variation of the Bonferroni method that has more power as it adjusts the Type I error rate sequentially, instead of applying the same correction to all the tests. To carry out the Holm-Bonferroni correction, the p-values from the set of statistical tests performed are ranked according to their size (smallest to largest) and each p-value is compared to increasingly less stringent values instead of the same value. The formula used to calculate the comparison p-value is:

$$\frac{0.05}{n - rank + 1}$$

The numerator is 0.05 as this was the alpha level used in this dissertation; n represents the number of tests; and $rank$ is an integer value corresponding to which p-value you are testing (1 if it is the smallest, 2 if it's the second smallest, etc.). If a given p-value is smaller than the comparison p-value, it is said to be significant at the 0.05 level with the Holm-Bonferroni correction applied.

After comparing values of the indicators across profiles in the same time point, indicators were compared across time. That is, for transitions between profiles, the changes to each indicator over that transition were assessed using Wald χ^2 tests. For example, in the transition from profile 1 at time 1 to profile 2 at

time 2, the critical reflection values were compared to examine how critical reflection changed over this transition. The effect sizes of these transitions were computed as well using the formula for Cohen's d:

$$\frac{\mu_2 - \mu_1}{\sigma_{pooled}} = \frac{\mu_2 - \mu_1}{\sqrt{(\sigma_1^2 + \sigma_2^2)/2}}$$

For the LPTA, μ_1 and μ_2 represented the mean levels on indicators at time 1 and time 2 respectively, and σ_1^2 and σ_2^2 are the variances of these mean values.

Analyses for Research Question 3: Estimating Average Scores on Outcome Variables for Each Transition

In research question 3, I estimated for each of the transitions identified through LPTA the mean levels on the three outcome variables in this dissertation: contribution, emotional problems, and risk and problem behaviors. This allowed me to observe the participants' developmental outcomes for different patterns of development of critical consciousness.

To estimate the mean levels of the outcome variables for each transition, I used the manual three-step approach (Asparouhov & Muthén, 2014a, 2014b, 2021; S. T. Lanza et al., 2013). The manual three-step approach is a method of estimating variables that are auxiliary to an LPTA model, such as outcome variables, that preserves the latent class structure during the estimation. It does this by keeping the evaluation of the LPTA model and the evaluation of the outcome variable values independent from each other by taking a multi-step

approach. In the first step, the LPTA without any auxiliary variables is estimated. In the present analyses, this is the final model from research question 2, i.e., the chosen unconditional LPTA model. In the second step, a categorical variable representing the most likely (modal) class assignment is computed for each participant. We will call this variable $\mathcal{N}$. Because the current LPTA has two time points, two sets of these categorical variables are computed in a piece-wise manner. When computing these modal-assignment categorical variables, the classification uncertainty rates q are computed as well, to account for the fact that all mixture models are probabilistic. In other words, since every participant has a given probability of being in each profile, there is an error rate to the modal class assignment. In the third and final step the LPTA is estimated again with the auxiliary variable added in, but instead of the usual categorical latent class variable for assigning participants into profiles, the variable $\mathcal{N}$ is employed, with uncertainty rates fixed at the values q from step two. In this way, the LPTA "measurement" model is fixed to values derived from when the model was constructed without the auxiliary variable, and the values of the auxiliary variable(s) can be estimated without influence of estimation of the LPTA model.

This method by default applies listwise deletion by the outcome variables added as an auxiliary variable. As this would have resulted in a sizable reduction in sample size, multiple imputation was conducted on the outcome variables prior to conducting the manual three-step approach. Using information from all other

variables in the study, the outcome variables contribution, emotional problems, and risk and problem behaviors were multiply imputed with 25 sets of data. Step two of the manual three-step approach was thus conducted 25 times on each of the datasets, and then combined at step three.

After the mean values of the outcome variables for each transition were estimated, the values were converted into z-scores using the same method as in research question 2. Furthermore, Wald χ^2 tests were conducted to compare the values within transitions over time, and between transitions within time. The p-values of the Wald χ^2 tests were adjusted using the Holm-Bonferroni correction as in research question 2.

Analyses for Research Question 4: Conditioning Transition Probabilities on School Context Variables

In research question 4, I investigated associations between the two school context variables, open classroom climate and classroom discussions of social justice, and the transition probabilities of the LPTA. This was conducted by entering the open classroom climate and classroom discussions of social justice variables as covariates (B. O. Muthén & Asparouhov, 2011) using the same manual three-step approach as in research question 3. By adding the school context variables into the model as covariates, the transition probabilities between time 1 and time 2 are conditioned (regressed) on these covariates. This gives

conditioned transition probabilities which can then be compared to the original unconditioned transition probabilities.

Using the LTA calculator in M*plus*, the conditioned transition probabilities were calculated for three values of the covariates: the mean, 1SD above the mean, and 1SD below the mean. The difference between the conditioned and unconditioned transition probabilities was contextualized as z-scores using the formula:

$$\frac{(p_a - p_b) - 0}{\sqrt{\left(\frac{p_a n_a + p_b n_b}{n_a + n_b}\right)\left(1 - \frac{p_a n_a + p_b n_b}{n_a + n_b}\right)\left(\frac{1}{n_a} + \frac{1}{n_b}\right)}}$$

In the formula, p_a and p_b refer to the conditioned and unconditioned transition probabilities, respectively, and n_a and n_b refer to the number of youth making each transition. This formula is a variation on the regular z-score formula, with the denominator representing the pooled standard error of the difference between two proportions. The z-scores were also converted into Cohen's *d* values to aid interpretation.

Analyses for research question 4 were conducted in M*plus* 8.5 with TYPE=COMPLEX to account for the nested nature of the data. Multiple imputation was performed on the school context variables to account for missing data.

Chapter 4: Results

Preliminary Analyses

In this section, I present the results of preliminary analyses. I first present the descriptive statistics for the items which were used to construct the scale variables. I then present the results of the confirmatory factor analyses and the longitudinal measurement invariance testing, which I carried out prior to constructing scale scores. I then present the descriptive statistics of the scale scores.

Descriptive Statistics for Scale Items

Means, standard deviations, skewness values, and kurtosis values for all of the items at each time point are presented in Table 3. All items are on a five-point scale of 1 to 5, with 1 representing lower scores.

Critical reflection, critical purpose, and sociopolitical control scores were high. All items in critical reflection and critical purpose approximately followed a normal distribution, as well as the items pyd16 and pyd33 measuring sociopolitical control. However, the item aec01 for sociopolitical control had a significant left skew at both time points meaning most participants selected very high scores on this item.

Critical action mean scores were low at both time points and had a strong right skew, meaning that most participants reported low rates of participation in these activities. Within the items measuring contribution, act07, which asked

about frequency of participation in “Organized sports or other physical activities…” had high mean scores and a left-skewed distribution. All other contribution items had low mean scores and a right-skewed distribution, meaning most participants reported low amounts of participation in the other contribution activities.

Mean scores on emotional problems and risk and problem behaviors were low at both time points and the distribution of responses heavily right-skewed. Items measuring classroom discussions about social justice had a normal distribution around the scale midpoint, but the two items measuring open classroom climate were skewed left. Mean scores were high meaning most participants strongly agreed that their classrooms had an open classroom climate.

Confirmatory Factor Analysis

A multifactor confirmatory factor analysis (CFA) was conducted at each time point to evaluate the measurement properties of the scales. A diagram of the multifactor CFA is displayed in Figure 2. Parameter estimates of the multifactor CFA at time 1 are presented in Table 4, and for time 2 in Table 5. A table of the model fit indices for the two multi-factor CFAs are presented in Table 6.

The model χ^2 value for both the time 1 and time 2 multi-factor CFA was significant, indicating poor model fit. However, this test of model fit is susceptible to Type I error when sample sizes are greater than about 200, as is the case here. Two alternative fit indices indicated the multi-factor CFA at both time points had

good model fit. The root mean square error of approximation (RMSEA) at both time points were below the recommended value of 0.06 (Hu & Bentler, 1999), and the standardized root mean square residual (SRMR) was at or below 0.08 (Hu & Bentler, 1999).

The comparative fit index (CFI) was below the recommended value of at least 0.95 (Hu & Bentler, 1999) but this was expected as not all of the constructs in the multifactor CFA were theoretically expected to be strongly correlated with each other: for example, risk and problem behaviors and open classroom climate. CFI is influenced by the average size of correlations in the model (Rigdon, 1996); therefore, low CFIs can be expected when running a multifactor model for all study variables.

Inspection of the standardized residuals revealed adequate fit. Overall, the multifactor CFAs were deemed to have acceptable fit for the purpose of creating scale scores for each of the specified latent variables.

Longitudinal Measurement Invariance

Results of the longitudinal measurement invariance testing are presented in Table 7. The configural invariance model had an RMSEA of 0.06 which is at the cutoff value recommended by Hu & Bentler (1999), and an SRMR of 0.09 which is just above the recommended cutoff value of 0.08.

Next, the model to assess metric invariance was estimated and compared to the configural invariance model. The χ^2 difference test between these two

models was not significant, indicating that the more restrictive metric invariance model fit as well as the configural invariance model. The CFI and RMSEA did not change by more than 0.01, and the Akaike information criterion reduced in size, indicating improvement in model fit.

The scalar invariance model fit as well as the metric invariance model, according to the χ^2 difference test and changes in CFI, RMSEA and AIC. Finally, a strict invariance model was fit to the data. Modification indices pointed to the need to freely estimate the residual variances of pb01 and pb04. After freeing this parameter, and fitting a partial strict invariance model, the χ^2 difference test passed. CFI did not change by more than 0.01 and RMSEA decreased from 0.06 to 0.05. AIC also decreased.

All in all, the latent variables can be considered to be invariant across the two timepoints, as progressively more stringent tests of invariance did not result in a worsening of model fit. The most stringent form of longitudinal measurement invariance, which is strict invariance, was only partially accomplished, however, all issues with strict invariance were confined to the risk and problem behavior construct.

Descriptive Statistics for Scale Variables

Given that the study constructs showed good cross-sectional and longitudinal measurement properties as assessed by multifactor confirmatory factor analyses and multifactor longitudinal invariance testing, scale scores for

each construct were computed by taking the mean of the available items for each participant. The descriptive statistics of these scale variables are presented in Table 8.

Correlations between the scale variables at time 1 are presented in Table 9 and correlations between the scale variables at time 2 are presented in Table 10. Critical reflection was not correlated with any other scale variables at time 1, and at time 2, it was only weakly correlated with contribution. The socioemotional dimensions of critical consciousness, critical purpose and sociopolitical control, were correlated with each other and with contribution and critical action.

There were also weak correlations at both time points between contribution and discussions about social justice, as well as between contribution and open classroom climate. Across both time points, emotional problems and risk and problem behaviors were not significantly correlated with any other variables.

Results for Research Question 1

In this section, I present the results of the first research question. Through the use of latent profile analysis, I investigated whether there was heterogeneity in participants' responses to measures about the critical consciousness dimensions, at each time point. I describe the processes of model selection at each time point, and then I summarize the characteristics of the chosen latent profile models. Some small shifts occur in the estimation of the parameters when latent profile models—which are cross-sectional—are then linked longitudinally using latent

profile transition analysis. Thus, more detailed descriptions of the nature of the profiles at each time point is provided at the beginning of the results for research question 2.

Model Selection Time 1

Model fit statistics from the latent profile analyses for time 1 are presented in Table 12. The two-profile model in the class-varying diagonal variance-covariance structure, and the two-profile model in the class-varying, unrestricted variance-covariance structure had high average correct model probabilities (CMPs) of 0.94 and 0.98 respectively. However, these models had poor classification as indicated by a relative entropy of 0.69 and 0.73. Furthermore, one of the profiles had very poor odds of correct classification (below 7.50), in both two-profile models. Therefore, these two models were not considered further.

Within the class-invariant, diagonal variance-covariance structure, and the class-invariant, unrestricted variance-covariance structure, the three-profile and four-profile models had CMPs above 0.30. To select a final model from among these four candidate models, CMPs were re-calculated within just these models. These results are presented in Table 13.

The three-profile model with a class-invariant, diagonal, variance-covariance matrix had the highest CMP at 0.62 out of the four candidate models. Plots of the model fit indices were also consulted at this stage (see Figures 3 to 7).

Plots of the consistent Akaike information criterion, Bayesian information criterion, and approximate weight of evidence criterion indicated that the class-invariant diagonal specification consistently had better fit. It also had an “elbow” around the two- or three-profile model, meaning that model fit was best with a model with two or three profiles.

As the three-profile, class-invariant, diagonal model model has the highest CMP and the lowest Akaike information criterion, Bayesian information criterion, and average weight of evidence criterion of the four candidate models being considered, the classification diagnostics for this model were assessed. The modal class assignment proportions were within the 90% confidence intervals of the model-estimated posterior class probabilities, meaning that the error rate of classification was low. All average posterior class probabilities were at or above 0.85, further indicating good classification properties. The odds of correct classification values for each class and the relative entropy were also large, indicating precise classification.

Altogether, the model fit indices pointed to the three-profile model being the best fitting model for time 1, and this model had acceptable classification properties. A visual inspection of the mean values of the indicators for this model indicated that this model was easily interpretable and conceptually meaningful. Further discussion of the characteristics of this model is given below.

Model Selection Time 2

A table of the fit indices for the models estimated within time 2 are presented in Table 15. Within the class-invariant, diagonal variance-covariance structure, the CMP was above 0.30 for both the four-profile and five-profile models. In the class-varying diagonal variance-covariance specification, four models converged, of which the two-profile model had a CMP above 0.30. In the class-invariant unrestricted variance-covariance structure, models with up to eight profiles were estimated; the four-profile model within this structure had a CMP above 0.30. In the class-varying, unrestricted specification, only two models could be estimated. The model with two profiles fit better than the single profile model, with a CMP of 0.71. Of these five candidate models, the two-profile model with class-varying, diagonal, variance-covariance structure was abandoned due to poor classification: the odds of correct classification for one of the classes was a mere 4.54 and the relative entropy was 0.73. The remaining four candidate models were compared using the CMP criterion, and the results are presented in Table 16.

A comparison of the CMPs of the four-profile and five-profile model from the class-invariant, diagonal specification; the four-profile model from the class-invariant, unrestricted specification; and the two-profile model from the class-varying, unrestricted specification resulted in the highest CMP of 0.62 belonging to the four-profile, class-invariant, diagonal model. However, compared to the

five-profile, class-invariant, diagonal model, which had a CMP of 0.38, the four-profile model with the same specification had a lower consistent Akaike information criterion, a lower Bayesian information criterion, and a lower average weight of evidence criterion. Furthermore, the five-profile model had one profile with only 2 individuals who would be modally assigned to it. A very small profile is indicative of over-extraction, and therefore the four-profile model was preferred.

Classification diagnostics for the four-profile class-invariant, diagonal model was next examined, and the results are presented in Table 17. Modal class assignment proportions for profile 1 and 3 were within the 90% confidence interval of the model-estimated posterior class probabilities, however, the modal class assignment for profile 2 and 4 were slightly below or above these cutoffs. However, all four profiles within this model had a high average posterior class probability (above 0.90) and high odds of correct classification. The relative entropy was also sufficiently close to 1 at 0.91. These diagnostics indicated good classification properties for this model, therefore the four-profile, class-invariant, diagonal model was chosen as the final model for time 2.

Descriptions of Profiles at Time 1 and Time 2

The mean scores on each indicator variable for time 1 and time 2 are presented in Table 18 and Table 19. Bar charts of these mean scores are illustrated in Figure 14 and Figure 15, for time 1 and time 2 respectively.

Profiles at Time 1. At time 1, a three-profile model was the best fit to the data. The average participant in the first profile reported levels of critical reflection that were very close to the time 1 average of 3.30. All other dimensions were below the time 1 averages. Critical purpose was 3.59 (compared to 3.79 on average in time 1), sociopolitical control was 3.00 (compared to 3.29) and critical action was 1.39 (compared to 2.10).

The second profile at time 1 had youth reporting scores on critical reflection below the time 1 mean of 3.30: the average profile 2 critical reflection score was 3.11. Youth in time 1 profile 2 reported average scores on all other dimensions above the time 1 mean levels. Critical action was especially high, the average participant in profile 2 reported critical action levels of 2.77 which is 0.68 standard deviations above the time 1 overall mean.

Youth classified into profile 3 had high scores on critical reflection, critical purpose, and sociopolitical control, along with very high scores on critical action. Their scores for critical reflection, critical purpose, and sociopolitical control were 0.43, 0.62, and 0.43 standard deviations above the time 1 mean, respectively. The critical action score was 3.90 compared to the time 1 sample mean of 2.10, giving it a z-score of 1.83. In other words, time 1 profile 3 average critical action scores were 1.83 standard deviations above the average score for the whole sample at time 1.

Profiles at Time 2. At time 2, a four-profile model was selected to represent the data. The first profile had youth reporting levels on all CC dimensions below the average for time 2. Critical reflection was 0.16 standard deviations below the time 2 mean, critical purpose was 0.31 standard deviations below, sociopolitical control was 0.32 standard deviations below, and critical action was 0.89 standard deviations below.

The second time 2 profile had youth reporting critical reflection levels that were on average close to the time 2 mean of 3.34. Critical purpose, sociopolitical control, and critical action were above the time 2 means by 0.26, 0.40, and 1.03 standard deviations, respectively.

Profile 3 at time 2 had youth reporting high levels on all critical consciousness dimensions, especially critical action. Critical reflection scores were 3.70 (0.37 standard deviations above time 2 mean), critical purpose scores were 4.44 (0.66 standard deviations above time 2 mean), and sociopolitical scores were 3.67 (0.42 standard deviations above time 2 mean). Critical action scores reported by youth in profile 3 at time 2, on average, was more than 2 standard deviations above the mean.

Results for Research Question 2

Next, I present the results of the latent profile transition analyses which were conducted to capture patterns of development in critical consciousness. As models with multiple profiles were the best fit to the data at both time 1 and time

2, these analyses aimed to determine whether and how participants transition between profiles using latent profile transition analysis.

Selection of LPTA Model

To select the best fitting LPTA model, a total of four models with an increasing number of constraints were estimated. The first model allowed all profiles to be different between the two time points, while the next three models constrained one to three pairs of profiles to be equal. The model worsened in fit as more constraints were added, as indicated by increasing values of the Akaike information criterion, Bayesian information criterion, and sample-size adjusted Bayesian information criterion. Therefore, a final LPTA model was chosen in which all profiles were freely estimated at each time point.

Characteristics of Profiles

The mean scores on all indicator variables for the chosen LPTA model are presented in Table 20, and tests of significance of these mean scores within time points are presented in Table 21. A visual representation of these mean scores is included with Figure 15.

Time 1 Profiles. In this section I present the characteristics of the time 1 profiles.

Low Socioemotional and Behavioral Engagement, Average Reflection (Profile 1 at Time 1). The first profile at time 1 had very low scores on critical purpose, sociopolitical control, and critical action. Specifically, for all three of

these indicators, the mean levels in profile 1 were significantly lower than the mean levels in profile 2 and 3. The mean critical reflection scores for profile 1 at time 1 were close to the mean for time 1. Due to these characteristics, this profile was named *Low socioemotional and behavioral engagement, average reflection*. This profile had 60.30% of the sample at time 1 modally assigned to it and was the largest time 1 profile.

Efficacious and Active, Average Reflection and Purpose (Profile 2 at Time 1). The second profile at time 1 had scores on critical purpose and critical action that were significantly higher than the *Low socioemotional and behavioral engagement, average reflection* profile (Profile 1 Time 1) but significantly lower than profile 3 time 1. Mean levels of sociopolitical control were close to the sample mean, and significantly higher than the *Low socioemotional and behavioral engagement, average reflection* profile. Critical reflection was just below the average for the time 1 sample, but not significantly different from profile 1 or 3.

Due to the moderately high levels of sociopolitical and critical action, especially compared to the *Low socioemotional and behavioral engagement, average reflection* profile, but levels of critical reflection and critical purpose near the sample mean, this profile was named the *Efficacious and Active, Average Reflection and Purpose* profile. This profile had 27.76% of the time 1 sample classified into it.

Engaged in CC (Profile 3 at Time 1). The last profile at time 1 was the smallest profile with only 11.94% of the time 1 sample. This profile was named the *Engaged in CC* profile due to high levels on all dimensions, especially critical action. Critical reflection, critical purpose, and sociopolitical control were roughly half a standard deviation above the time 1 sample mean, and critical action was almost two standard deviations above the time 1 sample mean (and significantly higher than profile 1 and profile 2).

Time 2 Profiles. Next, I will discuss the characteristics of the four profiles identified at time 2, and the labels that were given to these profiles given the average scores on the indicators for each profile.

Low CC Engagement (Profile 1 Time 2). The first profile at time 2 was the largest profile, with 48.66% of the sample being classified into this profile based on their most likely class membership. Mean scores on all critical consciousness components were below the mean for the time 2 sample (see Table 20). The critical reflection mean score for this profile was significantly lower than the critical reflection mean score for profile 4 time 2. The sociopolitical control mean score was significantly lower than the score in profile 2 and 4. The critical purpose and critical action scores were significantly lower than all other profiles at time 2. Due to the low scores across all dimensions of critical consciousness this profile was named the *Low CC Engagement* profile.

Purposeful, Efficacious, and Active – Average Reflection (Profile 2 at Time 2). The second profile, with about a quarter of the time 2 sample (25.67%), had moderately high levels of critical action: the score was significantly higher than all other profiles except profile 3. Scores on critical reflection were close to the mean for the time 2 sample, and there were no significant differences with the other three profiles at time 2. Mean levels of critical purpose and sociopolitical control in profile 2 time 2 were quite high, nevertheless, these scores were only significantly higher than the critical purpose and sociopolitical control mean scores in profile 1 (see Table 21). This profile was named *Purposeful, efficacious, and active – average reflection*.

Engaged in CC (Profile 3 at Time 2). The third profile had very high levels of critical action, and a critical purpose score that was significantly higher than profile 1 and 4. The critical action mean score in profile 3 at time 2 was significantly higher than the average levels for this indicator in all other time 2 profiles. Critical purpose had a high mean score that was significantly above profile 1 and 3 but not different from profile 2. The mean levels of critical reflection and sociopolitical control were quite high. However, the variation around these means were also high, and thus these scores were not significantly different from any other profile. In sum, this profile was characterized by a critical action mean level higher than all other profiles, a critical purpose level that was significantly above two other profiles, and levels of the other indicators well

above the average for time 2. Therefore, this profile was named the *Engaged in CC* profile. In terms of size, this profile was very small with only 4.78% of the time 2 participants classified into it.

Engagement in CC at Average Levels (Profile 4 at Time 2). The fourth profile at time 2 had 20.90% of participants classified into it by modal assignment. The mean scores on critical reflection, critical purpose, and sociopolitical control were all statistically significantly above the *Low CC engagement* profile (time 2 profile 1; see Table 22). However, these mean scores did not differ from levels in the *Purposeful, efficacious, and active – average reflection* profile (time 2 profile 2). The critical reflection, critical purpose, and sociopolitical mean scores were all below what can be found in *Engaged in CC* (profile 3 time 2), and critical purpose statistically significantly so. Critical action in this fourth profile was just below the time 2 sample mean, and significantly lower than *Purposeful, efficacious and active – average reflection* and *Engaged in CC*. Due to scores on all indicators being close to the sample mean, time 2 profile 4 was named *Engagement in CC at average levels*.

Transitions Between Profiles - Proportions

The results of the LPTA with respect to the proportion of participants transitioning from/to each of the identified profiles are presented in Table 22 and in Figure 16. The vast majority of participants transitioned from profile 1 at time 1 to profile 1 at time 2. That is, 74.26% those who were in *Low socioemotional and*

behavioral engagement, average reflection at time 1 transitioned to *Low CC engagement* at time 2, and this number represents 44.78% of all transitions. Another 20.30% of those in the *Low socioemotional and behavioral engagement, average reflection* profile at time 1 moved to the fourth profile of time 2: *Engagement in CC at average levels. This represents 12.24% of all transitions.*

Another major transition is between profile 2 at time 1 and profile 2 at time 2. More specifically, 63.44% of those who were in profile 2 at time 1 (*Efficacious and Active, Average Reflection and Purpose*) transitioned to the *Purposeful, Efficacious, and Active – Average Reflection* profile. This transition makes up 17.61% of all transitions.

Three transitions were very infrequent and were not considered in further detail. The transitions from *Low socioemotional and behavioral engagement, average reflection* to *Engaged in CC*; and from *Efficacious and active, average reflection and purpose* to *Engaged in CC* were each less than 1% of all transitions. The transition between *Engaged in CC* (time 1 profile 3) and *Low CC engagement* (time 2 profile 1) was also less than 1% of all transitions. It is notable that the only profile that transitions into time 2 profile 3, the *Engaged in CC* profile, is the *Engaged in CC* profile at time 1.

Transitions Between Profiles - Changes

In this section I will discuss what the transitions represent, addressing statistically significant changes to mean levels on indicators for each major

transition. As mentioned previously, three of the most infrequent transitions were omitted from further consideration, therefore nine transitions between time 1 and time 2 are discussed. Changes to each indicator (critical reflection, critical purpose, sociopolitical control, and critical action) across time were compared using a Wald χ^2 test, with a Holm-Bonferroni correction applied to the p-values due to conducting nine tests for each indicator. Table 23 lists the results of these Wald χ^2 tests, with the notation H-B for all of the tests that were still statistically significant at $p < 0.05$ after the Holm-Bonferroni correction. A graphical depiction of statistically significant changes in indicators is included as Figure 18.

Transition 1→1: "Low Socioemotional and Behavioral Engagement, Average Reflection" to "Low CC Engagement." The transition from *Low socioemotional and behavioral engagement, average reflection* at time 1 to *Low CC engagement* at time 2 represents 44.78% of all transitions. The mean levels of critical reflection, critical purpose, and sociopolitical were not statistically different between time 1 and time 2. However, critical action decreased significantly from a mean score of 1.39 at time 1 to a mean score of 1.17 at time 2. The effect size for this reduction in critical action as Cohen's *d* was -0.41.

Transition 1→2: "Low Socioemotional and Behavioral Engagement, Average Reflection" to "Purposeful, Efficacious, and Active – Average Reflection." The transition from *Low socioemotional and behavioral engagement, average reflection* at time 1 to *Purposeful, efficacious, and active – average reflection*

at time 2 had statistically significant increases in sociopolitical control (mean levels increased from 3.00 to 3.66, Cohen's $d = 0.42$) and in critical action (mean levels increased from 1.39 to 3.12, Cohen's $d = 2.21$). The proportion of the time 1 sample making this transition were 3.28%.

Transition 1→4: "Low Socioemotional and Behavioral Engagement, Average Reflection" to "Engagement in CC at Average Levels." In this transition, which was taken by 12.24% of the sample, there was a statistically significant increase in all indicators except critical reflection. Critical purpose increased from 3.59 to 4.02 (Cohen's $d = 0.55$), sociopolitical control increased from 3.00 to 3.41 (Cohen's $d = 0.61$), and critical action increased from 1.39 to 2.06 (Cohen's $d = 1.75$).

Transition 2→1: "Efficacious and Active, Average Reflection and Purpose" to "Low CC Engagement." A few participants (3.58%) transitioned from the *Efficacious and active, average reflection and purpose* profile at time 1 to the *Low CC Engagement* profile at time 2. (3.58% of transitions). This represents a decrease in sociopolitical control and critical action. The decrease in sociopolitical control had an effect size of Cohen's $d = -0.90$ while the decrease in critical action had an effect size of Cohen's $d = -2.41$.

Transition 2→2: "Efficacious and Active, Average Reflection and Purpose" to "Purposeful, Efficacious and Active – Average Reflection." Approximately a fifth of the transitions (17.61%) were between profile 2 at time 1

to profile 2 at time 2. This transition, which is from the *Efficacious and active, average reflection and purpose* profile to the *Purposeful, efficacious, and active – average reflection* profile, had a small increase in critical action (Cohen's $d = 0.43$) which was statistically significant.

Transition 2→4: "Efficacious and Active, Average Reflection and Purpose" to "Engagement in CC at Average Levels." Transitions from profile 2 at time 1 (*Efficacious and active, average reflection and purpose*) to profile 4 at time 2 (*Engagement in CC at average levels*) is characterized by a statistically significant increase in critical reflection, accompanied by statistically significant decreases in sociopolitical control and critical action. Critical reflection increased from 3.14 to 3.54 (Cohen's $d = 0.36$). Meanwhile, sociopolitical control decreased from 3.68 to 3.41 (Cohen's $d = -0.53$) and critical action also decreased from 2.75 to 2.06 (Cohen's $d = -1.30$). Of the sample, 5.67% went through this transition.

Transition 3→2: "Engaged in CC" to "Purposeful, Efficacious, and Active – Low Reflection." A small number of participants (3.88%) took the transition from *Engaged in CC* to *Purposeful, efficacious, and active – low reflection*; this transition had a statistically significant change in just the critical action indicator. Critical action decreased from 3.87 to 3.12 (Cohen's $d = -0.91$) and this reduction was statistically significant.

Transition 3→3: "Engaged in CC" to "Engaged in CC." Although this transition is between two similar profiles both characterized as *Engaged in CC*,

there was a significant increase in critical action between time 1 and time 2 (Cohen's $d = 0.81$). All other indicators did not change by a statistically significant amount. Critical action was 3.87 in the *Engaged in CC* profile at time 1 and increased to 4.33 in the *Engaged in CC* profile at time 2. Of the time 1 sample, 3.88% participants were in this transition.

Transition 3→4: "Engaged in CC" to "Engagement in CC at Average Levels." Transitioning from *Engaged in CC* (time 1 profile 3) *Engagement in CC at average levels* (time 2 profile 4) is marked by a statistically significant reduction in the mean level of critical action. The mean level decreased from 3.87 to 2.06 which has a large effect size of Cohen's $d = -3.88$.

Results for Research Question 3

In analyses for research question 3, the manual three-step procedure for LPTA was conducted to estimate mean levels on each of the outcome variables—contribution, emotional problems, and risk and problem behaviors—for each transition. These results are presented in Table 24.

Table 25 lists results of tests of statistical significance comparing the mean level on the same outcome at time 1 versus time 2. After Holm-Bonferroni corrections, none of these tests were significant at $p < 0.05$, meaning the mean levels on the outcomes within each transition were the same over time.

Table 26 to 31 contains the results of tests of statistical significance between transitions, for each the outcome variables at each time point. These results are discussed in detail below.

Contribution

Levels of contribution were very low in transition 1→1, which is from the *Low socioemotional and behavioral engagement, average reflection* profile at time 1 to the *Low CC engagement* profile at time 2. Mean levels of contribution for those who went through this transition were at 2.20 (*z*-score = -0.57) in time 1; this was significantly lower than transitions 2→1, 2→2, 3→2, 3→3, and 3→4. At time 2, the mean level of contribution was 2.23 (*z*-score = -0.57), a value lower than the mean level of contribution in transitions 2→2, and 3→2. Contribution was also low in transition 1→2, although only at time 1. At time 1, those who transitioned form 1→2 had a mean level of contribution significantly lower than the time 1 mean level of contribution in transitions 2→1, 2→2, and 3→4. Contribution was also low for transitions 1→4 and 2→4, although not statistically significantly different from other transitions. Contribution was high in all other transitions (2→1, 2→2, 3→2, 3→3, and 3→4) although there were drops from time 1 to time 2 for 2→1, 2→2, 3→3, and 3→4.

Overall, transitions from the *Low socioemotional and behavioral engagement, average reflection* profile at time 1 had the lowest levels of contribution. Transitions to the *Low CC engagement* profile also had low

contribution. The transition from *Engaged in CC* to *Purposeful, efficacious, and active – average reflection* had consistently high contribution with a *z*-score of 0.77 at time 1 and 1.02 at time 2.

Emotional Problems

Overall, emotional problems were highest in transitions starting from the time 1 *Engaged in CC* profile (time 1 profile 3). For the transitions 3→2 and 3→4, emotional problems increased from time 1 to time 2, although due to large standard errors around these mean levels, the scores were not statistically significantly different between time points or compared to other transitions. However, those who transitioned from *Engaged in CC* at time 1 to *Engaged in CC* at time 2 had a mean score of emotional problems at time 1 that was significantly higher than three other transitions: 1→2, 2→1, and 2→2. The level of emotional problems in this transition remained high at time 2.

Emotional problems were low at both time points (*z*-score of -0.37 at time 1 and *z*-score of -0.35 at time 2) for the transition 2→2, which represents transitions from *Efficacious and active, average reflection and purpose* to *Purposeful, efficacious, and active – average reflection*. Emotional problems were also low for the transition from *Efficacious and active, average reflection and purpose* to *Low CC Engagement*, although levels did rise between time 1 and time 2. Emotional problems remained close to the sample mean at both time points, for all other transitions (1→1, 1→2, 1→4, and 2→4).

Risk and Problem Behaviors

Risk and problem behaviors were extremely high in the *Engaged in CC* to *Engaged in CC* transition (3→3). The *z*-score of emotional problems for this transition was 3.25 at time 1, and 4.73 at time 2. Because of a large standard error around the time 1 level, this high level of emotional problems was not statistically significantly different from other transitions. However, the time 2 mean risk and problem behaviors score, which is even higher than time 1, was significantly higher than the time 2 risk and problem behaviors mean level in all other transitions.

Risk and problem behaviors were below mean levels for all other transitions except the transitions 2→4 and 3 →2, which had positive *z*-scores (see Table 24).

Results for Research Question 4

For research question 4, the manual three-step procedure for LPTA was conducted with the variables (1) classroom discussions about social justice and (2) open classroom climate as covariates in order to estimate associations between these school context variables and the LPTA transitions. Results are listed in Table 32 and 33 as changes to the probabilities of transitioning through specific transitions conditional on the covariates. Most of the transition probabilities when conditioned on classroom discussions about social justice and open classroom

climate did not significantly shift, demonstrating that these covariates were not associated with the likelihood of making certain transitions.

For time 1 school variables, discussions about social justice had small negative effect on the transition 1→1. That is, when scores for discussions about social justice are high (1 SD above the mean), participants are less likely to transition from the *Low socioemotional and behavioral engagement, average reflection* profile to the *Low CC engagement* profile. The effect size was Cohen's *d* -0.23. This result is maintained when considering time 2 school variables: discussions about social justice at time 2 was related to a lower probability of transitioning from *Low socioemotional and behavioral engagement, average reflection* to *Low CC engagement* (Cohen's $d = -0.34$).

Additionally, a high level of discussions about social justice was associated with lower likelihood of transitioning from *Efficacious and active, average reflection and purpose* to *Low CC engagement*. The conditional probability associated with discussions about social justice at 1 SD above the mean was not statistically significant at $p < 0.05$ at time 1. However, at time 2, the *z*-score was -2.74, which is associated with a Cohen's *d* of -0.29. That is, at time 2, when discussions about social justice are 1SD above the mean, the likelihood of transitioning from 2→1 was reduced.

Chapter 5: Discussion

Overview of Chapter

I first discuss the possible interpretations for the results pertaining to each of the research questions in this dissertation, placing each finding within the context of existing literature. I next consider the limitations of the study before discussing the implications of the present findings, focusing on theoretical, methodological, and applied impact. I end with recommendations for future research.

Discussion of Findings

Research Question 1

Overall Findings for Research Question 1. The first research question of this dissertation was an investigation of the presence and nature of heterogeneity in the sample in terms of the multiple critical consciousness components being considered: critical reflection, sociopolitical control, critical purpose, and critical action. Latent profile analysis was conducted at each time point to determine whether multiple profiles of the critical consciousness components existed at each time point. Results indicated that the sample can be described using three profiles at time 1 and four profiles at time 2.

In the first profile at time 1, youth on average reported critical reflection levels that were close to the time 1 mean of 3.30. Youth in this first profile also reported levels of critical purpose, sociopolitical control and critical action that

were below the time 1 mean. A second profile at time 1 had youth with levels of critical reflection below the time 1 mean, critical purpose close to the time 1 mean of 3.79, and high sociopolitical control and critical action. A third profile where youth had high critical reflection, critical purpose, and sociopolitical control, and very high critical action was identified.

The first profile in time 2 had youth who reported, on average, low levels on all critical consciousness indicators. All scores were below the sample means for time 2. Two other profiles were identified in which the average participant in the profile reported levels on the critical consciousness indicators that were very similar to the second and third profiles of time 1. Time 2 had a fourth profile, where levels on all indicators were close to the time 2 sample means.

The presence of multiple profiles in the data suggest that the current dissertation sample is best described using a mixture model, where heterogeneity in the sample is modeled. In a mixture model, it is assumed that distinct subgroups of participants can be described, each with a unique pattern of scores on the various critical consciousness processes. This finding is important because it underscores the need to examine all of the components of critical consciousness in unison when trying to understand a young person's engagement with critical consciousness. Even if we know the levels of one dimension of critical consciousness (e.g., we know that a young person has high levels of sociopolitical control), we cannot know how they are engaged in critical consciousness as levels

on other dimensions may also be high or may be moderate or low. This lack of unidimensionality among the critical consciousness components means that we have to consider youths' engagement in critical consciousness not as on a spectrum of low vs. high across critical consciousness broadly, but as different modes of participation each with its own pattern of cognitive, behavioral, and socioemotional engagement.

High Levels on Socioemotional and Behavioral Dimensions, Average Critical Reflection. The results of the latent profile analyses conducted in this study demonstrate several patterned ways in which youth of color may be engaging in critical consciousness. First, youth may have relatively high levels of engagement in political activities and social activism, the two types of activities measuring critical action in the present analyses, even if levels of critical reflection are close to or below the average levels for the sample. This pattern of engagement in critical consciousness is represented by the average levels reported by youth in profile 2 time 1 and profile 2 time 2. Importantly, in these profiles, the levels of sociopolitical control are also quite high. These patterns suggest that there is covariation in sociopolitical control and critical action, but not between these components and critical reflection. It may be that youth who are engaged often in political activities and social activism build a sense of self-efficacy about being able to create change in their communities, or that youth who feel their community is responsive to their civic actions are more motivated to engage in

these behaviors. These links between sociopolitical control and critical action are important to consider when thinking about praxis of reflection and action.

Freire criticized involvement in actions without reflection, as well as reflection without action because he believed that critical consciousness consists of praxis in which there is both reflection of oppression and actions to fight oppression, simultaneously and synergistically (1970/2016). The current findings propose that—as outlined by scholars including Watts and colleagues (2011)—the study of critical consciousness must pay attention to the covariation between sociopolitical control and critical action, when thinking about praxis within youth of color. If scholars are interested in learning how young people may be engaging in critical actions while also engaging in critical reflection, it will be important to consider that their critical actions may be supported by a high level of sociopolitical control. This may be especially true when the domain of critical action and the domain of sociopolitical control are matched: in other words, if critical actions are being measured as civic activities in the community and sociopolitical control is being measured as feelings of self-efficacy about generating positive changes in the community.

There is also a need to further refine existing ways of capturing the socioemotional and behavioral components of critical consciousness. The pattern of results where youth on average report very high levels of critical action along with high levels of sociopolitical control and critical purpose, while critical

reflection is close to the sample mean, may be due to measures capturing developmental processes that are beyond the scope of critical consciousness. Asking about political activism and social activism may be measuring youths' prosocial behaviors more generally, the measures of sociopolitical control may be measuring youth's overall sense of connectedness to their communities, and the critical purpose measure may be an indication of youths' prosociality or empathy. This is another possible explanation for why profiles were identified in which young people on average scored high on behavioral and socioemotional components of critical consciousness, while only scoring around the mean on critical reflection.

Any interpretations of these findings must also take into account that participants may be involved in political behaviors or social activism in a manner that is not conducive to the undoing of forces of oppression affecting their lives. Political behaviors and social activism behaviors fall more broadly within the category of civic engagement, and not all civic engagement is justice-oriented or targeting structures of oppression (Evans & Prilleltensky, 2005; Westheimer & Kahne, 2004). For example, a young person of color may be involved in a political campaign that has policy agendas that could hurt their community in the long-term, or they may be involved in a movement organization that only highlights class struggles and represses actions for racial justice (Oluo, 2020).

Engaged in CC Profiles. Profile 3 at both time points reflects a subgroup with high levels of critical reflection, critical purpose, and sociopolitical control, alongside very high levels of critical action. These profiles were the smallest profiles with 11.15% of the sample and 7.23% of the sample modally assigned to these profiles at time 1 and time 2, respectively. It is notable that when young people are engaged across all dimensions in terms of critical consciousness, their engagement in critical action is very high. This level of engagement in political activities and social activism corresponds to youth doing these activities approximately "a few times a month." This suggests youth with ties to an organization or group that fosters their engagement in these activities, in contrast to other youth who may only be doing these activities as one-off events. Young people's involvement in organized avenues for conducting critical actions may be sustaining their critical reflection, critical purpose, and sociopolitical control (Conner & Cosner, 2016; Mira, 2013; Rogers et al., 2012; Rogers & Terriquez, 2013; Shiller, 2013; Terriquez, 2015).

Research Question 2

The second research question was about exploring changes in critical consciousness among the sample, between time 1 and time 2 of the study. Through an analysis of the transitions between the three profiles identified at time 1 and the four profiles identified at time 2, I was able to examine how youth

change in their engagement with critical consciousness over time. The following is a discussion of the transitions that were modeled.

Many Youth Transitioned Between Profiles With Low Sociopolitical Control and Critical Action At Both Time Points. A transition for a major portion of participants in the sample (44.78%) was a transition from profile 1 time 1 to profile 1 time 2. At time 1, average reports of critical reflection were slightly above the sample mean, but all other critical consciousness component were low, and at time 2, all components including critical reflection were low. In addition, those who went through this transition had a decrease in critical action (Cohen's $d = 0.41$).

The high frequency of participants who went through this transition suggests that it is quite common for youth around ages 14 to 15 to have low critical purpose and sociopolitical control paired with a lack of involvement in critical actions. Furthermore, it suggests that youth may report these low levels of engagement in critical consciousness over a prolonged period, almost a whole year. Although it is possible that youth may have experienced higher levels of engagement in critical consciousness between the two time points in which they reported low levels of engagement, the pattern in which critical actions became even more infrequent at time 2 while other dimensions had no change, suggests that any engagement in between these time points is not resulting in youth reporting higher levels of critical consciousness as they get older.

It is important to note, however, that the mean level of critical reflection for the sample was relatively high on the scale: 3.30 at time 1 and 3.34 at time 2. These scores mean youth on average agreed that it is “Sometimes True” that some groups in the U.S. have fewer opportunities to succeed. Moreover, the scores on critical purpose, while below the sample mean, were 3.59 for time 1 and 3.52 for time 2; this corresponds to participants agreeing that goals such as fighting economic and racial justice are between “Important” and “Very Important” for them. In essence, the participants’ responses on these components of critical consciousness correspond to levels that point to at least some acknowledgement of inequities in society, and at least some incorporation of issues of social justice into their life goals.

Research by Hope and colleagues (2020) provides some insight into why youth of color may report high levels of critical reflection and critical purpose. Their research with Black adolescents found that individual, institutional, and cultural racial stress were related to critical reflection, and individual and cultural racial stress were related to critical purpose. Racial stress is a reality for youth of color. These experiences of marginalization may motivate youth to analyze the roots of societal disparities and spur youth to commit to goals to address those disparities. Some ancillary evidence that supports Hope and colleague’s explanation for the relationship between racial stress and critical consciousness are that white youth, as a group that benefits from racial oppression and therefore

do not experience racial stress, have lower average levels of critical reflection compared to youth of color (Godfrey & Grayman, 2014; Thomas et al., 2014; Tyler et al., 2019).

In contrast to the levels of critical reflection and critical purpose, average reports of critical action in the profiles of the *Low Socioemotional and Behavioral Engagement, Average Reflection* to *Low CC Engagement* transition were very low. Youth reported participating in political activities or social activism on average between "Never" and "Rarely (1 or 2 times)" during the past 12 months. Participants' engagement in these activities may be impacted by contextual factors. On average, youth in these profiles reported levels of sociopolitical control that hovered around the scale midpoint, anchored as a neutral point. Moreover, the items capturing sociopolitical control in this study asked whether youth felt like an "important member" of their community such that "adults…listen to what [they] have to say" and they "believe [they] can make a difference in [their] community." Although we do not have precise information about the participants' neighborhood contexts, some of the schools that they attended belonged to neighborhoods where 70% or more of the residents are white (Boston Planning & Development Agency Research Division, 2017). Research suggests youth of color may perceive the amount of social support and cohesion in their neighborhoods to be low when the neighborhood racial composition lacks diversity (Hurd et al., 2013).

An alternative reason for the low levels of critical action and sociopolitical control for this profile may be that these youth are engaged in other ways of performing "critical action." A principal way that youth of color may be enacting their resistance to oppression is through academic engagement at school. While much critical consciousness research considers doing well in school as stemming from critical consciousness (Cadenas et al., 2018; Seider et al., 2019), some scholars define achievement as the critical action itself (Allen, 2015; Andrews, 2009; Carter, 2008a, 2008b; Jayakumar et al., 2013).

Increase in Critical Action But No Other Changes. Transitions from the profile *Efficacious and active, average reflection and purpose* to the profile *Purposeful, efficacious and active – average reflection* was the second most frequent transition with 17.61% of the time 1 sample taking this transition. In this transition, critical action increased (Cohen's $d = 0.43$), while other indicators did not change.

Critical consciousness theory proposes that critical reflection can stem from critical actions (Diemer et al., 2017; Freire, 1970/2016; Watts et al., 2011), however, in this common transition, youth who, on average, reported doing political activities and social activism "every few months" over the past year, did not transition to reporting higher levels of critical reflection. Critical reflection may not have increased because the activity engagement was not frequent enough, or because specific qualities about these activities may need to be present

in order to spur critical reflection among participating youth. For example, critical reflection may be able to be fostered when youth participate in projects characterized by commitments to critical youth engagement (Fox et al., 2010). Such commitments include youth as holders of important knowledge, spaces for community education to develop critical analysis, and youth leadership in partnership with adults toward youth empowerment (Fox et al., 2010).

Increases in Socioemotional and Behavioral Components – Possible Transition Points. Some youth transitioned from *Low socioemotional and behavioral engagement, average reflection* to either the *Purposeful, efficacious, and active – average reflection* profile or the *Engagement in CC at average levels* profile. The transition to *Purposeful, efficacious, and active – average reflection* was marked by increases in sociopolitical control and critical action, while the transition to *Engagement in CC at average levels* had increases in sociopolitical control, critical action, and critical purpose. Both of these transitions had no change in critical reflection.

Notably, a transition from the *Low socioemotional and behavioral engagement* profile to the *Engaged in CC* profile was extremely improbable, such that no participants were modally assigned to such a transition. Hence, the transitions from *Low socioemotional and behavioral engagement* to *Purposeful, efficacious, and active – average reflection* or *Engagement in CC at average levels* may signify middle points toward being fully engaged in critical consciousness.

The participants who transitioned to *Purposeful, efficacious, and active – average reflection* and experienced increases in sociopolitical control and critical action may have come into contact with various contextual factors that are supporting growth in these dimensions of critical consciousness. Scholars have identified certain assets in youths' contexts as supporting civic endeavors among youth of color (Wray-Lake & Abrams, 2020). In particular, youth may have encountered positive community spaces that foster their sociopolitical development (Wray-Lake & Abrams, 2020) and may have found supportive adults who act as role models for civic engagement (Wray-Lake & Abrams, 2020; Zaff et al., 2008).

The transition from *Low socioemotional and behavioral engagement, average reflection* to *Engagement in CC at average levels* is distinct from the transition from to *Purposeful, efficacious, and active – average reflection* in that there was a statistically significant increase in critical purpose as well. Youth may have developed goals to combat sociopolitical issues due to personal experiences, especially experiences of racism (Ballard, 2014; Ballard et al., 2015; Suárez-Orozco et al., 2015; Wray-Lake et al., 2018). For example, in a study by Wray-Lake and colleagues (2018), Latinx youth reported greater commitment to engage in both conventional and non-conventional forms of civic behaviors in the context of a Trump presidency that amplified racist rhetoric about Latinx peoples and ushered in unjust immigration policies.

Decreases in Sociopolitical Control and Critical Action. Transitions where youth experienced decreases in critical consciousness dimensions were also present. In one transition—from *Efficacious and active, average reflection and purpose* to *Low CC engagement*—youth experienced decreases in sociopolitical control and critical action. In another—from *Efficacious and active, average reflection and purpose* to *Engagement in CC at average levels*—youth similarly experienced a decrease in sociopolitical control and critical action, despite an increase in critical reflection. Youth who are feeling less efficacious and reducing their engagement in critical actions in this way may be experiencing setbacks and challenges in their sociopolitical involvement.

Work by Gorski with young adult and older adult activists found that experiences of burnout are prevalent among activists engaged in racial justice work (Gorski, 2019a, 2019b). Some causes of burnout include backlash to their activism, becoming discouraged by or cynical about the deeply embedded nature of oppression, and interpersonal tensions and conflicts among people involved in a movement (Gorski, 2019b). Importantly, activists of color were also burdened in other ways: that is, their activism heightened and put them in the fire of experiences of racial battle fatigue (Smith et al., 2011), which accelerated burnout (Gorski, 2019a).

Transitions Where Just Critical Action Decreased. Two transitions marked by decreases in just the critical action indicator are transitions from

Engaged in CC to *Purposeful, efficacious and active – average reflection*; and from *Engaged in CC* to *Engagement in CC at average levels*. Youth in these transitions may have experienced burnout from civic engagement or may have seen a decrease in opportunities to engage in political activities and social activism. They may also have delayed or paused engagement due to other demands on their energies (e.g., focusing on college applications, family demands, needing to earn money).

Nevertheless, the timing of this study demands attention as a possible explanation for youth experiencing decreases in critical action despite maintaining critical consciousness engagement in cognitive and socioemotional ways. The data for time 2 was collected right after the 2016 presidential election, in which Trump was elected as president. This election cycle was striking in terms of the intense magnification and (Hooghe & Dassonneville, 2018; Pérez Huber, 2016; Schaffner et al., 2018). This affected youth contexts as well. For example, in a survey conducted in March 2016, K-12 educators reported increases in bullying fueled by the Trump campaign (Costello, 2016a). Consequently, 67% of these educators reported they had students of color, immigrant students, Muslim students, and other minoritized and marginalized students anxious and concerned about what might happen to them or their families after the election (Costello, 2016). This threatening environment in many schools did not cease after the election. Of the 10,000 educators surveyed by the Southern Law Poverty Center, 80% reported

more anxiety among students from minoritized and marginalized backgrounds, and 40% reported having heard derogatory language directed at students of color, Muslims, and immigrants (Costello, 2016b). Additionally, over 2,500 educators described incidents of bigotry (e.g., racist graffiti) and harassment related to election at their schools (Costello, 2016b). It is not hard to imagine young people who still reflect on injustice and inequity, and still committed to social justice, choosing to refrain from civic activities in this climate.

Remaining in the Engaged in CC Profiles. Only a very small number of participants in this study (3.88%) stayed in the *Engaged in CC* profile across both time points. As discussed previously in the section on research question 1, youth in these profiles had engagement in critical action that was much higher than the norm, with average scores that correspond to engagement in political activities and social activism "a few times a month." This suggests youth have a formalized structure for participating in these activities or belong to a community with whom they can participate often.

Students who stay engaged in critical consciousness may belong to student groups that address issues of social justice, or similar groups in community spaces such as churches. These settings may act as counterspaces (Case & Hunter, 2012) where youth of color experience psychological wellbeing and supports for challenging oppression, thus sustaining their engagement in critical consciousness.

Research Question 3

The third research question in this dissertation was about the relationship between different patterns of critical consciousness development and three outcomes: contribution, emotional problems, and risk and problem behaviors.

Contribution. Contribution behaviors represent ways young people can support their own positive development through involvement in organizations such as sports or dance clubs and cultural and academic clubs; furthermore, it represents ways students can give back to their communities through actions such as community service. While contribution is measured similarly to activity participation, the PYD framework provides us with an important interpretation of why young people's activity participation (both self- and other-oriented) is important to examine as an outcome. According to PYD, young people who are thriving engage in contribution, so that they are further supporting their own development and the development of their contexts, creating further impetus for positive development. Thus, in this study we use the language and notion of contribution to underscore the importance of activity involvement for youth maintaining positive developmental trajectories. In the present analyses, the *Low socioemotional and behavioral engagement, average reflection* status was linked to low levels of contribution.

In contrast, levels of contribution were above the sample mean for transitions that did not begin with the *Low socioemotional and behavioral*

engagement, average reflection profile at time 1. Contribution was high when participants were in transitions that started from *Engaged in CC* or *Efficacious and active, average reflection and purpose*. The only exception is for the transition from *Efficacious and active, average reflection and purpose* to *Engagement in CC at average levels*. Average levels of contribution was also high in transitions ending with *Purposeful, efficacious, and active – average reflection*.

The pattern of results for contribution suggests that youth of color who are engaged in critical consciousness across multiple components, especially across the socioemotional and behavioral components, are also engaged in other activities that would help them to develop personally and demonstrate a commitment to engaging in service activities that would support the development of their contexts (neighborhood, school, etc.). The converse also seems to be true. Youth with a low level of involvement in CC processes, especially processes of critical purpose, sociopolitical control, and critical action, have low levels of participation in contribution activities compared to other youth in the sample. This pattern of results is unlikely to be due to participants who are most engaged in behaviors being engaged in both critical action and contribution behaviors, as critical action decreased or increased over time in all transitions, but there were no associated changes in contribution. Thus, contribution appears to have associations with specific multi-dimensional critical consciousness patterns, not just to critical action.

Research on critical consciousness has found that youth who experience high levels of critical consciousness may be positioned on pathways towards success in the institutional contexts that they are embedded in (usually, school). For example, sociopolitical control predicted more advanced educational outcome expectations (Luginbuhl et al., 2016; McWhirter & McWhirter, 2015) and intent to persist in college (Cadenas et al., 2018). In terms of career pathways, youth of color with high levels of critical action had strong career expectancies which led to more prestigious occupational attainment in early adulthood (Rapa et al., 2018). The present findings suggest that perhaps youth are engaged in contribution behaviors in order to support their ambitious educational and career goals; many of the behaviors consist of contribution to self which would support their attainment of further education and prestigious careers. It may also be that contribution behaviors are more immediately fostered via critical consciousness, which in turn facilitates youth having high-achieving goals for themselves. It is likely that there are reciprocal relationships between youths' ambitious career and educational goals and their contribution behaviors, with both outcomes being supported by critical consciousness.

While critical consciousness is usually positioned as youth of color and other people who experience oppression fighting *against* systems, given that currently and historically many systems (educational, legal, health, etc.) are steeped in injustice and inequity, it may be that young people of color are also

able to imagine themselves as creating change by navigating and succeeding within systems, while also challenging oppression within those systems. That is, the current findings show that youth with high levels of critical consciousness do not disengage from the contexts that they are embedded in, including school and out-of-school settings. Instead, they are engaged in contributing to the positive development of themselves and those around them through engagement in various activities and behaviors.

Some recent research by Uriostegui and colleagues (2021), provides evidence for this notion that youth may be simultaneously deeply engaged in critical consciousness and pursuing paths forward *within* systems. However, their research shows that making this goal a reality in practice may be challenging for youth of color. In their study with Black and Latinx youth, they found that sociopolitical control predicted social justice-based motivations for achievement—for example, youth responded that their academic and career aspirations are driven by a desire "to make meaningful changes to the 'system'." However, these motives were not further related to academic and career activities among youth such as involvement in preparations for college or work.

These findings suggest that youth can hold aspirations to succeed in their academic and career trajectories, and that these aspirations may be grounded in their critical consciousness. Further, some youth may be engaged in important contribution behaviors that will help them to achieve those goals. However, for

some youth, important contextual supports may be needed to support their drive to succeed.

This dissertation also provides evidence that youth of color with low levels of critical consciousness may be disengaging from their contexts, reporting low levels of contribution to self and others. This stands in contrast to work by scholars such as Fine (1991) and Ogbu (1991, 2003) who presented critically conscious youth as disengaging from systems that they knew were inequitable, especially through the act of dropping out of school. While this may indeed be a path that is taken by some youth of color, especially in the face of other constraints and forces pushing them out of school, current findings suggest that disengaging from important activities that promote positive development is characteristic of youth with the lowest levels of critical consciousness.

Youth with low levels of critical consciousness may be reporting low levels of contribution for various reasons. A major reason may be that these youth are lacking adaptive mechanisms for explaining their experiences of discrimination, which can impede contribution to self and others (Neblett et al., 2012). For example, a study by Thomas and colleagues (2014) found that youth with lower levels of critical consciousness reported higher stigma consciousness, meaning that they perceived discrimination from others in ways that devalued one's sense of self (stigma consciousness is associated with powerlessness and hopelessness). In contrast, youth with higher levels of critical consciousness may be buffered

from the negative effects of discrimination because they understand experiences of discrimination as stemming from systems of oppression. Meanwhile, those with low critical consciousness may have attributed experiences of discrimination to their group membership. In contrast to the high critical consciousness and high contribution subgroups of the sample in this dissertation, youth with lower critical consciousness may be attributing the realities of racial oppression for youth of color to factors other than systemic injustice—factors such as stigmatization of themselves and the groups they belong to. This may lead to a lack of motivation to engage in contribution behaviors.

Emotional problems. Report of depressive symptoms were examined in the various critical consciousness transitions that were identified. At time 1, youth who were *Engaged in CC* at both time points, had higher levels of emotional problems compared to youth in transitions (a) *Low socioemotional and behavioral engagement, average reflection* to *Low CC Engagement*; (b) *Efficacious and active, average reflection and purpose* to *Low CC Engagement*; and (c) *Efficacious and active, average reflection and purpose* to *Purposeful, efficacious, and active – average reflection*. Overall, youth who were highly engaged in critical consciousness, and remained so a year later, were experiencing high levels of emotional problems compared to others in the sample with lower levels of critical consciousness.

This is consistent with findings by Godfrey and colleagues (2019) who found the highest levels of depression among subgroups of their sample who had

high critical reflection and sociopolitical control. With the current results, however, it is important to note that emotional problems were highly variable by time 2 within transitions such that there were zero statistically significant differences in emotional problems between transitions at time 2. Furthermore, some researchers have found positive associations between critical consciousness and psychological well-being (Luginbuhl et al., 2016). The mixed findings and the lack of constancy in links between high critical consciousness and emotional problems in the current study may point to a need to consider what Heberle and colleagues (2020) call "contextual critical consciousness."

Although in the developmental psychology literature, attention is being brought back to the collective in critical consciousness, early theoretical works by Freire (1998, 1970/2016) and scholars from liberation psychology (Leonard & McLaren, 1993; Montero, 2009) have always emphasized the importance of collective processes in understanding critical consciousness. Heberle and colleagues (2020) suggest the possibility for mismatches between contextual and individual critical consciousness, and such mismatches may explain why some youth experience emotional problems when they have high critical consciousness.

Risk and problem behaviors. Another outcome that was examined in relation to critical consciousness is youths' engagement in risk and problem behaviors. Risk and problem behaviors were very high at time 2 for those who were in the *Engaged in CC* profile across time; indeed, it was higher than all other

transitions. As youth who exhibited this pattern had maintained high levels of engagement in critical action for almost a year, an interpretation of these findings may be through the links that have been observed between activism and engagement in risk and problem behaviors (Ballard et al., 2019). Further research suggests the links between activism and risk and problem behaviors may be explained by the greater risk preference of those who are drawn to this type of civic involvement (Oosterhoff & Wray-Lake, 2020).

Importantly, at time 1, those who stayed in the *Engaged in CC* profile at both time points did not have levels of risk and problem behaviors that were significantly different from other transitions. This suggests that it is a sustained high level of engagement in critical consciousness that is associated with high risk and problem behaviors.

Research Question 4

The fourth research question explored associations between transitions and two variables about youths' perceptions of their school context: (1) open classroom climate, and (2) classroom discussions about social justice. Among youth classified to *Low socioemotional and behavioral engagement, average reflection*, those who rated their classrooms as fostering discussions about issues of social justice were less likely to then transition to *Low CC engagement*. The same was true for youth in *Efficacious and active, average reflection and purpose.* Among youth in this time 1 profile, those who reported higher levels of classroom

discussions about social justice were less likely to transition into *Low CC engagement*. In contrast, there were no significant effects of open classroom climate on critical consciousness development in this study.

Although these findings should be interpreted with caution, as overall the effect sizes were small, it points to the importance of distinguishing between classrooms that have an overall pedagogical approach of fostering discussions, versus classrooms that bring in issues of social justice as class content, when considering effects on critical consciousness development.

Prior research by Godfrey and Grayman (2014) and Rapa and colleagues (2020) have found links between open classroom climate and critical consciousness. A noteworthy difference between the current research and these prior works is that the analyses for this dissertation were conducted on just youth of color, while the works by Godfrey and Grayman (2014) and Rapa and colleagues (2020) were conducted in samples that included white youth. In the study by Godfrey and Grayman (2014), most associations between open classroom climate and critical consciousness were not found to differ significantly by race. However, open classroom climate predicted that students of color feel "students working together can create positive changes in the school" in contrast to white students feeling that they can engender school-level changes regardless of open classroom climate. These between-group differences suggest that open

classroom climate may operate differently for different groups, and that it may be critical to understand the content of discussions.

Another difference is that prior work was cross-sectional, while the current research investigated the influence of open classroom climate on changes in critical consciousness. Rapa and colleagues (2020) found links between open classroom climate and critical consciousness; these links were statistically significant across different racial-ethnic groups. However, effects were largest for critical purpose, and smallest for critical reflection and critical action. As these data are cross-sectional, there is a possibility that youth who are more motivated to address issues of social justice are more likely to report an open classroom climate.

Limitations

This dissertation is limited in several ways. First, the sample for this dissertation ($n = 335$) is very small in relation to the complexity of the models, reducing the power with which we can detect statistically significant effects. The lack of power has implications in particular for the conclusions that were drawn in response to research question 3 where I examined differences in the outcomes (contribution, emotional problems, and risk and problem behaviors) between transitions and over time within transitions; and in response to research question 4 where I examined the effects of school variables (open classroom climate and

discussions about social justice) on transitions. Some differences may not have been detected due to the low power.

The dissertation sample is not representative of youth of color in the United States, limiting the generalizability of the conclusions drawn from present analyses. The proportions of youth in each racial-ethnic group are not representative of the racial-ethnic breakdown in the country at large. For example, in 2016, 10.48% of youth of color aged 12-17 in the U.S. identified as Asian (Kids Count Data Center, 2021) compared to over 16% in the dissertation sample. This means that as an aggregated sample of youth of color, the experiences of some groups are amplified over the experiences of other groups, in ways that may provide different conclusions to an aggregated, but representative, sample of youth of color. As will be discussed later in this chapter as a direction for future research, a larger sample will also allow for us to conduct disaggregated analyses looking at potential differences between racial-ethnic groups. Such analyses could not be conducted in this dissertation due to the small sample size.

Another limitation is that the sample was recruited primarily from the Greater Boston area, instead of being sampled from across regions in the United States. The sample is also different to a sample of youth of color that would be representative of the U.S. in that a greater portion of students attended Catholic schools. Many of the recruitment sites for this study were Catholic schools due to the affiliations the research team of the Connecting Adolescents' Beliefs and

Behaviors study had with Catholic schools in the Greater Boston area. However, youth of color in the nation do not attend Catholic schools in such large proportions (National Center for Education Statistics, 2020). In fact, almost two-thirds of Catholic school enrollment nationwide are white students (National Center for Education Statistics, 2020). This means that youth in this study are in a unique context compared to youth of color across the country and are also likely to be in school contexts where the majority of students (and staff and teachers) are white. These geographic limitations and the particular school context that youth were in may be particularly important for understanding the development of critical consciousness, as contextual factors have implications for youth of colors' experiences of oppression (Farrell et al., 2017; Ford & Browning, 2015; Fram et al., 2007; Kupchik & Ward, 2014; Lleras, 2008; Piontak & Schulman, 2016; Stevenson et al., 2005).

The measurement of constructs in this dissertation was also limited in that only a few items were available to capture each construct. While minimum requirements were met when the multifactor confirmatory factor analyses which assessed the properties of the measurement model at each time point were estimated, having more items per construct would have increased the precision and reliability with which each construct was measured.

The data for this study also only spanned two time points, with about 10 months between the time points. This restricts the conclusions I can draw about

the development of critical consciousness: without more data points, it is impossible to determine whether some of the transitions were simply fluctuations in youths' critical consciousness engagement, or whether it was a consistent trend across the period of adolescence.

Implications

Despite these limitations, the dissertation findings have several theoretical, methodological, and applied implications.

Theoretical Implications

An important theoretical implication of this work is for our understanding of positive youth development and critical consciousness. A major finding from this research is that young people who are less engaged in critical consciousness are also less engaged in contribution behaviors, while youth who are highly engaged in critical consciousness across domains experience emotional problems and engagement in risk and problem behaviors (despite higher contribution levels). While on average youth of color were all reflecting on inequities and injustice in society from a structural lens, youth faced serious developmental consequences whether or not they were engaged socioemotionally and behaviorally with critical consciousness processes as well. This highlights the reality of racial oppression for youth of color, which stands in contrast to the immense privilege that white youth have by not having to contend with these realities.

Critical consciousness theory, building on the empirical literature on critical consciousness (Diemer et al., 2016; Heberle et al., 2020) often links critical consciousness with positive development for youth of color. There are many proposed paths to this link between critical consciousness and positive development: critical reflection may help youth to make attributions for their experiences of oppression that do not focus on stories of individual success or failure aiding their psychological well-being; sociopolitical control may help youth to feel empowered and connected to communities; and critical action may build their sense of agency in the world while equipping them with skills to navigate inequitable systems. However, current findings suggest that links between positive development and critical consciousness are more complex and builds on research by Godfrey and colleagues (2019) who found similar complexities.

In particular, youth who reported high levels of critical consciousness across both measurement periods were the only subgroup to have very high involvement in risk and problem behaviors and also had high emotional problems. This suggests that young people's engagement in critical consciousness has significant costs to their psychological well-being. Possible interpretations for these findings are that youth may be engaged in critical consciousness in ways that are a mismatch to contextual levels of critical consciousness (Heberle et al., 2020). Current critical consciousness theory in developmental psychology focuses on the individual and is largely acontextual in that it does not consider the young

person's development of critical consciousness as happening within settings that may or may not foster critical consciousness engagement. That is, the links between critical consciousness and positive development for a young person may vary widely depending on whether their critical consciousness is being supported in the contexts that they are in, or whether it is antithetical to their settings, creating friction and chances for poor outcomes.

At the same time, the findings for those with lower levels of critical consciousness supports a core tenet of critical consciousness theory that emphasizes the importance of critical consciousness for the thriving of youth who experience oppression. Youth with low critical consciousness, especially in the socioemotional and behavioral dimensions, were also disengaged from contribution behaviors, which can impact their positive development over the long-term. This finding provides support for a social justice-based approach to positive youth development, which argues that sociopolitical development is a vital part of the positive youth development of youth who experience oppression. Achieving thriving for a young person of color is tied to their engagement with systems of inequity and injustice in society. Systems of oppression create conditions of unequal opportunity for youth of color (National Academies of Sciences, Engineering, and Medicine, 2019), however, young people's contact with systems of oppression as a sociopolitical agent influences their own development. Youth who are only somewhat aware that inequity is embedded

within society, and therefore do not feel empowered or motivated to take actions to address this inequity, show a lack of engagement in their context overall. In contrast, young people who are engaged more fully in critical consciousness were invested in supporting their own positive development through contribution actions, and also were contributing back to their contexts through community service.

Methodological Implications

This dissertation demonstrates the importance of a group-differential approach to studying development, especially when the phenomenon of interest is known to be multi-dimensional in nature. Multiple subgroups of youth were identified at each time point, and these subgroups were characterized by levels on the indicators that demonstrated variation in how youth were engaging in critical consciousness. That is, multiple typologies of critical consciousness were identified, which draws attention the importance of considering the possibility that previously unobserved patterns exist in the data.

Because the mixtures of subgroups in the data were modeled, we were able to observe nuances in the relations between critical consciousness and outcomes, that would have been masked if we had simply examined the average relationships. For instance, across the whole sample, no significant correlations were estimated between emotional problems or risk problems on the one hand, and critical consciousness constructs on the other, for both time points. However,

our analyses showed that emotional problems and risk problems are reported by youth who are highly engaged in critical consciousness for a prolonged period of time, which has major research and practical implications.

Applied Implications

There are also several applied implications of this work. An important finding was that youth who reported high levels of critical consciousness at both time points were involved in political activities and social activism at levels that suggested a regular outlet for engaging in these behaviors. On the other hand, some youth experienced increases in critical reflection but became less engaged in critical actions. There were also youth who remained engaged in critical action at a relatively high level but did not see any change in critical reflection. Together, these findings point to the fundamental role that critical action settings may have for youth of color's development of critical consciousness.

First, being able to engage in critical action is important to youth maintaining a sustained cognitive and socioemotional engagement with critical consciousness. Various contexts of development for youth, including schools, families, neighborhoods, and online settings, should pay attention to whether there are avenues for youth to engage in sociopolitical actions that are developmentally appropriate.

Second, these settings may need to consider ways that they can support the development of *critical reflection* among youth, as this component of critical

consciousness was the least likely to change in concert with youths' progressive involvement in critical actions. Drawing from the funds of knowledge among those practicing youth participatory action research and youth organizing, those who shape youth settings can incorporate key structures that support youths' development of critical reflection (Fox et al., 2010). A key principle would be to create ways in which youth of color can exercise their power as knowledge-holders and knowledge-creators, challenging traditional notions of expertise. The lived experiences of young people must shape the sociopolitical activities of the organization or setting, instead of top-down structures where the expertise is treated as only existing among those who possess more power and privilege compared to the youth of color (due to age, credentialing, race, etc.).

Third, settings for youth to engage in sociopolitical action must attend to the possibility that they may experience burnout. In particular youth of color, like adult activists of color (Gorski, 2019a) may be more exposed to racial trauma and racial battle fatigue due to their work. In building environments where youth of color can engage in critical actions, care must also be taken to build in supports for youths' psychological well-being. One area of research that can inform the construction of spaces where youth of color engage in resistance while upholding psychological well-being is the work on counterspaces (Case & Hunter, 2012). In counterspaces, youth of color and other groups who experience oppression engage in explorations of their self-identity and narratives of

oppression/resistance in addition to engaging in acts of resistance. It is also a space of solidarity where empathy and security are fostered, and strategies for responding to oppression are shared.

Recommendations for Further Research

Several directions for further research follow from this dissertation. First, it will be important to explore the questions in this research with a larger sample, in order to replicate the results and extend the generalizability of the results. It will be important to consider differences by various sociodemographic factors such as gender, socioeconomic status, race, and ethnicity. While the reality of white privilege and power in the United States means that all youth of color conversely experience a lack of privilege and power, these experiences of oppression are not identical among youth of color. Racialization has played out in distinct ways for people of different ethnic origins over the history of this country (Omi & Winant, 2015) and experiences of oppression are multiplied for those who identify with groups that are marginalized in other ways (e.g., those who identity as gay, bisexual, lesbian, or transgender). It will be important to examine critical consciousness development and implications for positive development among specific groups of youth.

Future research may also explore critical consciousness development more precisely by breaking down some of the components of critical consciousness more finely and including other facets of critical consciousness that were not

studied in this dissertation. For the cognitive component of critical consciousness, future research should consider both reflection and evaluation. That is, young people may be aware that people of color are faced with unequal opportunities in society, yet they may not endorse a more egalitarian society. In addition, young people may be aware of inequity, yet believe that the system is just. Previous research has found that young people can hold these thoughts simultaneously (Hope & Bañales, 2018; Singh et al., 2020). In terms of sociopolitical control, it will be important to explore both internal and external sources of self-efficacy (Beaumont, 2010); are young people feeling that they have the skills to effect change through sociopolitical actions, and/or are young people feeling that sociopolitical institutions are responsive to their demands?

In future research, critical action must be considered in ways that attend to the targets of youths' actions, and their motivations behind the actions. A young person who reports that they frequently engage in protest actions may be protesting something motivated by xenophobia (i.e., anti-immigration activities), and such actions will be "counted" as critical action alongside a young person protesting racial oppression in the criminal justice system. It will be important to be able to pinpoint whether youth of colors' sociopolitical actions are actions that are advancing the liberation of themselves and others.

This dissertation also foregrounds the need to conduct new critical consciousness research in a more contextualized manner. In particular, while

there is research that considers the impact of various contextual factors on the development of critical consciousness (e.g., the impact of school context, parent and peer supports for critical consciousness development), the phenomenon of critical consciousness itself is considered as an individualized phenomenon, where the young person engages in the processes such as critical reflection and critical action alone. A path for future research is to consider critical consciousness itself as a multilevel process (Heberle et al., 2020) wherein reflections and actions may be carried out as collective processes with members of the youths' context. Whether or not youth are able to engage in such mutual steps towards liberation may impact how critical consciousness relates to their positive development.

Conclusion

Due to historical and ongoing systems of racial oppression, which permeate all structures including the structures which gird the conduct of research, the development of youth of color have often been viewed from a deficit-focused perspective (Cabrera & The SRCD Ethnic and Racial Issues Committee, 2013). Youth of color have been seen as essentially deficient themselves (in character, intellect, etc.) or struggling to be resilient within contexts that are deficient (due to poverty, etc.). Both views focus on damage. Two perspectives that I drew on for this dissertation challenge such views. Positive youth development (Lerner et al., 2015) suggests that all youth have strengths and that contextual resources can be relied on to promote these assets and bring these youth into a generative

adulthood. The social justice-based view of youth development (Ginwright & Cammarota, 2002), which incorporates the key construct of critical consciousness (Diemer et al., 2016; Freire, 1970/2016) contends that in addition to the idea of a person↔context synergy, we must focus on awareness and resistance by youth against structures of oppression which affect all processes of development and the very notions of developmental competencies (García Coll et al., 1996).

Bringing these ideas together in research requires an investigative approach that is non-deterministic, such as one guided by Spencer's phenomenological variant of ecological systems theory (PVEST; Spencer et al., 2015). A group of young people who experience the same lack of white privilege due to their identification as persons of color, will not all experience the same paths of development. Some will be powerfully engaged in acts of resistance cognitively, socioemotionally, and behaviorally, even at considerable cost to their psychological and personal well-being. These youth may still strive to succeed in the established, dominant paths set forth for youth, such as through achieving in school.

Yet, many young people of color will struggle to enact resistance in their lives. This may be due to individual as well as structural barriers, including lack of opportunities for civic action, burnout, and fear of retaliation. Resistance by definition means that this path is difficult. However, it may be important to take up efforts to support these youth to challenge oppression, as these youth also

struggle to contribute to positive development in the person↔context ecology within which they are part, which makes positive youth development less likely as an outcome. It is important to note that non-determinism is associated with context as well. When classrooms support dialogue of issues of social justice, youth are less likely to be fixed on a path where they lack engagement in struggle as well as engagement in contributions towards their own positive development.

The current study among youth of color demonstrated through taking a group-differential approach that positive youth development and critical consciousness have complex relations and are not equivalent. This is likely to remain the case as long as oppression rooted in white supremacy remains embedded within the wider societal context. People of color must navigate a challenging balance of fighting for their justice and surviving within systems dominated by whites. What is clear, then, is that work must be done to build and restructure youth settings in ways that take into account current realities.

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Table 1

Race/Ethnicity Identification of Participants in Dissertation Sample

	Frequency	Percent
“Arab or Middle Eastern”	5	1.49%
“Asian or Asian American”	55	16.42%
“Black, African American, or of African descent”	82	24.48%
“Hispanic or Latino/a”	65	19.40%
“Pacific Islander (for example, Filipino)”	3	0.90%
“Native American/Alaskan Native”	2	0.60%
Selected “White, Caucasian, or European American” and “Asian or Asian American”	7	2.09%
Selected “White, Caucasian, or European American” and “Black, African American or of African descent”	26	7.76%
Selected “White, Caucasian, or European American” and “Hispanic or Latino/a”	25	7.46%
Selected “Black, African American or of African descent” and “Hispanic or Latino/a”	8	2.39%
“Caribbean”	26	7.76%
Participant identified using options not listed above	31	9.25%
Total	335	100%

Table 2

Rates of Missing Data for Each Variable, By Type of Missingness

Time	Construct	Variable Name	Planned Missing (%)	Participant Excluded from Receiving Item (%)	Participant Selected "I Don't Know" Option (%)	Unplanned Missing (%)	Total Missing (%)
1	Critical reflection	cc01	66 (21.64)	N/A	16 (5.25)	2 (0.66)	84 (27.54)
		cc02	62 (20.33)	N/A	16 (5.25)	2 (0.66)	80 (26.23)
		cc03	68 (22.30)	N/A	18 (5.90)	1 (0.33)	87 (28.52)
		cc04	N/A	N/A	27	2	29 (9.51)
		Scale variable	N/A	N/A	N/A	N/A	10 (3.28)
2	Critical reflection	cc01	47 (19.92)	N/A	16 (6.78)	4 (1.69)	67 (28.39)
		cc02	44 (18.64)	N/A	15 (6.36)	4 (1.69)	63 (26.69)
		cc03	48 (20.34)	N/A	11 (4.66)	4 (1.69)	63 (26.69)
		cc04	N/A	N/A	11 (4.66)	4 (1.69)	15 (6.36)
		Scale variable	N/A	N/A	N/A	N/A	9 (3.83)
1	Critical purpose	prp23	N/A	155 (50.82)	N/A	1 (0.33)	156 (51.15)
		prp24	N/A	155 (50.82)	N/A	1 (0.33)	156 (51.15)
		prp25	N/A	155 (50.82)	N/A	2 (0.66)	157 (51.48)
		Scale variable	N/A	N/A	N/A	N/A	156 (51.15)
2	Critical purpose	prp23	N/A	95 (40.43)	N/A	3 (1.28)	98 (41.70)
		prp24	N/A	95 (40.43)	N/A	5 (2.13)	100 (42.55)
		prp25	N/A	95 (40.43)	N/A	2 (0.85)	97 (41.28)
		Scale variable	N/A	N/A	N/A	N/A	97 (41.28)

Time	Construct	Variable Name	Planned Missing (%)	Participant Excluded from Receiving Item (%)	Participant Selected "I don't know" option (%)	Unplanned Missing (%)	Total Missing (%)
1	Sociopolitical control	pyd16	68 (22.30)	N/A	N/A	2 (0.66)	70 (22.95)
		pyd33	66 (21.64)	N/A	N/A	1 (0.33)	67 (21.97)
		aec01	N/A	N/A	16 (5.25)	3 (0.98)	19 (6.23)
		Scale variable	N/A	N/A	N/A	N/A	0 (0)
2	Sociopolitical control	pyd16	48 (20.43)	N/A	N/A	2 (0.85)	50 (21.23)
		pyd33	47 (20.00)	N/A	N/A	5 (2.13)	52 (22.13)
		aec01	N/A	N/A	20 (8.51)	4 (1.70)	24 (10.21)
		Scale variable	N/A	N/A	N/A	N/A	0 (0)
1	Critical action	act01	N/A	N/A	N/A	3 (0.98)	3 (0.98)
		act03	N/A	N/A	N/A	3 (0.98)	3 (0.98)
		Scale variable	N/A	N/A	N/A	N/A	2 (0.66)
2	Critical action	act01	N/A	N/A	N/A	3 (1.28)	3 (1.28)
		act03	N/A	N/A	N/A	3 (1.28)	3 (1.28)
		Scale variable	N/A	N/A	N/A	N/A	3 (1.28)
1	Contribution	act02	N/A	N/A	N/A	2 (0.66)	2 (0.66)
		act06	N/A	N/A	N/A	5 (1.64)	5 (1.64)
		act07	N/A	N/A	N/A	4 (1.31)	4 (1.31)
		act08	N/A	N/A	N/A	7 (2.30)	7 (2.30)
		act09	N/A	N/A	N/A	3 (0.98)	3 (0.98)
		Scale variable	N/A	N/A	N/A	N/A	2 (0.66)

Time	Construct	Variable Name	Planned Missing (%)	Participant Excluded from Receiving Item (%)	Participant Selected "I don't know" option (%)	Unplanned Missing (%)	Total Missing (%)
2	Contribution	act02	N/A	N/A	N/A	2 (0.85)	2 (0.85)
		act06	N/A	N/A	N/A	5 (2.13)	5 (2.13)
		act07	N/A	N/A	N/A	3 (1.28)	3 (1.28)
		act08	N/A	N/A	N/A	5 (2.13)	5 (2.13)
		act09	N/A	N/A	N/A	3 (1.28)	3 (1.28)
		Scale variable	N/A	N/A	N/A	N/A	2 (0.85)
1	Emotional problems	ep03	N/A	N/A	N/A	7 (2.30)	7 (2.30)
2	Emotional problems	ep03	N/A	N/A	N/A	6 (2.55)	6 (2.35)
1	Risk and problem behaviors	pb01	N/A	109 (35.74)	N/A	0	109 (35.74)
		pb03	N/A	109 (35.74)	N/A	1 (0.33)	110 (36.07)
		pb04	N/A	109 (35.74)	N/A	0	109 (35.74)
		pb05	N/A	109 (35.74)	N/A	1 (0.33)	110 (36.07)
		Scale variable	N/A	N/A	N/A	N/A	109 (35.74)

Time	Construct	Variable Name	Planned Missing (%)	Participant Excluded from Receiving Item (%)	Participant Selected "I don't know" option (%)	Unplanned Missing (%)	Total Missing (%)
2	Risk and problem behaviors	pb01	N/A	96 (40.85)	N/A	1 (0.43)	97 (41.28)
		pb03	N/A	96 (40.85)	N/A	1 (0.43)	97 (41.28)
		pb04	N/A	96 (40.85)	N/A	1 (0.43)	97 (41.28)
		pb05	N/A	96 (40.85)	N/A	1 (0.43)	97 (41.28)
		Scale variable	N/A	N/A	N/A	N/A	97 (41.28)
1	Discussions about social justice	ci01	N/A	N/A	N/A	3 (0.98)	3 (0.98)
		ci02	N/A	N/A	N/A	4 (1.31)	4 (1.31)
		ci07	N/A	155 (50.82)	5 (1.64)	3 (0.98)	163 (53.44)
		Scale variable	N/A	N/A	N/A	N/A	3 (0.98)
2	Discussions about social justice	ci01	N/A	N/A	N/A	4 (1.70)	4 (1.70)
		ci02	N/A	N/A	N/A	3 (1.28)	3 (1.28)
		ci07	N/A	95 (40.43)	3 (1.28)	3 (1.28)	101 (42.98)
		Scale variable	N/A	N/A	N/A	N/A	3 (1.28)
1	Open classroom climate	ci05	N/A	N/A	N/A	6 (1.97)	6 (1.97)
		ci06	N/A	N/A	N/A	4 (1.31)	4 (1.31)
		Scale variable	N/A	N/A	N/A	N/A	3 (0.98)
2	Open classroom climate	ci05	N/A	N/A	N/A	6 (2.55)	6 (2.55)
		ci06	N/A	N/A	N/A	5 (2.13)	5 (2.13)
		Scale variable	N/A	N/A	N/A	N/A	4 (1.70)

Note. The total sample size is 305 at time 1 and 235 at time 2.

Table 3

Descriptive Statistics for Study Variables

		n	Mean	SE of Mean	*SD*	Skewness	SE of Skewness	Kurtosis	SE of Kurtosis
Critical reflection (time 1)	cc01	221	3.20	0.08	1.18	-0.28	0.16	-0.59	0.33
	cc02	225	3.45	0.08	1.14	-0.39	0.16	-0.55	0.32
	cc03	218	2.96	0.08	1.20	0.01	0.16	-0.77	0.33
	cc04	276	3.58	0.07	1.11	-0.38	0.15	-0.49	0.29
Critical reflection (time 2)	cc01	169	3.29	0.09	1.16	-0.38	0.19	-0.54	0.37
	cc02	173	3.50	0.08	1.09	-0.45	0.18	-0.28	0.37
	cc03	173	2.99	0.09	1.12	-0.09	0.18	-0.56	0.37
	cc04	221	3.53	0.08	1.13	-0.57	0.16	-0.29	0.33
Critical purpose (time 1)	prp23	149	3.96	0.09	1.11	-0.73	0.20	-0.48	0.39
	prp24	149	3.59	0.09	1.09	-0.36	0.20	-0.60	0.39
	prp25	148	3.82	0.10	1.16	-0.61	0.20	-0.62	0.40
Critical purpose (time 2)	prp23	137	3.99	0.09	1.00	-0.57	0.21	-0.63	0.41
	prp24	135	3.69	0.09	1.08	-0.36	0.21	-0.73	0.41
	prp25	138	3.91	0.08	0.99	-0.59	0.21	-0.07	0.41
Sociopolitical control (time 1)	pyd16	235	2.98	0.08	1.22	0.01	0.16	-0.90	0.32
	pyd33	238	2.84	0.08	1.28	0.07	0.16	-1.02	0.31
	aec01	286	3.94	0.05	0.88	-0.67	0.14	0.47	0.29
Sociopolitical control (time 2)	pyd16	185	3.09	0.09	1.21	0.05	0.18	-0.88	0.36
	pyd33	183	2.84	0.09	1.27	0.12	0.18	-0.97	0.36
	aec01	211	3.81	0.06	0.89	-0.50	0.17	0.17	0.33

		n	Mean	SE of Mean	*SD*	Skewness	SE of Skewness	Kurtosis	SE of Kurtosis
Critical action (time 1)	act01	302	1.93	0.06	1.06	1.06	0.14	0.47	0.28
	act03	302	2.26	0.07	1.25	0.64	0.14	-0.65	0.28
Critical action (time 2)	act01	232	1.94	0.07	1.10	1.03	0.16	0.21	0.32
	act03	232	2.24	0.08	1.22	0.61	0.16	-0.66	0.32
Contribution (time 1)	act02	303	2.58	0.07	1.21	0.22	0.14	-1.02	0.28
	act06	300	2.50	0.08	1.34	0.40	0.14	-1.08	0.28
	act07	301	3.38	0.09	1.55	-0.40	0.14	-1.35	0.28
	act08	298	2.88	0.09	1.51	0.11	0.14	-1.45	0.28
	act09	302	2.19	0.08	1.44	0.78	0.14	-0.89	0.28
Contribution (time 2)	act02	233	2.64	0.08	1.29	0.19	0.16	-1.11	0.32
	act06	230	2.49	0.09	1.35	0.39	0.16	-1.13	0.32
	act07	232	3.38	0.10	1.53	-0.34	0.16	-1.38	0.32
	act08	230	2.97	0.10	1.51	0.01	0.16	-1.44	0.32
	act09	232	2.24	0.10	1.46	0.73	0.16	-0.97	0.32
Emotional problems (time 1)	ep03	298	2.04	0.07	1.25	1.01	0.14	-0.12	0.28
Emotional problems (time 2)	ep03	229	2.03	0.08	1.20	0.88	0.16	-0.42	0.32
Risk and problem behaviors (time 1)	pb01	196	1.28	0.06	0.80	3.09	0.17	9.20	0.35
	pb03	195	1.49	0.07	1.01	2.19	0.17	3.89	0.35
	pb04	196	1.15	0.04	0.56	4.43	0.17	21.31	0.35
	pb05	195	1.06	0.03	0.42	7.90	0.17	63.45	0.35

		n	Mean	SE of Mean	*SD*	Skewness	SE of Skewness	Kurtosis	SE of Kurtosis
Risk and problem behaviors (time 2)	pb01	138	1.18	0.05	0.62	3.99	0.21	17.00	0.41
	pb03	138	1.44	0.09	1.04	2.43	0.21	4.88	0.41
	pb04	138	1.23	0.07	0.79	3.50	0.21	11.49	0.41
	pb05	138	1.06	0.03	0.40	6.92	0.21	47.56	0.41
Discussions about social justice (time 1)	ci01	302	3.06	0.06	1.02	-0.13	0.14	-0.20	0.28
	ci02	301	3.30	0.06	1.02	-0.16	0.14	-0.31	0.28
	ci07	142	3.01	0.09	1.12	0.08	0.20	-0.38	0.40
Discussions about social justice (time 2)	ci01	231	3.14	0.07	1.08	-0.10	0.16	-0.46	0.32
	ci02	232	3.22	0.07	1.03	-0.12	0.16	-0.23	0.32
	ci07	134	3.02	0.10	1.14	0.02	0.21	-0.37	0.42
Open classroom climate (time 1)	ci05	299	3.55	0.06	1.02	-0.33	0.14	-0.24	0.28
	ci06	301	4.00	0.06	1.01	-0.62	0.14	-0.64	0.28
Open classroom climate (time 2)	ci05	229	3.68	0.07	1.01	-0.47	0.16	-0.15	0.32
	ci06	230	4.01	0.06	0.97	-0.63	0.16	-0.25	0.32

Table 4

Results of Multifactor Confirmatory Factor Analysis at Time 1

		Unstandardized		Standardized	
		Estimate	*SE*	Estimate	*SE*
Pattern coefficients					
Critical reflection	cc01	1.00	-	0.82	0.04
	cc02	0.73	0.09	0.62	0.06
	cc03	0.99	0.11	0.80	0.04
	cc04	0.78	0.08	0.68	0.04
Critical purpose	prp23	1.00	-	0.75	0.05
	prp24	1.00	0.12	0.76	0.05
	prp25	1.17	0.14	0.84	0.04
Sociopolitical control	pyd16	1.00	-	0.77	0.05
	pyd33	1.02	0.13	0.74	0.05
	aec01	0.50	0.07	0.53	0.06
Critical action	act01	1.00	-	0.65	0.05
	act03	1.24	0.15	0.68	0.05
Contribution	act02	1.00	-	0.69	0.04
	act06	0.82	0.12	0.51	0.05
	act07	0.41	0.14	0.22	0.08
	act08	0.71	0.13	0.39	0.06
	act09	1.02	0.13	0.59	0.05
Risk and problem behaviors	pb01	1.00	-	0.46	0.06
	pb03	1.57	0.28	0.57	0.05
	pb04	1.51	0.25	1.00	0.04
	pb05	0.81	0.13	0.71	0.04
Discussions about social justice	ci01	1.00	-	0.82	0.03
	ci02	1.02	0.09	0.84	0.03
	ci07	0.56	0.12	0.41	0.08
Open classroom climate	ci05	1.00	-	0.90	0.06
	ci06	0.62	0.10	0.56	0.06

	Unstandardized		Standardized	
	Estimate	*SE*	Estimate	*SE*
Error variances				
cc01	0.46	0.09	0.33	0.07
cc02	0.82	0.10	0.62	0.07
cc03	0.50	0.09	0.35	0.07
cc04	0.66	0.07	0.54	0.06
prp23	0.54	0.09	0.44	0.07
prp24	0.50	0.08	0.42	0.07
prp25	0.40	0.10	0.30	0.07
pyd16	0.60	0.11	0.40	0.08
pyd33	0.74	0.12	0.45	0.08
aec01	0.56	0.05	0.72	0.06
act01	0.65	0.08	0.58	0.06
act03	0.84	0.10	0.54	0.07
act02	0.76	0.09	0.53	0.06
act06	1.34	0.12	0.74	0.05
act07	2.21	0.21	0.95	0.03
act08	1.94	0.17	0.85	0.05
act09	1.36	0.14	0.65	0.06
pb01	0.50	0.05	0.79	0.06
pb03	0.70	0.07	0.68	0.06
pb04	0.01	0.02	0.02	0.07
pb05	0.09	0.01	0.50	0.06
ci01	0.35	0.06	0.33	0.06
ci02	0.31	0.06	0.30	0.06
ci07	1.04	0.13	0.83	0.07
ci05	0.21	0.12	0.20	0.11
ci06	0.69	0.07	0.69	0.06
Variances				
Critical reflection	0.94	0.15	1.00	-
Critical purpose	0.68	0.14	1.00	-
Sociopolitical control	0.88	0.15	1.00	-
Critical action	0.47	0.09	1.00	-
Contribution	0.69	0.12	1.00	-
Emotional problems	1.57	0.13	1.00	-
Risk and problem behaviors	0.13	0.04	1.00	-
Discussions about social justice	0.70	0.09	1.00	-
Open classroom climate	0.83	0.14	1.00	-

	Unstandardized		Standardized	
	Estimate	*SE*	Estimate	*SE*
Covariances				
Critical reflection WITH Critical purpose	0.10	0.08	0.13	0.10
Critical reflection WITH Sociopolitical control	-0.14	0.07	-0.15	0.08
Critical reflection WITH Critical action	0.08	0.06	0.12	0.08
Critical reflection WITH Contribution	0.12	0.07	0.15	0.08
Critical reflection WITH Emotional problems	0.13	0.08	0.10	0.07
Critical reflection WITH risk and problem behaviors	-0.01	0.03	-0.02	0.08
Critical reflection WITH Discussions about social justice	0.07	0.06	0.08	0.07
Critical reflection WITH Open classroom climate	-0.03	0.07	-0.03	0.07
Critical purpose WITH Sociopolitical control	0.21	0.09	0.27	0.10
Critical purpose WITH Critical action	0.20	0.06	0.34	0.10
Critical purpose WITH Contribution	0.17	0.07	0.25	0.10
Critical purpose WITH Emotional problems	0.07	0.10	0.07	0.09
Critical purpose WITH Risk and problem behaviors	<0.01	0.03	-0.01	0.10
Critical purpose WITH Discussions about social justice	0.11	0.07	0.16	0.09
Critical purpose WITH Open classroom climate	0.15	0.08	0.20	0.10
Sociopolitical control WITH Critical action	0.30	0.06	0.46	0.08
Sociopolitical control WITH Contribution	0.35	0.08	0.45	0.07
Sociopolitical control WITH Emotional problems	-0.16	0.08	-0.13	0.07

	Unstandardized		Standardized	
	Estimate	*SE*	Estimate	*SE*
Covariances (continued)				
Sociopolitical control WITH Risk and problem behaviors	0.01	0.03	0.04	0.09
Sociopolitical control WITH Discussions about social justice	0.37	0.07	0.47	0.07
Sociopolitical control WITH Open classroom climate	0.33	0.07	0.39	0.07
Critical action WITH Contribution	0.52	0.07	0.91	0.06
Critical action WITH Emotional problems	0.05	0.07	0.06	0.08
Critical action WITH Risk and problem behaviors	0.05	0.07	-0.01	0.09
Critical action WITH Discussions about social justice	0.23	0.05	0.40	0.07
Critical action WITH Open classroom climate	0.10	0.05	0.16	0.08
Contribution WITH Emotional problems	0.01	0.07	0.01	0.07
Contribution WITH Risk and problem behaviors	<0.01	0.03	-0.01	0.09
Contribution WITH Discussions about social justice	0.25	0.06	0.35	0.07
Contribution WITH Open classroom climate	0.13	0.06	0.18	0.08
Emotional problems WITH Risk and problem behaviors	0.06	0.04	0.13	0.08
Emotional problems WITH Discussions about social justice	-0.04	0.07	-0.04	0.07
Emotional problems WITH Open classroom climate	-0.15	0.07	-0.14	0.06
Risk and problem behaviors WITH Discussions about social justice	-0.02	0.02	-0.07	0.08
Risk and problem behaviors WITH Open classroom climate	-0.03	0.03	-0.10	0.08
Discussions about social justice WITH Open classroom climate	0.46	0.06	0.60	0.06

Table 5

Results of Multifactor Confirmatory Factor Analysis at Time 2

		Unstandardized		Standardized	
		Estimate	*SE*	Estimate	*SE*
Pattern coefficients					
Critical reflection	cc01	1.00	-	0.90	0.03
	cc02	0.81	0.08	0.74	0.05
	cc03	0.81	0.08	0.75	0.04
	cc04	0.77	0.08	0.70	0.04
Critical purpose	prp23	1.00	-	0.81	0.05
	prp24	0.98	0.13	0.75	0.05
	prp25	0.95	0.12	0.79	0.05
Sociopolitical control	pyd16	1.00	-	0.77	0.07
	pyd33	0.80	0.13	0.59	0.07
	aec01	0.58	0.11	0.61	0.07
Critical action	act01	1.00	-	0.73	0.05
	act03	1.13	0.13	0.74	0.05
Contribution	act02	1.00	-	0.72	0.05
	act06	0.87	0.12	0.60	0.05
	act07	0.57	0.13	0.35	0.07
	act08	0.75	0.13	0.46	0.06
	act09	0.95	0.12	0.60	0.05
Risk and problem behaviors	pb01	1.00	-	0.81	0.04
	pb03	1.16	0.19	0.56	0.07
	pb04	0.94	0.14	0.60	0.07
	pb05	0.67	0.07	0.85	0.04
Discussions about social justice	ci01	1.00	-	0.90	0.04
	ci02	0.86	0.08	0.81	0.04
	ci07	0.39	0.10	0.34	0.08
Open classroom climate	ci05	1.00	-	0.80	0.07
	ci06	0.73	0.13	0.61	0.06

	Unstandardized		Standardized	
	Estimate	*SE*	Estimate	*SE*
Error variances				
cc01	0.25	0.08	0.19	0.06
cc02	0.56	0.08	0.45	0.07
cc03	0.55	0.08	0.44	0.06
cc04	0.65	0.08	0.50	0.06
prp23	0.35	0.08	0.34	0.08
prp24	0.52	0.09	0.44	0.08
prp25	0.37	0.07	0.37	0.08
pyd16	0.59	0.15	0.40	0.11
pyd33	1.04	0.15	0.65	0.09
aec01	0.51	0.07	0.63	0.09
act01	0.57	0.08	0.47	0.07
act03	0.66	0.10	0.45	0.07
act02	0.80	0.11	0.48	0.06
act06	1.18	0.13	0.64	0.06
act07	2.05	0.20	0.88	0.05
act08	1.78	0.18	0.79	0.06
act09	1.37	0.15	0.64	0.06
pb01	0.13	0.03	0.34	0.06
pb03	0.74	0.10	0.68	0.07
pb04	0.39	0.05	0.64	0.08
pb05	0.05	0.01	0.29	0.08
ci01	0.22	0.08	0.19	0.07
ci02	0.36	0.07	0.34	0.06
ci07	1.14	0.14	0.89	0.06
ci05	0.38	0.11	0.37	0.11
ci06	0.59	0.08	0.63	0.08
Variances				
Critical reflection	1.06	0.15	1.00	-
Critical purpose	0.68	0.14	1.00	-
Sociopolitical control	0.87	0.20	1.00	-
Critical action	0.63	0.12	1.00	-
Contribution	0.86	0.15	1.00	-
Emotional problems	1.44	0.14	1.00	-
Risk and problem behaviors	0.25	0.05	1.00	-
Discussions about social justice	0.95	0.13	1.00	-
Open classroom climate	0.64	0.13	1.00	-

	Unstandardized		Standardized	
	Estimate	*SE*	Estimate	*SE*
Covariances				
Critical reflection WITH Critical purpose	0.07	0.09	0.09	0.10
Critical reflection WITH Sociopolitical control	-0.05	0.09	-0.05	0.09
Critical reflection WITH Critical action	0.11	0.07	0.13	0.09
Critical reflection WITH Contribution	0.19	0.08	0.20	0.08
Critical reflection WITH Emotional problems	0.13	0.09	0.10	0.07
Critical reflection WITH risk and problem behaviors	0.03	0.05	0.07	0.10
Critical reflection WITH Discussions about social justice	0.03	0.08	0.03	0.08
Critical reflection WITH Open classroom climate	0.01	0.08	0.01	0.09
Critical purpose WITH Sociopolitical control	0.37	0.10	0.48	0.10
Critical purpose WITH Critical action	0.27	0.08	0.40	0.09
Critical purpose WITH Contribution	0.28	0.09	0.37	0.10
Critical purpose WITH Emotional problems	0.15	0.09	0.15	0.09
Critical purpose WITH Risk and problem behaviors	-0.04	0.05	-0.09	0.13
Critical purpose WITH Discussions about social justice	0.20	0.08	0.25	0.09
Critical purpose WITH Open classroom climate	0.31	0.08	0.46	0.09
Sociopolitical control WITH Critical action	0.27	0.08	0.36	0.10
Sociopolitical control WITH Contribution	0.44	0.10	0.50	0.08
Sociopolitical control WITH Emotional problems	0.10	0.09	0.09	0.08

	Unstandardized		Standardized	
	Estimate	*SE*	Estimate	*SE*
Covariances (continued)				
Sociopolitical control WITH Risk and problem behaviors	-0.07	0.06	-0.15	0.13
Sociopolitical control WITH Discussions about social justice	0.20	0.08	0.22	0.09
Sociopolitical control WITH Open classroom climate	0.13	0.08	0.18	0.10
Critical action WITH Contribution	0.63	0.10	0.85	0.05
Critical action WITH Emotional problems	0.09	0.08	0.09	0.08
Critical action WITH Risk and problem behaviors	0.04	0.04	0.09	0.11
Critical action WITH Discussions about social justice	0.31	0.07	0.41	0.08
Critical action WITH Open classroom climate	0.18	0.07	0.29	0.09
Contribution WITH Emotional problems	0.15	0.09	0.14	0.08
Contribution WITH Risk and problem behaviors	-0.05	0.06	-0.11	0.12
Contribution WITH Discussions about social justice	0.24	0.08	0.27	0.08
Contribution WITH Open classroom climate	0.21	0.07	0.28	0.09
Emotional problems WITH Risk and problem behaviors	0.05	0.06	0.08	0.09
Emotional problems WITH Discussions about social justice	0.12	0.09	0.11	0.07
Emotional problems WITH Open classroom climate	-0.10	0.08	-0.11	0.08
Risk and problem behaviors WITH Discussions about social justice	-0.05	0.05	-0.09	0.10
Risk and problem behaviors WITH Open classroom climate	-0.06	0.05	-0.14	0.12
Discussions about social justice WITH Open classroom climate	0.47	0.08	0.60	0.07

Table 6

Model Fit Indices of Multifactor Confirmatory Factor Analysis at Each Time Point

	n	χ^2 (df)	*p*	CFI	NNFI	RMSEA	90% CI of RMSEA	SRMR
Time 1	335	389.74 (289)	<0.01	0.94	0.93	0.03	[0.02, 0.04]	0.07
Time 2	235	490.45 (289)	<0.01	0.87	0.85	0.05	[0.05, 0.06]	0.08

Note. CFI = comparative fit index; NNFI = non-normed fit index; RMSEA = root mean square error of approximation; CI = confidence interval; SRMR = standardized root mean square residual.

Table 7

Results of Tests of Longitudinal Measurement Invariance

Model	χ^2 (df)	Δdf	$\Delta\chi^2$	*p*	CFI	ΔCFI	SRMR	RMSEA	90% CI of RMSEA	ΔRMSEA	AIC
Configural	2324.73 (1128)	-	-	-	0.75	-	0.09	0.06	[0.05, 0.06]	-	30894.05
Metric	2345.68 (1153)	25	20.95	0.70	0.75	<0.01	0.09	0.06	[0.05, 0.06]	<0.01	30865.00
Scalar	2376.161 (1179)	26	30.48	0.25	0.75	<0.01	0.09	0.06	[0.05, 0.06]	<0.01	30843.48
Partial Strict	2399.93 (1203)	24	23.77	0.47	0.75	<0.01	0.09	0.05	[0.05, 0.06]	0.01	30819.25

Note. Δ = change in value; CFI = comparative fit index; SRMR = standardized root mean square residual; RMSEA = root mean square error of approximation; CI = confidence interval; AIC = Akaike information criterion.

Table 8

Descriptive Statistics of Scale Variables at Each Time Point

Time	Variable	n	Mean	SE of Mean	SD	Skewness	SE of Skewness	Kurtosis	SE of Kurtosis
1	Critical reflection	295	3.30	0.06	0.98	-0.16	0.14	-0.47	.28
2	Critical reflection	226	3.34	0.06	0.97	-0.55	0.16	0.07	.32
1	Critical purpose	149	3.79	0.08	0.96	-0.36	0.20	-0.81	.39
2	Critical purpose	138	3.86	0.08	0.89	-0.37	0.21	-0.51	.41
1	Sociopolitical control	305	3.29	0.05	0.95	-0.19	0.14	-0.33	.28
2	Sociopolitical control	235	3.28	0.06	0.94	-0.21	0.16	-0.21	.32
1	Critical action	303	2.10	0.06	0.99	0.63	0.14	-0.61	.28
2	Critical action	232	2.09	0.07	1.02	0.76	0.16	-0.19	.32
1	Contribution	303	2.70	0.05	0.90	0.14	0.14	-0.60	.28
2	Contribution	233	2.75	0.06	0.96	0.10	0.16	-0.62	.32
1	Emotional problems	298	2.04	0.07	1.25	1.01	0.14	-0.12	0.28
2	Emotional problems	229	2.03	0.08	1.20	0.88	0.16	-0.42	0.32
1	Risk and problem behaviors	196	1.23	0.04	0.57	3.10	0.17	12.43	0.35
2	Risk and problem behaviors	138	1.22	0.05	0.57	3.54	0.21	14.24	0.41
1	Discussions about social justice	302	3.15	0.05	0.89	-0.20	0.14	<0.01	.28
2	Discussions about social justice	232	3.15	0.06	0.90	-0.06	0.16	-.07	.32
1	Open classroom climate	302	3.78	0.05	0.88	-0.42	0.14	-.44	.28
2	Open classroom climate	231	3.84	0.06	0.85	-0.50	0.16	.12	.32

Table 9

Correlations Between Scale Variables at Time 1

	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. Critical reflection	-								
2. Critical purpose	0.09	-							
3. Sociopolitical control	-0.11	0.19*	-						
4. Critical action	0.07	0.26**	0.32**	-					
5. Contribution	0.08	0.21**	0.33**	0.53**	-				
6. Emotional problems	0.11	0.09	-0.11	0.04	-0.06	-			
7. Risk and problem behaviors	-0.01	-0.14	-0.02	-0.04	-0.05	0.14	-		
8. Discussions about social justice	0.07	0.14	0.34**	0.28**	0.22**	-0.03	-0.01	-	
9. Open classroom climate	-0.02	0.17*	0.27**	0.10	0.13*	-0.13*	-0.08	0.45**	-

Note. *Correlation is significant at the 0.05 level (2-tailed); **correlation is significant at the 0.01 level (2-tailed).

Table 10

Correlations Between Scale Variables at Time 2

	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. Critical reflection	-								
2. Critical purpose	0.10	-							
3. Sociopolitical control	-0.01	0.30**	-						
4. Critical action	0.10	0.29**	0.27**	-					
5. Contribution	0.17*	0.22**	0.31**	0.55**	-				
6. Emotional problems	0.07	0.17	0.06	0.08	0.10	-			
7. Risk and problem behaviors	-0.05	-0.07	-0.16	0.01	-0.06	0.09	-		
8. Discussions about social justice	0.06	0.24**	0.16*	0.32**	0.25**	0.11	-0.10	-	
9. Open classroom climate	<0.01	0.34**	0.11	0.17**	0.22**	-0.11	-0.13	0.45**	-

Note. *Correlation is significant at the 0.05 level (2-tailed); **correlation is significant at the 0.01 level (2-tailed).

Table 11

Correlations Between Scale Variables Across Time

Variable	*r*	*p*
Critical reflection	0.51	<0.01
Critical purpose	0.58	<0.01
Sociopolitical control	0.38	<0.01
Critical action	0.53	<0.01
Contribution	0.58	<0.01
Emotional problems	0.31	<0.01
Risk and problem behaviors	0.56	<0.01
Discussions about social justice	0.33	<0.01
Open classroom climate	0.38	<0.01

Table 12

Model Fit Statistics From Time 1 Latent Profile Analysis

# of Profiles *(# of Parameters)*	n of smallest profile	LL	AIC	cAIC	BIC	sBIC	AWE	LMR	aBF	CMP
Class-invariant diagonal										
1 (8)	305	-1458.55	2933.11	2970.87	2962.87	2937.50	3032.63	-	<0.01	<0.01
2 (13)	105	-1406.91	2839.83	2901.19	2888.19	2846.96	**3001.55**	0.03	0.03	0.02
3 (18)	34	-1389.20	2814.40	**2899.37**	**2881.37**	2824.28	3038.33	0.02	1.62	0.61
4 (23)	24	-1375.38	2796.76	2905.33	2882.33	**2809.38**	3082.89	0.52	8090.94	0.37
5 (28)	24	-1370.08	**2796.15**	2928.32	2900.32	2811.52	3144.49	0.80	>9000.00	<0.01
6 (33)	14	-1365.78	2797.57	2953.34	2920.34	2815.68	3208.11	0.69	>9000.00	<0.01
7 (38)	3	-1361.33	2798.66	2978.03	2940.03	2819.51	3271.40	0.42	-	<0.01
Class-varying diagonal										
1 (8)	305	-1458.55	2933.11	2970.87	2962.87	2937.50	3032.63	-	<0.01	<0.01
2 (17)	147	-1388.05	2810.10	**2890.35**	**2873.35**	2819.43	**3021.59**	0.01	16.79	0.94
3 (26)	48	-1365.13	2782.26	2904.99	2878.99	2796.53	3105.72	0.65	>9000.00	0.06
4 (35)	49	-1349.78	2769.57	2934.78	2899.78	**2788.78**	3204.99	0.77	>9000.00	<0.01
5 (44)	10	-1339.87	**2767.74**	2975.44	2931.44	2791.89	3315.13	0.60	-	<0.01

# of Profiles *(# of Parameters)*	n of smallest profile	LL	AIC	cAIC	BIC	sBIC	AWE	LMR	aBF	CMP
Class-invariant unrestricted										
1 (14)	305	-1431.55	2891.10	2957.19	2943.19	2898.78	**3065.27**	-	<0.01	<0.01
2 (19)	110	-1399.72	2837.44	**2927.13**	2908.13	2847.87	3073.81	0.10	0.14	0.07
3 (24)	39	-1383.48	2814.97	2928.26	**2904.26**	2828.14	3113.54	0.23	1.27	0.52
4 (29)	35	-1369.42	2796.84	2933.73	2904.73	**2812.76**	3157.62	0.69	>9000.00	0.41
5 (34)	16	-1364.54	2797.08	2957.57	2923.57	2815.74	3220.06	0.66	>9000.00	<0.01
6 (39)	14	-1360.20	2798.39	2982.48	2943.49	2819.80	3283.58	0.67	2693.24	<0.01
7 (44)	15	-1353.79	2795.59	3003.28	2959.28	2819.74	3342.98	0.58	2168.95	<0.01
8 (49)	12	-1347.18	2792.35	3023.65	2974.65	2819.24	3401.94	0.67	5190.06	<0.01
9 (54)	1	-1341.43	**2790.86**	3045.75	2991.76	2820.49	3462.65	0.30	-	<0.01
Class-varying unrestricted										
1 (14)	305	-1431.55	2891.10	2957.19	2943.19	2898.78	**3065.27**	-	<0.01	<0.01
2 (29)	131	-1373.84	2805.68	**2942.56**	**2913.56**	2821.59	3166.45	0.36	39.81	0.98
3 (44)	17	-1334.62	**2757.24**	2964.93	2920.93	**2781.39**	3304.63	-	-	0.02

Note. LL = log-likelihood, AIC = Akaike information criterion, cAIC = consistent Akaike information criterion, BIC = Bayesian information criterion, sBIC = sample size adjusted Bayesian information criterion, AWE = approximate weight of evidence criterion, LMR = p-value for adjusted Lo-Mendell-Rubin likelihood ratio test, aBF = approximate Bayes factor, CMP = approximate correct model probability. The CMP was calculated within each variance-covariance specification. Numbers in bold indicate the lowest values of each information criterion, within each variance-covariance specification.

Table 13

Comparison of Approximate Correct Model Probabilities of Four Candidate Models for Time 1

Number of profiles in model	Model Variance-Covariance Structure	Approximate Correct Model Probability
3	Class-Invariant, Diagonal	0.62
4	Class-Invariant, Diagonal	0.38
3	Class-Invariant, Unrestricted	<0.01
4	Class-Invariant, Unrestricted	<0.01

Table 14

Classification Diagnostics for Three-Profile Class-Invariant Diagonal Variance-Covariance Structure Model (Time 1)

Class	Model-estimated posterior class probabilities	90% CI of model-estimated posterior class probabilities	Modal class assignment proportion	Average posterior class probability	Odds of correct classification
1	0.58	[0.51, 0.65]	0.60	0.98	39.43
2	0.31	[0.24, 0.37]	0.28	0.85	12.71
3	0.11	[0.05, 0.18]	0.11	0.86	45.98

Note. The relative entropy for this model was 0.84.

Table 15

Model Fit Statistics from Time 2 Latent Profile Analysis

# of Profiles *(# of Parameters)*	n of smallest profile	LL	AIC	cAIC	BIC	sBIC	AWE	LMR	aBF	CMP
Class-invariant diagonal										
1 (8)	235	-1143.78	2303.56	2339.24	2331.24	2305.88	**2398.92**	-	<0.01	<0.01
2 (13)	67	-1112.31	2250.61	**2308.59**	2295.59	2254.38	2405.56	0.19	7.06	0.01
3 (18)	17	-1100.61	2237.23	2317.50	2299.50	2242.45	2451.77	0.30	<0.01	<0.01
4 (23)	17	-1080.74	2207.48	2310.05	**2287.05**	2214.15	2481.62	0.36	1.64	0.62
5 (28)	2	-1067.59	2191.17	2316.04	2288.04	2199.29	2524.91	0.39	794.33	0.37
6 (33)	2	-1060.62	2187.23	2334.40	2301.40	2196.80	2580.56	0.72	2025.35	<0.01
7 (38)	2	-1054.58	2185.16	2354.62	2316.62	2196.18	2638.09	0.60	1638.44	<0.01
8 (43)	2	-1048.33	**2182.67**	2374.43	2331.43	**2195.14**	2695.19	0.59	6737.88	<0.01
9 (48)	2	-1043.50	2183.00	2397.06	2349.06	2196.92	2755.12	0.52	-	<0.01
Class-varying diagonal										
1 (8)	235	-1143.78	2303.56	2339.24	2331.24	2305.88	**2398.92**	-	<0.01	<0.01
2 (17)	95	-1087.10	2208.21	**2284.02**	**2267.02**	2213.14	2410.83	0.10	241.17	0.94
3 (26)	13	-1068.02	**2188.04**	2303.99	2277.99	**2195.58**	2497.94	0.63	>9000.00	<0.01
4 (35)	16	-1061.07	2192.14	2348.23	2313.23	2202.29	2609.31	0.64	-	<0.01

# of Profiles *(# of Parameters)*	n of smallest profile	LL	AIC	cAIC	BIC	sBIC	AWE	LMR	aBF	CMP
Class-invariant unrestricted										
1 (14)	235	-1122.06	2272.13	2334.56	2320.56	2276.19	**2438.99**	-	<0.01	<0.01
2 (19)	66	-1102.90	2243.81	**2328.54**	2309.54	2249.32	2470.27	0.45	2.20	0.28
3 (24)	16	-1090.04	2228.09	2335.12	2311.12	2235.05	2514.15	0.20	0.30	0.13
4 (29)	17	-1075.18	2208.36	2337.68	**2308.68**	2216.77	2554.01	0.59	2.41	0.42
5 (34)	2	-1062.41	2192.82	2344.44	2310.45	2202.68	2598.07	0.37	508.01	0.18
6 (39)	2	-1054.99	2187.98	2361.91	2322.91	2199.29	2652.83	0.64	1149.98	<0.01
7 (44)	2	-1048.39	2184.78	2381.00	2337.00	**2197.54**	2709.22	0.70	3563.51	<0.01
8 (49)	2	-1042.92	**2183.84**	2402.36	2353.36	2198.05	2767.88	0.74	-	<0.01
Class-varying unrestricted										
1 (14)	235	-1122.06	2272.13	**2334.56**	2320.56	2276.19	**2438.99**	-	0.40	0.29
2(29)	13	-1080.21	**2218.42**	2347.74	**2318.74**	**2226.83**	2564.07	<0.01	-	0.71

Note. LL = log-likelihood, AIC = Akaike information criterion, cAIC = consistent Akaike information criterion, BIC = Bayesian information criterion, sBIC = sample size adjusted Bayesian information criterion, AWE = approximate weight of evidence criterion, LMR = p-value for adjusted Lo-Mendell-Rubin likelihood ratio test, aBF = approximate Bayes factor, CMP = approximate correct model probability. The CMP was calculated within each variance-covariance specification. Numbers in bold indicate the lowest values of each information criterion, within each variance-covariance specification.

Table 16

Comparison of Approximate Correct Model Probabilities of Four Candidate Models for Time 2

Number of profiles in model	Model Variance-Covariance Structure	Approximate Correct Model Probability
4	Class-Invariant, Diagonal	0.62
5	Class-Invariant, Diagonal	0.38
4	Class-Invariant, Unrestricted	<0.01
2	Class-Varying, Unrestricted	<0.01

Table 17

Classification Diagnostics for Four-Profile Class-Invariant Diagonal Variance-Covariance Structure Model (Time 2)

Class	Model-estimated posterior class probabilities	90% CI of model-estimated posterior class probabilities	Modal class assignment proportion	Average posterior class probability	Odds of correct classification
1	0.44	[0.35, 0.53]	0.46	0.99	141.33
2	0.21	[0.21, 0.35]	0.20	0.94	56.52
3	0.07	[0.04, 0.11]	0.07	0.99	978.56
4	0.28	[0.17, 0.25]	0.28	0.92	31.43

Note. The relative entropy for this model was 0.91.

Table 18

Mean Scores on Indicator Variables for Time 1 Chosen Model (Three-Profile Class-Invariant Diagonal Variance-Covariance Structure Model)

	Mean score on indicator (SE of mean) [z-score]			
	Critical reflection	Critical purpose	Sociopolitical control	Critical action
Profile 1 (60.33%)	3.31 (0.08) [0.02]	3.59 (0.06) [-0.21]	3.00 (0.05) [-0.31]	1.39 (0.04) [-0.72]
Profile 2 (28.53%)	3.11 (0.12) [-0.19]	3.90 (0.10) [0.11]	3.69 (0.06) [0.42]	2.77 (0.08) [0.68]
Profile 3 (11.15%)	3.71 (0.21) [0.43]	4.38 (0.07) [0.62]	3.70 (0.18) [0.43]	3.90 (0.09) [1.83]

Note. Percentage in parentheses represents proportion of sample that assigned to each profile based on modal posterior class probability.

Table 19

Mean Scores on Indicator Variables for Time 2 Chosen Model (Four-Profile Class-Invariant Diagonal Variance-Covariance Structure Model)

	Mean score on indicator (SE of mean) [z-score]			
	Critical reflection	Critical purpose	Sociopolitical control	Critical action
Profile 1 (45.53%)	3.18 (0.08) [-0.16]	3.58 (0.14) [-0.31]	2.97 (0.07) [-0.32]	1.18 (0.04) [-0.89]
Profile 2 (20.00%)	3.27 (0.16) [-0.07]	4.08 (0.22) [0.26]	3.66 (0.12) [0.40]	3.13 (0.03) [1.03]
Profile 3 (7.23%)	3.70 (0.40) [0.37]	4.44 (0.17) [0.66]	3.67 (0.40) [0.42]	4.32 (0.06) [2.20]
Profile 4 (27.23%)	3.53 (0.14) [0.20]	3.96 (0.09) [0.12]	3.37 (0.06) [0.10]	2.12 (0.03) [0.04]

Note. Percentage in parentheses represents proportion of sample that assigned to each profile based on modal posterior class probability.

Table 20

Mean Scores on Indicator Variables for Chosen Unconditional Estimated Latent Transition Model

		Mean score on indicator (SE of mean) [z-score]			
		Critical reflection	Critical purpose	Sociopolitical control	Critical action
Time 1	Profile 1 (60.30%)	3.30 (0.07) [0.01]	3.59 (0.05) [-0.21]	3.00 (0.06) [-0.31]	1.39 (0.03) [-0.72]
	Profile 2 (27.76%)	3.14 (0.12) [-0.16]	3.86 (0.06) [0.07]	3.68 (0.06) [0.41]	2.75 (0.07) [0.66]
	Profile 3 (11.94%)	3.65 (0.26) [0.36]	4.40 (0.07) [0.63]	3.72 (0.16) [0.45]	3.87 (0.09) [1.80]
Time 2	Profile 1 (48.66%)	3.16 (0.08) [-0.18]	3.52 (0.10) [-0.37]	2.93 (0.08) [-0.37]	1.17 (0.05) [-0.91]
	Profile 2 (25.67%)	3.25 (0.17) [-0.09]	4.08 (0.23) [0.25]	3.66 (0.22) [0.40]	3.12 (0.11) [1.01]
	Profile 3 (4.78%)	3.77 (0.88) [0.44]	4.44 (0.17) [0.66]	3.64 (0.49) [0.38]	4.33 (0.14) [2.21]
	Profile 4 (20.90%)	3.54 (0.13) [0.21]	4.02 (0.10) [0.19]	3.41 (0.05) [0.13]	2.06 (0.04) [-0.03]

Table 21

Results of Comparing Average Scores on Indicator Variables Between Profiles

Time 1	Profile 1 vs. Profile 2	Profile 1 vs. Profile 3	Profile 2 vs. Profile 3
Critical reflection	$\chi^2 = 1.24$, $p = 0.27$	$\chi^2 = 1.25$, $p = 0.26$	$\chi^2 = 3.99$, $p = 0.05$
Critical purpose	$\chi^2 = 7.24$, $p < 0.01$, H-B	$\chi^2 = 67.88$, $p < 0.01$, H-B	$\chi^2 = 18.81$, $p < 0.01$, H-B
Sociopolitical control	$\chi^2 = 69.22$, $p < 0.01$, H-B	$\chi^2 = 23.56$, $p < 0.01$, H-B	$\chi^2 = 0.05$, $p = 0.83$
Critical action	$\chi^2 = 410.92$, $p < 0.01$, H-B	$\chi^2 = 657.294$, $p < 0.01$, H-B	$\chi^2 = 201.83$, $p < 0.01$, H-B
Time 2	Profile 1 vs. Profile 2	Profile 1 vs. Profile 3	Profile 1 vs. Profile 4
Critical reflection	$\chi^2 = 0.19$, $p = 0.66$	$\chi^2 = 0.48$, $p = 0.49$	$\chi^2 = 10.34$, $p < 0.01$, H-B
Critical purpose	$\chi^2 = 9.41$, $p < 0.01$, H-B	$\chi^2 = 21.84$, $p < 0.01$, H-B	$\chi^2 = 12.16$, $p < 0.01$, H-B
Sociopolitical control	$\chi^2 = 9.66$, $p < 0.01$, H-B	$\chi^2 = 1.98$, $p = 0.16$	$\chi^2 = 27.56$, $p < 0.01$, H-B
Critical action	$\chi^2 = 276.40$, $p < 0.01$, H-B	$\chi^2 = 437.31$, $p < 0.01$, H-B	$\chi^2 = 213.65$, $p < 0.01$, H-B
Time 2	Profile 2 vs. Profile 3	Profile 2 vs. Profile 4	Profile 3 vs. Profile 4
Critical reflection	$\chi^2 = 0.28$, $p = 0.60$	$\chi^2 = 2.36$, $p = 0.12$	$\chi^2 = 0.07$, $p = 0.79$
Critical purpose	$\chi^2 = 2.56$, $p = 0.11$	$\chi^2 = 0.06$, $p = 0.81$	$\chi^2 = 18.11$, $p < 0.01$, H-B
Sociopolitical control	$\chi^2 < 0.01$, $p = 0.98$	$\chi^2 = 1.79$, $p = 0.17$	$\chi^2 = 0.21$, $p = 0.64$
Critical action	$\chi^2 = 584.88$, $p < 0.01$, H-B	$\chi^2 = 65.28$, $p < 0.01$, H-B	$\chi^2 = 206.36$, $p < 0.01$, H-B

Note. All χ^2 tests are with 1 degree of freedom. H-B indicates tests significant at $p < .05$ after a Holm-Bonferroni adjustment was made to the raw p-values.

Table 22

Latent Transition Probabilities for Chosen Unconditional Estimated Latent Transition Model

		Time 2			
		Profile 1	Profile 2	Profile 3	Profile 4
Time 1	Profile 1	0.63	0.10	<0.01	0.27
	Profile 2	0.20	0.41	0.07	0.32
	Profile 3	0.03	0.34	0.31	0.33

Table 23

Results of Comparing Average Scores on Indicator Variables Between Time Points, for Each Identified Transition

	Critical reflection	Critical purpose	Sociopolitical control	Critical action
1 → 1	$\chi^2 = 2.72, p = 0.10$	$\chi^2 = 0.64, p = 0.50$	$\chi^2 = 0.67, p = 0.41$	$\chi^2 = 46.90, p < 0.01$, H-B, Cohen's $d = -0.41$
1 → 2	$\chi^2 = 0.14, p = 0.71$	$\chi^2 = 3.97, p = 0.05$	$\chi^2 = 7.98, p < 0.01$, H-B, Cohen's $d = 0.42$	$\chi^2 = 229.15, p < 0.01$, H-B, Cohen's $d = 2.21$
1 → 4	$\chi^2 = 2.63, p = 0.11$	$\chi^2 = 19.79, p < 0.01$, H-B, Cohen's $d = 0.55$	$\chi^2 = 24.89, p < 0.01$, H-B, Cohen's $d = 0.61$	$\chi^2 = 174.96, p < 0.01$, H-B, Cohen's $d = 1.75$
2 → 1	$\chi^2 = 0.02, p = 0.88$	$\chi^2 = 6.10, p = 0.01$	$\chi^2 = 63.79, p < 0.01$, H-B, Cohen's $d = -0.90$	$\chi^2 = 302.64, p < 0.01$, H-B, Cohen's $d = -2.41$
2 → 2	$\chi^2 = 0.31, p = 0.58$	$\chi^2 = 1.28, p = 0.26$	$\chi^2 = 0.01, p = 0.92$	$\chi^2 = 6.94, p < 0.01$, H-B, Cohen's $d = 0.43$
2 → 4	$\chi^2 = 7.20, p < 0.01$, H-B, Cohen's $d = 0.36$	$\chi^2 = 2.19, p = 0.14$	$\chi^2 = 15.23, p < 0.01$, H-B, Cohen's $d = -0.53$	$\chi^2 = 128.18, p < 0.01$, H-B, Cohen's $d = -1.30$
3 → 2	$\chi^2 = 1.17, p = 0.28$	$\chi^2 = 1.42, p = 0.23$	$\chi^2 = 0.06, p = 0.81$	$\chi^2 = 27.93, p < 0.01$, H-B, Cohen's $d = -0.91$
3 → 3	$\chi^2 = 0.03, p = 0.86$	$\chi^2 = 0.04, p = 0.83$	$\chi^2 = 0.02, p = 0.88$	$\chi^2 = 7.70, p < 0.01$, H-B, Cohen's $d = 0.81$
3 → 4	$\chi^2 = 0.25, p = 0.62$	$\chi^2 = 7.22, p = 0.01$	$\chi^2 = 3.50, p = 0.06$	$\chi^2 = 385.71, p < 0.01$, H-B, Cohen's $d = -3.88$

Note. All χ^2 tests are with 1 degree of freedom. H-B indicates tests significant at $p < 0.05$ after a Holm-Bonferroni adjustment was made to the raw p-values. Cohen's d values are only included for differences that were significant after Holm-Bonferroni correction. Negative Cohen's *d* values indicate reduction in mean levels on the indicator, while positive Cohen's *d* values indicate increases in mean levels on the indicator.

Table 24

Mean Scores on Contribution, Emotion Problems, and Problem and Risk Behaviors, for Each Transition

	Mean score on outcome variable (SE of mean) [*z*-score]					
Transition	Contribution (time 1)	Contribution (time 2)	Emotional problems (time 1)	Emotional problems (time 2)	Risk and problem behaviors (time 1)	Risk and problem behaviors (time 2)
1 → 1	2.20 (0.12) [-0.57]	2.23 (0.13) [-0.57]	2.04 (0.13) [-0.01]	1.95 (0.14) [-0.11]	1.26 (0.08) [-0.06]	1.31 (0.08) [-0.06]
1 → 2	2.30 (0.17) [-0.47]	3.07 (0.41) [0.36]	2.29 (0.44) [0.20]	1.92 (0.65) [-0.13]	1.14 (0.09) [-0.31]	1.12 (0.14) [-0.45]
1 → 4	2.63 (0.39) [-0.09]	2.86 (0.31) [0.13]	1.97 (0.33) [-0.06]	2.02 (0.20) [-0.05]	1.17 (0.22) [-0.25]	1.21 (0.31) [-0.27]
2 → 1	3.41 (0.29) [0.79]	3.22 (0.32) [0.53]	1.81 (0.27) [-0.19]	2.01 (0.32) [-0.05]	1.28 (0.20) [-0.02]	1.34 (0.22) [-0.01]
2 → 2	3.67 (0.11) [1.09]	3.51 (0.12) [0.84]	1.60 (0.19) [-0.37]	1.67 (0.27) [-0.35]	1.09 (0.05) [-0.42]	1.11 (0.08) [-0.45]
2 → 4	2.47 (0.69) [-0.27]	2.47 (0.59) [-0.30]	2.14 (0.83) [0.07]	2.07 (0.45) [-0.01]	1.63 (0.46) [0.72]	1.71 (0.57) [0.70]
3 → 2	2.67 (0.58) [0.77]	2.52 (0.49) [1.02]	2.53 (1.00) [0.91]	2.31 (1.04) [1.56]	3.11 (0.87) [0.34]	3.01 (0.62) [0.45]
3 → 3	3.30 (0.30) [0.67]	2.95 (0.37) [0.23]	3.73 (0.50) [1.36]	3.46 (0.66) [1.19]	2.85 (0.84) [3.25]	3.79 (0.24) [4.73]
3 → 4	3.57 (0.34) [0.98]	3.57 (0.46) [0.29]	2.40 (0.63) [0.28]	2.96 (0.80) [0.76]	1.06 (0.06) [-0.46]	1.08 (0.11) [-0.51]

Table 25

Results of Comparing Average Scores on Outcome Variables Between Time Points, for Each Identified Transition

Transition	Contribution (time 1 vs. time 2)	Emotional problems (time 1 vs. time 2)	Risk and problem behaviors (time 1 vs. time 2)
$1 \rightarrow 1$	$\chi^2 = 0.11, p = 0.74$	$\chi^2 = 0.76, p = 0.38$	$\chi^2 = 0.43, p = 0.51$
$1 \rightarrow 2$	$\chi^2 = 4.98, p = 0.03$	$\chi^2 = 0.04, p = 0.83$	$\chi^2 = 0.22, p = 0.64$
$1 \rightarrow 4$	$\chi^2 = 1.86, p = 0.17$	$\chi^2 = 0.16, p = 0.69$	$\chi^2 = 0.03, p = 0.87$
$2 \rightarrow 1$	$\chi^2 = 0.72, p = 0.40$	$\chi^2 = 0.22, p = 0.64$	$\chi^2 = 0.76, p = 0.38$
$2 \rightarrow 2$	$\chi^2 = 1.23, p = 0.27$	$\chi^2 = 0.16, p = 0.69$	$\chi^2 = 0.04, p = 0.83$
$2 \rightarrow 4$	$\chi^2 < 0.01, p = 0.99$	$\chi^2 = 0.10, p = 0.76$	$\chi^2 = 0.01, p = 0.27$
$3 \rightarrow 2$	$\chi^2 = 0.57, p = 0.45$	$\chi^2 = 0.17, p = 0.68$	$\chi^2 = 0.91, p = 0.34$
$3 \rightarrow 3$	$\chi^2 = 0.72, p = 0.40$	$\chi^2 = 1.01, p = 0.31$	$\chi^2 = 0.49, p = 0.48$
$3 \rightarrow 4$	$\chi^2 = 1.22, p = 0.27$	$\chi^2 = 0.07, p = 0.79$	$\chi^2 = 0.81, p = 0.37$

Table 26

Results of Comparing Average Scores on Time 1 Contribution Between Transitions

Transition	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
(a) $1 \rightarrow 1$								
(b) $1 \rightarrow 2$	$\chi^2 = 0.27$ $p = 0.60$							
(c) $1 \rightarrow 4$	$\chi^2 = 0.83$ $p = 0.36$	$\chi^2 = 0.45$ $p = 0.50$						
(d) $2 \rightarrow 1$	**$\chi^2 = 10.04$** **$p < 0.01$**	**$\chi^2 = 9.26$** **$p < 0.01$**	$\chi^2 = 3.04$ $p = 0.08$					
(e) $2 \rightarrow 2$	**$\chi^2 = 94.73$** **$p < 0.01$**	**$\chi^2 = 46.62$** **$p < 0.01$**	$\chi^2 = 6.28$ $p = 0.01$	$\chi^2 = 0.71$ $p = 0.40$				
(f) $2 \rightarrow 4$	$\chi^2 = 0.17$ $p = 0.68$	$\chi^2 = 0.07$ $p = 0.80$	$\chi^2 = 0.03$ $p = 0.87$	$\chi^2 = 1.37$ $p = 0.24$	$\chi^2 = 3.06$ $p = 0.08$			
(g) $3 \rightarrow 2$	**$\chi^2 = 11.91$** **$p < 0.01$**	$\chi^2 = 8.44$ $p < 0.01$	$\chi^2 = 2.34$ $p = 0.13$	$\chi^2 < 0.01$ $p = 0.96$	$\chi^2 = 0.59$ $p = 0.44$	$\chi^2 = 1.32$ $p = 0.25$		
(h) $3 \rightarrow 3$	**$\chi^2 = 10.52$** **$p < 0.01$**	$\chi^2 = 7.61$ $p = 0.01$	$\chi^2 = 1.83$ $p = 0.18$	$\chi^2 = 0.06$ $p = 0.80$	$\chi^2 = 1.23$ $p = 0.27$	$\chi^2 = 1.15$ $p = 0.28$	$\chi^2 = 0.04$ $p = 0.84$	
(i) $3 \rightarrow 4$	**$\chi^2 = 14.66$** **$p < 0.01$**	**$\chi^2 = 12.68$** **$p < 0.01$**	$\chi^2 = 2.94$ $p = 0.09$	$\chi^2 = 0.11$ $p = 0.74$	$\chi^2 = 0.07$ $p = 0.79$	$\chi^2 = 2.50$ $p = 0.11$	$\chi^2 = 0.12$ $p = 0.73$	$\chi^2 = 0.39$ $p = 0.53$

Note. Cells in bold indicate the Wald test was significant at $p < .05$ after Holm-Bonferroni correction.

Table 27

Results of Comparing Average Scores on Time 2 Contribution Between Transitions

Transition	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
(a) $1 \rightarrow 1$								
(b) $1 \rightarrow 2$	$\chi^2 = 5.10$ $p = 0.02$							
(c) $1 \rightarrow 4$	$\chi^2 = 2.85$ $p = 0.09$	$\chi^2 = 0.13$ $p = 0.72$						
(d) $2 \rightarrow 1$	$\chi^2 = 6.89$ $p = 0.01$	$\chi^2 = 0.07$ $p = 0.79$	$\chi^2 = 0.65$ $p = 0.42$					
(e) $2 \rightarrow 2$	**$\chi^2 = 48.85$** **$p < 0.01$**	$\chi^2 = 0.80$ $p = 0.37$	$\chi^2 = 4.25$ $p = 0.04$	$\chi^2 = 0.86$ $p = 0.35$				
(f) $2 \rightarrow 4$	$\chi^2 = 0.19$ $p = 0.66$	$\chi^2 = 0.91$ $p = 0.34$	$\chi^2 = 0.24$ $p = 0.62$	$\chi^2 = 1.31$ $p = 0.25$	$\chi^2 = 3.16$ $p = 0.08$			
(g) $3 \rightarrow 2$	**$\chi^2 = 15.98$** **$p < 0.01$**	$\chi^2 = 0.94$ $p = 0.33$	$\chi^2 = 4.14$ $p = 0.04$	$\chi^2 = 1.28$ $p = 0.26$	$\chi^2 = 0.27$ $p = 0.60$	$\chi^2 = 2.79$ $p = 0.10$		
(h) $3 \rightarrow 3$	$\chi^2 = 3.49$ $p = 0.06$	$\chi^2 = 0.06$ $p = 0.80$	$\chi^2 = 0.03$ $p = 0.86$	$\chi^2 = 0.29$ $p = 0.59$	$\chi^2 = 1.95$ $p = 0.16$	$\chi^2 = 0.42$ $p = 0.52$	$\chi^2 = 2.04$ $p = 0.15$	
(i) $3 \rightarrow 4$	$\chi^2 = 2.69$ $p = 0.10$	$\chi^2 = 0.01$ $p = 0.93$	$\chi^2 = 0.08$ $p = 0.78$	$\chi^2 = 0.13$ $p = 0.72$	$\chi^2 = 1.23$ $p = 0.27$	$\chi^2 = 0.47$ $p = 0.49$	$\chi^2 = 1.60$ $p = 0.21$	$\chi^2 = 0.01$ $p = 0.93$

Note. Cells in bold indicate the Wald test was significant at $p < .05$ after Holm-Bonferroni correction.

Table 28

Results of Comparing Average Scores on Time 1 Emotional Problems Between Transitions

Transition	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
(a) 1 → 1								
(b) 1 → 2	$\chi^2 = 0.28$ $p = 0.60$							
(c) 1 → 4	$\chi^2 = 0.04$ $p = 0.85$	$\chi^2 = 0.26$ $p = 0.61$						
(d) 2 → 1	$\chi^2 = 0.46$ $p = 0.50$	$\chi^2 = 0.97$ $p = 0.32$	$\chi^2 = 0.13$ $p = 0.71$					
(e) 2 → 2	$\chi^2 = 3.31$ $p = 0.07$	$\chi^2 = 1.79$ $p = 0.18$	$\chi^2 = 1.19$ $p = 0.28$	$\chi^2 = 0.44$ $p = 0.51$				
(f) 2 → 4	$\chi^2 = 0.01$ $p = 0.91$	$\chi^2 = 0.03$ $p = 0.86$	$\chi^2 = 0.03$ $p = 0.87$	$\chi^2 = 0.13$ $p = 0.71$	$\chi^2 = 0.34$ $p = 0.56$			
(g) 3 → 2	$\chi^2 = 1.93$ $p = 0.17$	$\chi^2 = 1.02$ $p = 0.31$	$\chi^2 = 1.75$ $p = 0.19$	$\chi^2 = 2.40$ $p = 0.12$	$\chi^2 = 3.43$ $p = 0.06$	$\chi^2 = 0.90$ $p = 0.34$		
(h) 3 → 3	**$\chi^2 = 10.63$** **$p < 0.01$**	$\chi^2 = 4.38$ $p = 0.04$	$\chi^2 = 9.69$ $p < 0.01$	**$\chi^2 = 11.41$** **$p < 0.01$**	**$\chi^2 = 15.82$** **$p < 0.01$**	$\chi^2 = 2.75$ $p = 0.10$	$\chi^2 = 0.31$ $p = 0.58$	
(i) 3 → 4	$\chi^2 = 0.31$ $p = 0.58$	$\chi^2 = 0.02$ $p = 0.90$	$\chi^2 = 0.51$ $p = 0.47$	$\chi^2 = 0.55$ $p = 0.46$	$\chi^2 = 1.49$ $p = 0.22$	$\chi^2 = 0.04$ $p = 0.84$	$\chi^2 = 0.49$ $p = 0.48$	$\chi^2 = 2.63$ $p = 0.10$

Note. Cells in bold indicate the Wald test was significant at $p < .05$ after Holm-Bonferroni correction.

Table 29

Results of Comparing Average Scores on Time 2 Emotional Problems Between Transitions

Transition	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
(a) $1 \rightarrow 1$								
(b) $1 \rightarrow 2$	$\chi^2 < 0.01$ $p = 0.96$							
(c) $1 \rightarrow 4$	$\chi^2 = 0.06$ $p = 0.80$	$\chi^2 = 0.02$ $p = 0.89$						
(d) $2 \rightarrow 1$	$\chi^2 = 0.03$ $p = 0.87$	$\chi^2 = 0.02$ $p = 0.89$	$\chi^2 < 0.01$ $p = 0.99$					
(e) $2 \rightarrow 2$	$\chi^2 = 0.91$ $p = 0.34$	$\chi^2 = 0.16$ $p = 0.69$	$\chi^2 = 0.93$ $p = 0.34$	$\chi^2 = 0.77$ $p = 0.38$				
(f) $2 \rightarrow 4$	$\chi^2 = 0.06$ $p = 0.80$	$\chi^2 = 0.03$ $p = 0.86$	$\chi^2 = 0.01$ $p = 0.92$	$\chi^2 = 0.01$ $p = 0.93$	$\chi^2 = 0.61$ $p = 0.44$			
(g) $3 \rightarrow 2$	$\chi^2 = 6.69$ $p = 0.01$	$\chi^2 = 3.13$ $p = 0.08$	$\chi^2 = 6.67$ $p = 0.01$	$\chi^2 = 5.37$ $p = 0.02$	$\chi^2 = 6.06$ $p = 0.01$	$\chi^2 = 4.34$ $p = 0.04$		
(h) $3 \rightarrow 3$	$\chi^2 = 4.86$ $p = 0.03$	$\chi^2 = 2.39$ $p = 0.12$	$\chi^2 = 4.67$ $p = 0.03$	$\chi^2 = 3.85$ $p = 0.05$	$\chi^2 = 5.86$ $p = 0.02$	$\chi^2 = 3.43$ $p = 0.06$	$\chi^2 = 0.18$ $p = 0.67$	
(i) $3 \rightarrow 4$	$\chi^2 = 1.39$ $p = 0.24$	$\chi^2 = 1.02$ $p = 0.31$	$\chi^2 = 1.47$ $p = 0.23$	$\chi^2 = 1.11$ $p = 0.29$	$\chi^2 = 2.21$ $p = 0.14$	$\chi^2 = 0.74$ $p = 0.39$	$\chi^2 = 0.67$ $p = 0.41$	$\chi^2 = 0.26$ $p = 0.61$

Note. None of these Wald tests were significant at $p < .05$ after Holm-Bonferroni correction.

Table 30

Results of Comparing Average Scores on Time 1 Risk and Problem Behaviors Between Transitions

Transition	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
(a) $1 \rightarrow 1$								
(b) $1 \rightarrow 2$	$\chi^2 = 1.21$ $p = 0.37$							
(c) $1 \rightarrow 4$	$\chi^2 = 0.14$ $p = 0.71$	$\chi^2 = 0.02$ $p = 0.90$						
(d) $2 \rightarrow 1$	$\chi^2 = 0.01$ $p = 0.94$	$\chi^2 = 0.39$ $p = 0.53$	$\chi^2 = 0.26$ $p = 0.61$					
(e) $2 \rightarrow 2$	$\chi^2 = 5.02$ $p = 0.03$	$\chi^2 = 0.30$ $p = 0.58$	$\chi^2 = 0.14$ $p = 0.71$	$\chi^2 = 0.87$ $p = 0.35$				
(f) $2 \rightarrow 4$	$\chi^2 = 0.66$ $p = 0.42$	$\chi^2 = 1.23$ $p = 0.27$	$\chi^2 = 0.70$ $p = 0.40$	$\chi^2 = 0.42$ $p = 0.52$	$\chi^2 = 1.41$ $p = 0.23$			
(g) $3 \rightarrow 2$	$\chi^2 = 0.46$ $p = 0.50$	$\chi^2 = 1.04$ $p = 0.31$	$\chi^2 = 0.95$ $p = 0.33$	$\chi^2 = 0.26$ $p = 0.61$	$\chi^2 = 1.62$ $p = 0.20$	$\chi^2 = 0.09$ $p = 0.76$		
(h) $3 \rightarrow 3$	$\chi^2 = 3.54$ $p = 0.06$	$\chi^2 = 4.14$ $p = 0.04$	$\chi^2 = 4.34$ $p = 0.04$	$\chi^2 = 3.17$ $p = 0.08$	$\chi^2 = 4.40$ $p = 0.04$	$\chi^2 = 1.23$ $p = 0.27$	$\chi^2 =2.80$ $p = 0.09$	
(i) $3 \rightarrow 4$	$\chi^2 = 3.95$ $p = 0.05$	$\chi^2 = 0.63$ $p = 0.43$	$\chi^2 = 0.25$ $p = 0.62$	$\chi^2 = 1.01$ $p = 0.32$	$\chi^2 = 0.12$ $p = 0.73$	$\chi^2 = 1.52$ $p = 0.22$	$\chi^2 = 1.83$ $p = 0.18$	$\chi^2 = 4.69$ $p = 0.03$

Note. None of these Wald tests were significant at $p < .05$ after Holm-Bonferroni correction.

Table 31

Results of Comparing Average Scores on Time 2 Risk and Problem Behaviors Between Transitions

Transition	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
(a) 1 → 1								
(b) 1 → 2	$\chi^2 = 2.12$ $p = 0.15$							
(c) 1 → 4	$\chi^2 = 0.11$ $p = 0.74$	$\chi^2 = 0.09$ $p = 0.77$						
(d) 2 → 1	$\chi^2 = 0.01$ $p = 0.91$	$\chi^2 = 0.83$ $p = 0.36$	$\chi^2 = 0.20$ $p = 0.66$					
(e) 2 → 2	$\chi^2 = 6.00$ $p = 0.01$	$\chi^2 < 0.01$ $p = 0.99$	$\chi^2 = 0.10$ $p = 0.76$	$\chi^2 = 1.20$ $p = 0.27$				
(f) 2 → 4	$\chi^2 = 0.45$ $p = 0.50$	$\chi^2 = 1.09$ $p = 0.30$	$\chi^2 = 0.48$ $p = 0.49$	$\chi^2 = 0.30$ $p = 0.58$	$\chi^2 = 1.05$ $p = 0.31$			
(g) 3 → 2	$\chi^2 = 0.46$ $p = 0.50$	$\chi^2 = 1.13$ $p = 0.29$	$\chi^2 = 1.10$ $p = 0.30$	$\chi^2 = 0.32$ $p = 0.57$	$\chi^2 = 1.33$ $p = 0.25$	$\chi^2 = 0.03$ $p = 0.86$		
(h) 3 → 3	**$\chi^2 = 87.85$** **$p < 0.01$**	**$\chi^2 = 91.61$** **$p < 0.01$**	**$\chi^2 = 33.32$** **$p < 0.01$**	**$\chi^2 = 53.94$** **$p < 0.01$**	**$\chi^2 = 102.65$** **$p < 0.01$**	**$\chi^2 = 12.71$** **$p < 0.01$**	**$\chi^2 = 18.13$** **$p < 0.01$**	
(i) 3 → 4	$\chi^2 = 3.32$ $p = 0.07$	$\chi^2 = 0.04$ $p = 0.85$	$\chi^2 = 0.15$ $p = 0.70$	$\chi^2 = 1.03$ $p = 0.31$	$\chi^2 = 0.06$ $p = 0.81$	$\chi^2 = 1.15$ $p = 0.28$	$\chi^2 = 1.40$ $p = 0.24$	**$\chi^2 = 90.80$** **$p < 0.01$**

Note. Cells in bold indicate the Wald test was significant at $p < .05$ after Holm-Bonferroni correction.

Table 32

Transition Probabilities Conditioned on School Context Variables Measured at Time 1

		1 → 1	1 → 2	1 → 4	2 → 1	2 → 2	2 → 4	3 → 2	3 → 3	3 → 4
Discussions about social justice – 1SD above mean	Conditional probability	**0.73**	0.08	0.19	0.43	0.29	0.20	0.38	0.29	0.33
	z-score	**-2.17**	0.14	0.44	-1.60	0.57	0.27	0.44	-0.17	-0.08
	Cohen's *d*	**-0.23**	0.01	0.05	-0.17	0.06	0.03	0.05	-0.02	-0.01
Discussions about social justice – mean	Conditional probability	0.76	0.07	0.17	0.48	0.27	0.19	0.37	0.29	0.33
	z-score	-1.25	0.07	0.24	-0.89	0.28	0.13	0.36	-0.13	-0.06
	Cohen's *d*	-0.13	0.01	0.03	-0.09	0.03	0.01	0.04	-0.01	-0.01
Discussions about social justice – 1SD below mean	Conditional probability	0.80	0.06	0.14	0.53	0.24	0.17	0.36	0.30	0.33
	z-score	-0.39	0.02	0.07	-0.13	-0.01	0.01	0.26	-0.09	-0.04
	Cohen's *d*	-0.04	0.00	0.01	-0.01	0.00	0.00	0.03	-0.01	0.00
Open classroom climate – 1SD above mean	Conditional probability	0.79	0.06	0.15	0.45	0.28	0.20	0.41	0.23	0.32
	z-score	-0.63	0.05	0.09	-1.38	0.44	0.22	0.86	-0.70	-0.15
	Cohen's *d*	-0.07	0.00	0.01	-0.15	0.05	0.02	0.09	-0.07	-0.02
Open classroom climate – mean	Conditional probability	0.77	0.07	0.16	0.43	0.28	0.21	0.40	0.25	0.32
	z-score	-1.00	0.06	0.18	-1.64	0.46	0.31	0.70	-0.58	-0.12
	Cohen's *d*	-0.11	0.01	0.02	-0.17	0.05	0.03	0.07	-0.06	-0.01
Open classroom climate – 1SD below mean	Conditional probability	0.76	0.07	0.17	0.41	0.29	0.22	0.38	0.26	0.32
	z-score	-1.38	0.07	0.27	-1.90	0.49	0.40	0.53	-0.46	-0.09
	Cohen's *d*	-0.15	0.01	0.03	-0.20	0.05	0.04	0.06	-0.05	-0.01

Table 33

Transition Probabilities Conditioned on School Context Variables Measured at Time 2

		1 → 1	1 → 2	1 → 4	2 → 1	2 → 2	2 → 4	3 → 2	3 → 3	3 → 4
Discussions about social justice – 1SD above mean	Conditional probability	**0.68**	0.10	0.22	**0.34**	0.35	0.23	0.41	0.31	0.27
	z-score	**-3.20**	0.23	0.69	**-2.74**	1.13	0.52	0.92	0.06	-0.63
	Cohen's *d*	**-0.34**	0.02	0.07	**-0.29**	0.12	0.06	0.10	0.01	-0.07
Discussions about social justice – mean	Conditional probability	0.78	0.06	0.16	0.46	0.27	0.20	0.40	0.31	0.29
	z-score	-0.94	0.05	0.17	-1.21	0.34	0.23	0.72	0.06	-0.50
	Cohen's *d*	-0.10	0.00	0.02	-0.13	0.04	0.02	0.08	0.01	-0.05
Discussions about social justice – 1SD below mean	Conditional probability	0.85	0.04	0.11	0.59	0.20	0.16	0.38	0.31	0.30
	z-score	1.12	-0.05	-0.16	0.78	-0.31	-0.08	0.54	0.06	-0.36
	Cohen's *d*	0.12	-0.01	-0.02	0.08	-0.03	-0.01	0.06	0.01	-0.04
Open classroom climate – 1SD above mean	Conditional probability	0.75	0.07	0.18	0.44	0.29	0.20	0.38	0.25	0.36
	z-score	-1.55	0.09	0.30	-1.56	0.52	0.25	0.44	-0.53	0.27
	Cohen's *d*	-0.16	0.01	0.03	-0.17	0.05	0.03	0.05	-0.06	0.03
Open classroom climate – mean	Conditional probability	0.77	0.07	0.16	0.46	0.28	0.19	0.37	0.26	0.35
	z-score	-1.15	0.07	0.21	-1.27	0.37	0.18	0.36	-0.44	0.23
	Cohen's *d*	-0.12	0.01	0.02	-0.13	0.04	0.02	0.04	-0.05	0.02
Open classroom climate – 1SD below mean	Conditional probability	0.78	0.06	0.15	0.48	0.26	0.18	0.36	0.27	0.35
	z-score	-0.74	0.04	0.13	-0.97	0.25	0.12	0.29	-0.36	0.18
	Cohen's *d*	-0.08	0.00	0.01	-0.10	0.03	0.01	0.03	-0.04	0.02

Figure 1

Histogram of Time Spans Between Time 1 and Time 2

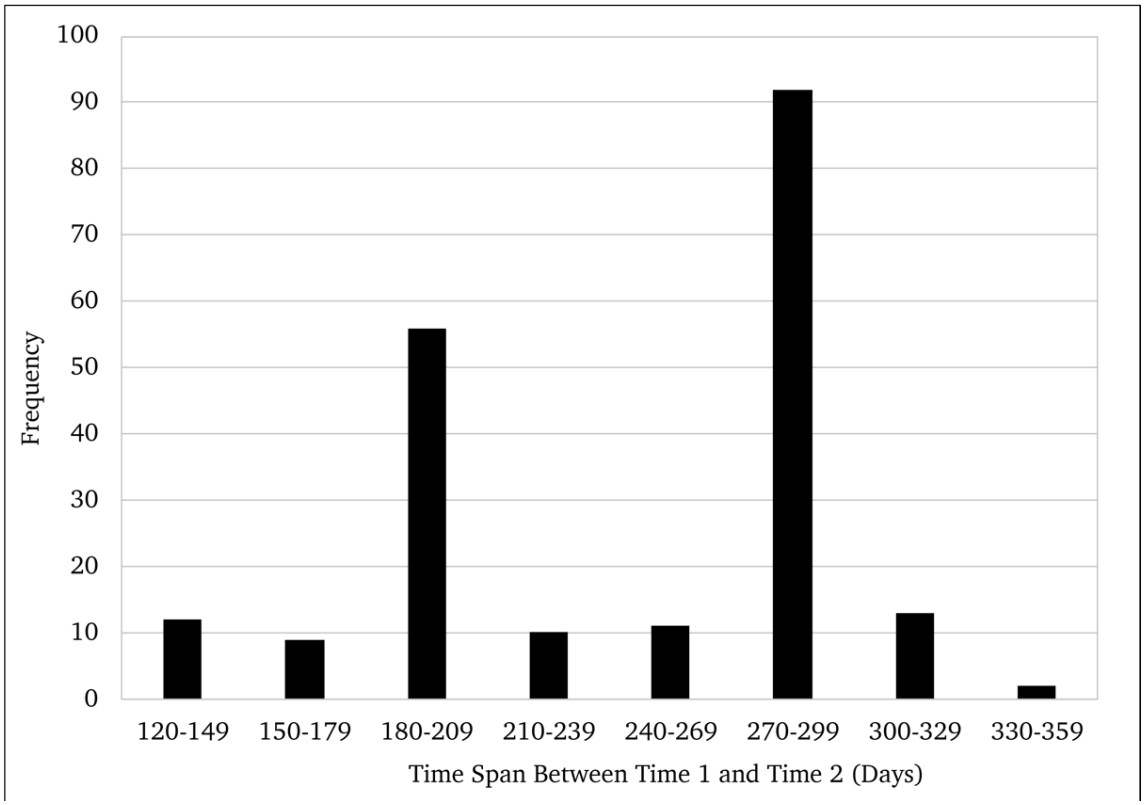


Figure 2

Flowchart of Process of Analysis

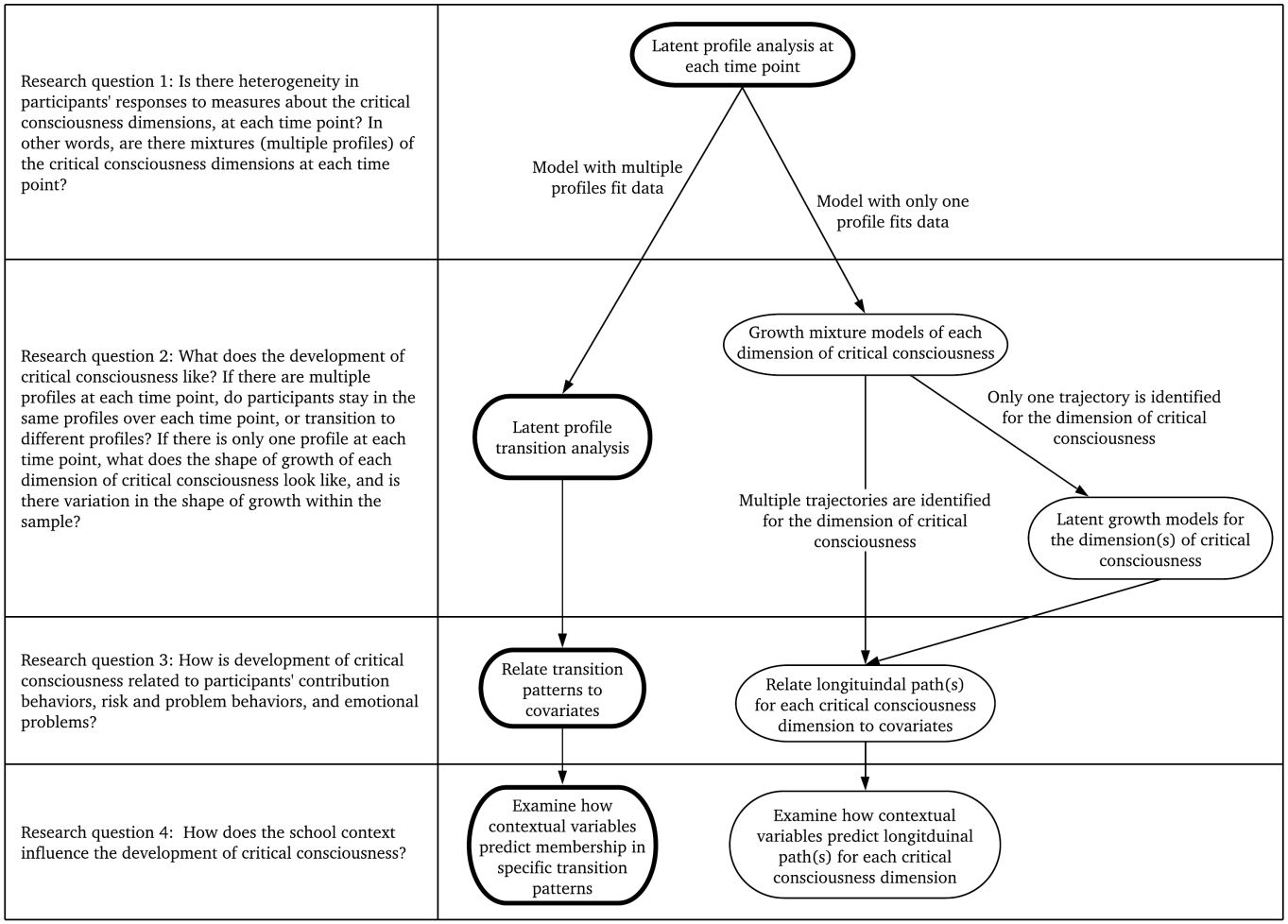
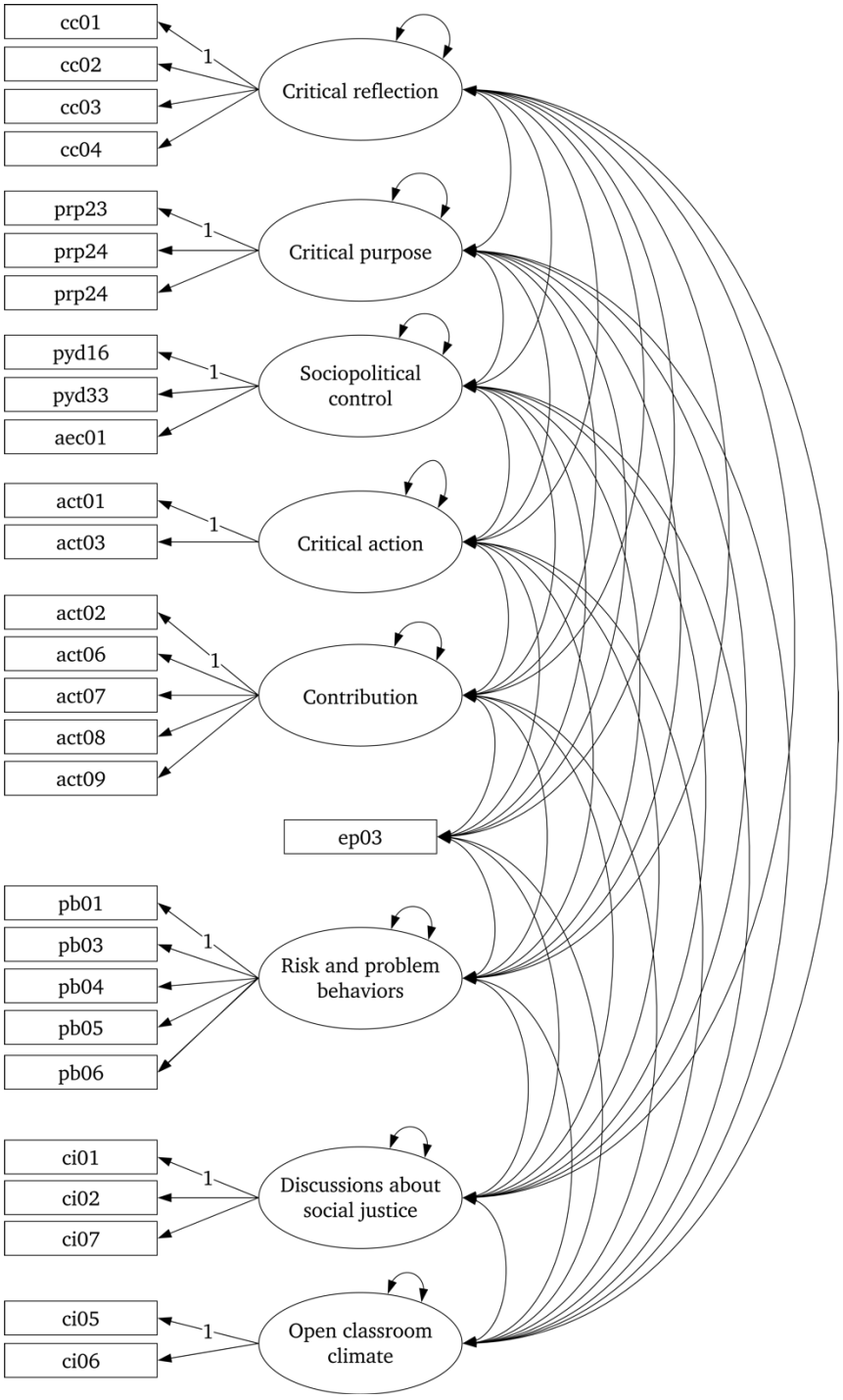


Figure 3

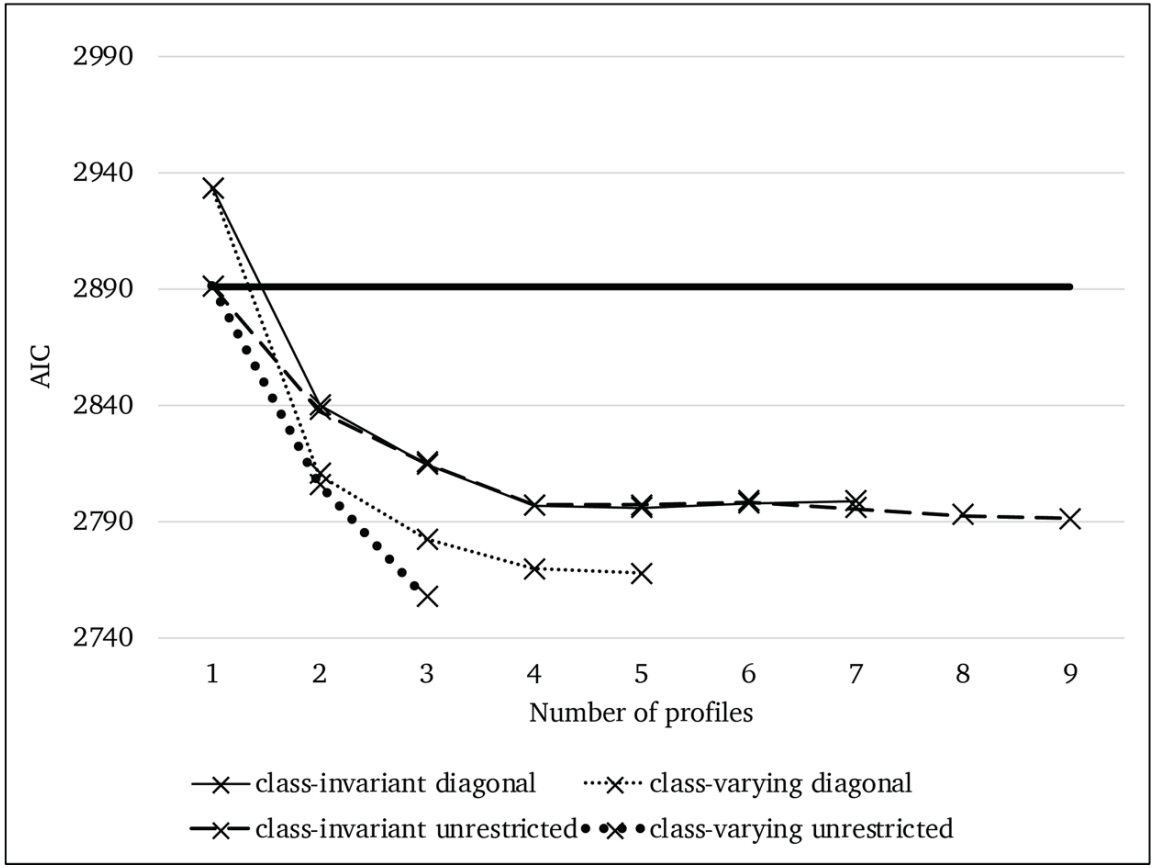
Diagram of Multifactor Confirmatory Factor Analysis Model



Note. The same model was fit at time 1 and time 2. Error terms not represented in figure

Figure 4

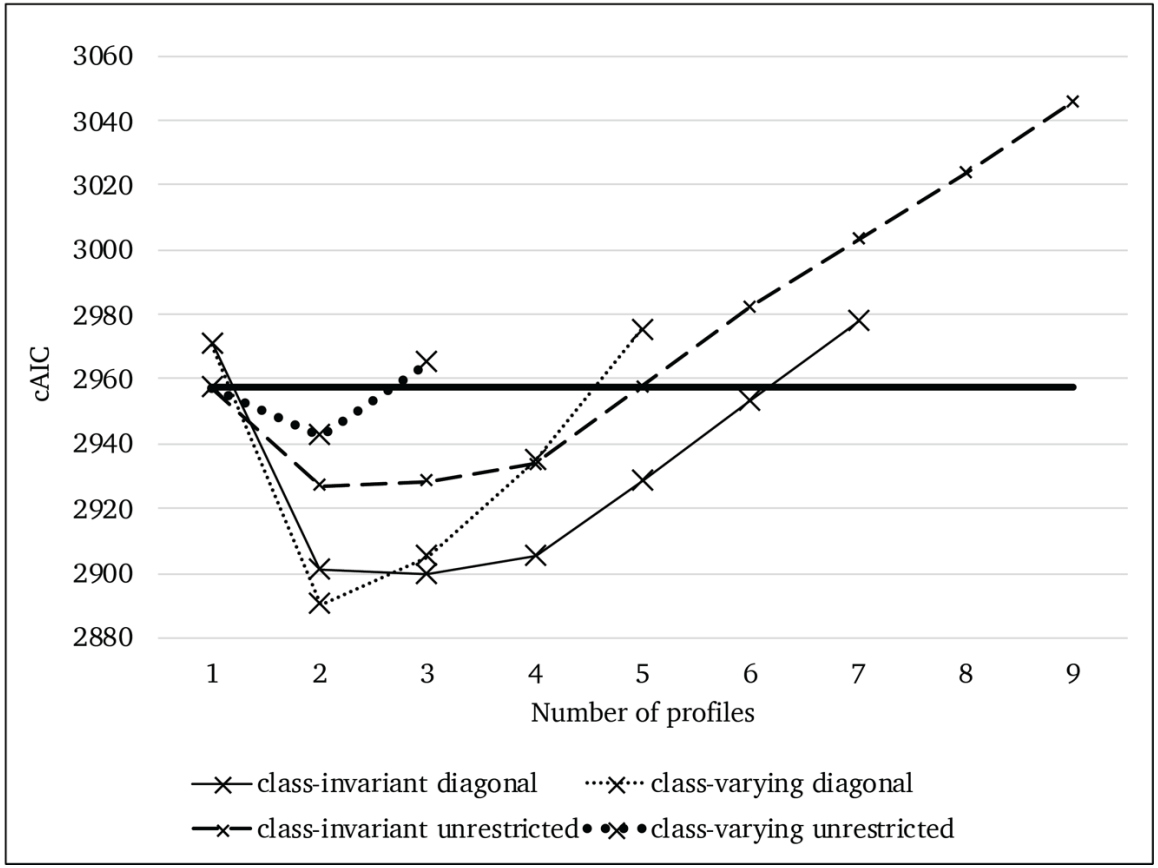
Plot of Akaike Information Criterion (AIC) Values Within Each Variance-Covariance Structure (Time 1)



Note. Bold horizontal line indicates the AIC for the "null" model, i.e. the 1 profile solution in a class-varying unrestricted specification.

Figure 5

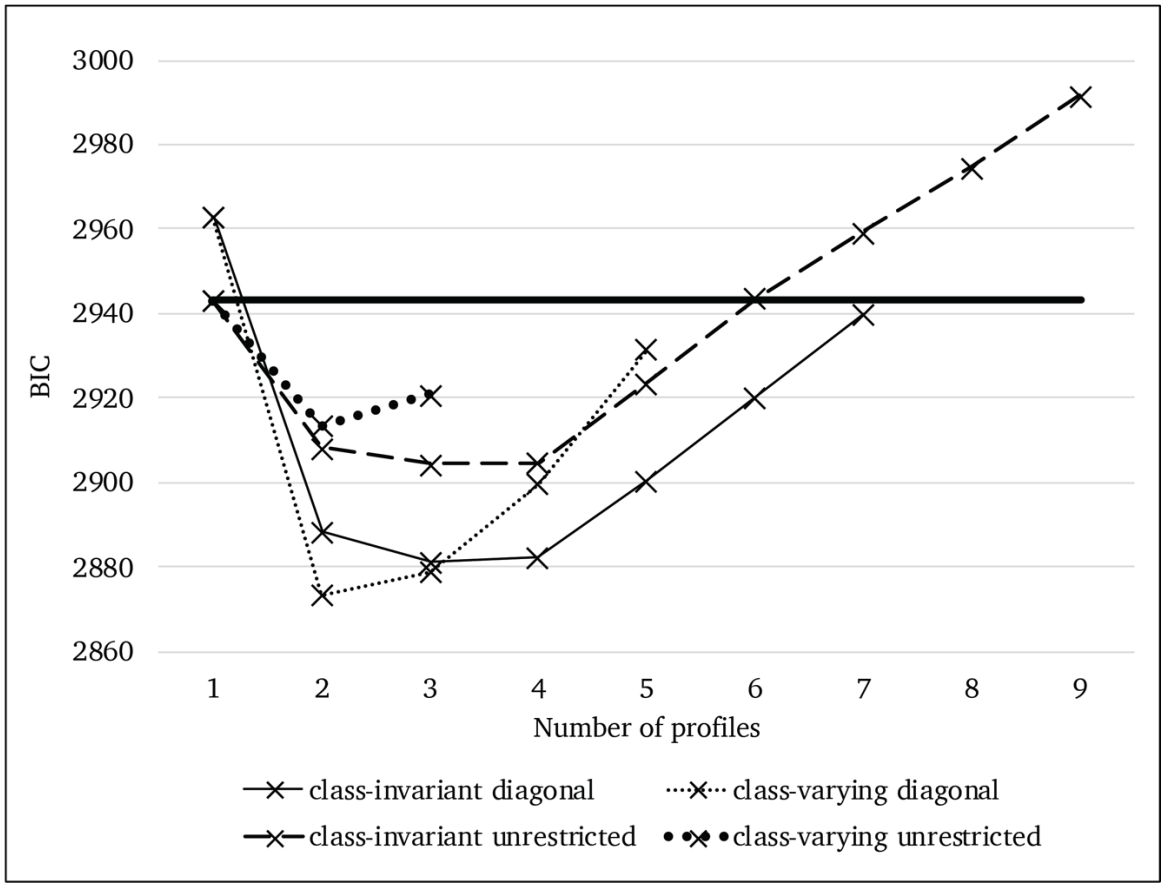
Plot of Consistent Akaike Information Criterion (cAIC) Values Within Each Variance-Covariance Structure (Time 1)



Note. Bold horizontal line indicates the cAIC for the "null" model, i.e. the 1 profile solution in a class-varying unrestricted specification.

Figure 6

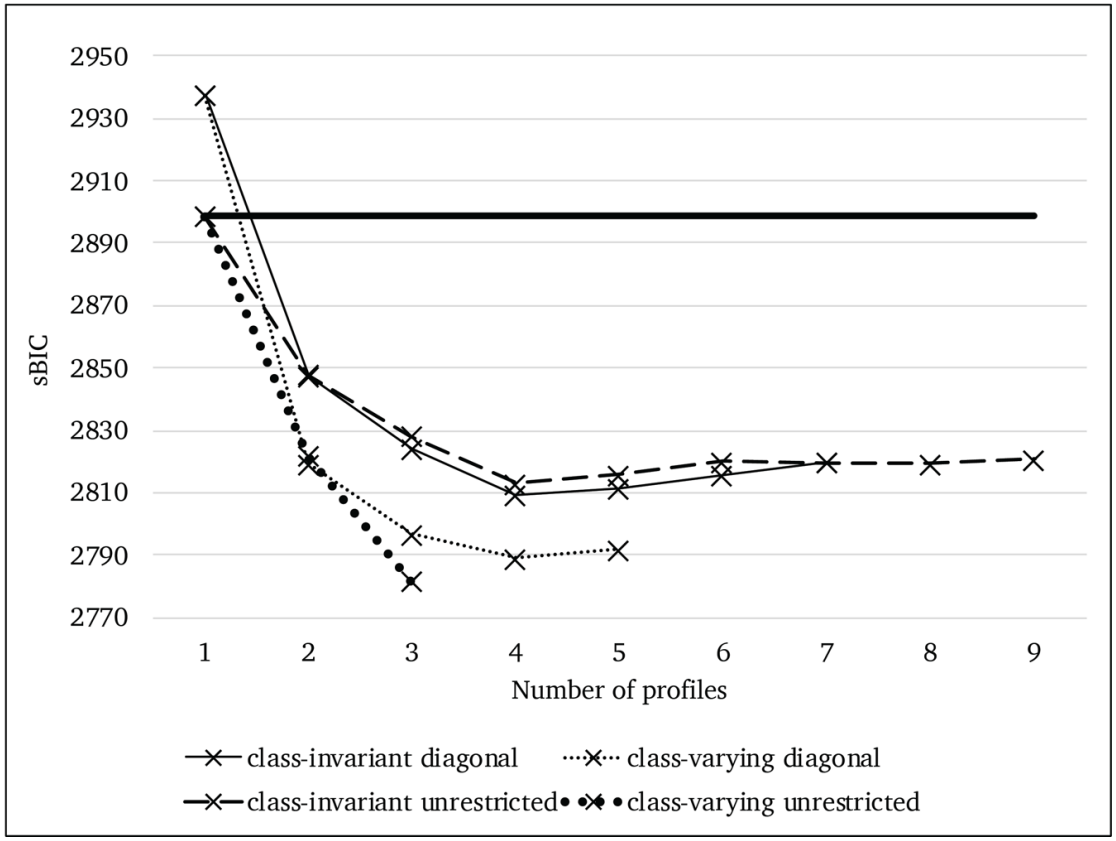
Plot of Bayesian Information Criterion (BIC) Values Within Each Variance-Covariance Structure (Time 1)



Note. Bold horizontal line indicates the BIC for the "null" model, i.e. the 1 profile solution in a class-varying unrestricted specification.

Figure 7

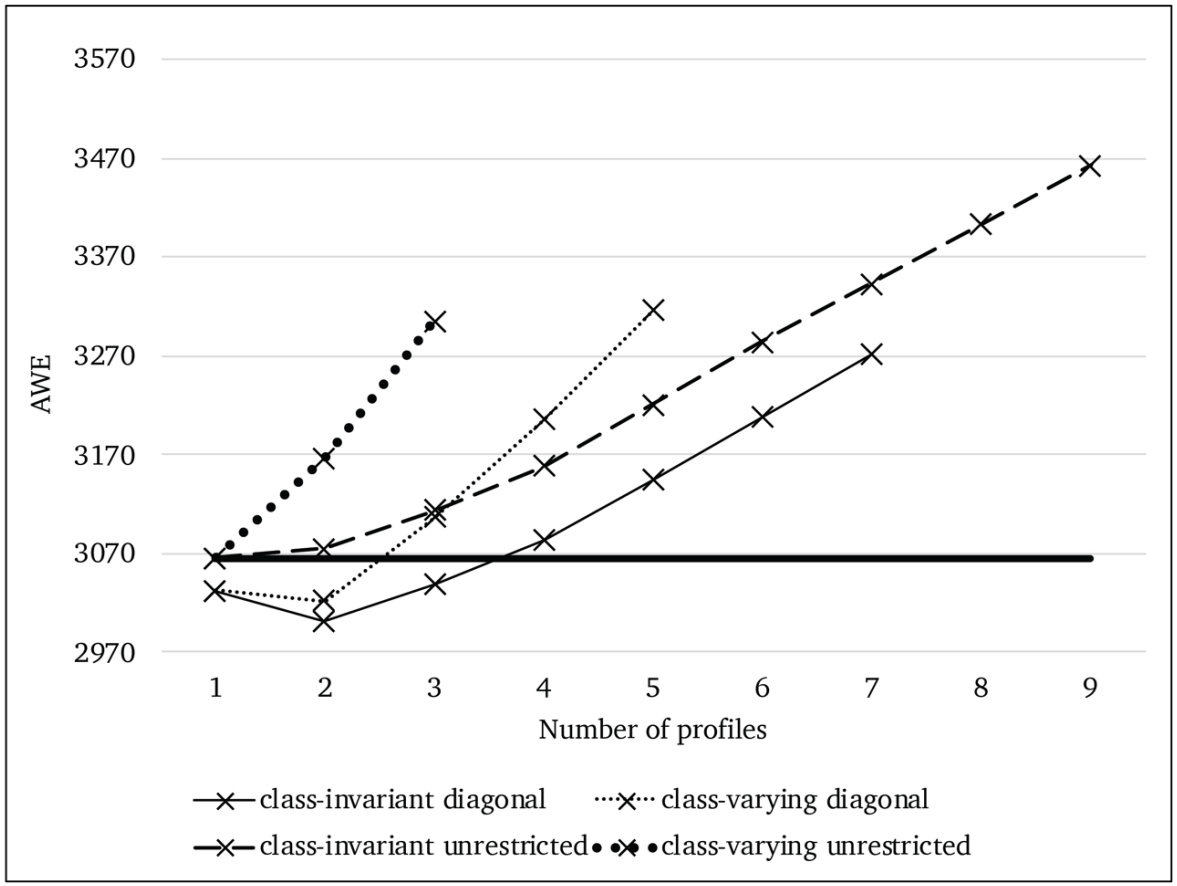
Plot of Sample Size Adjusted Bayesian Information Criterion (sBIC) Values Within Each Variance-Covariance Structure (Time 1)



Note. Bold horizontal line indicates the sBIC for the "null" model, i.e. the 1 profile solution in a class-varying unrestricted specification.

Figure 8

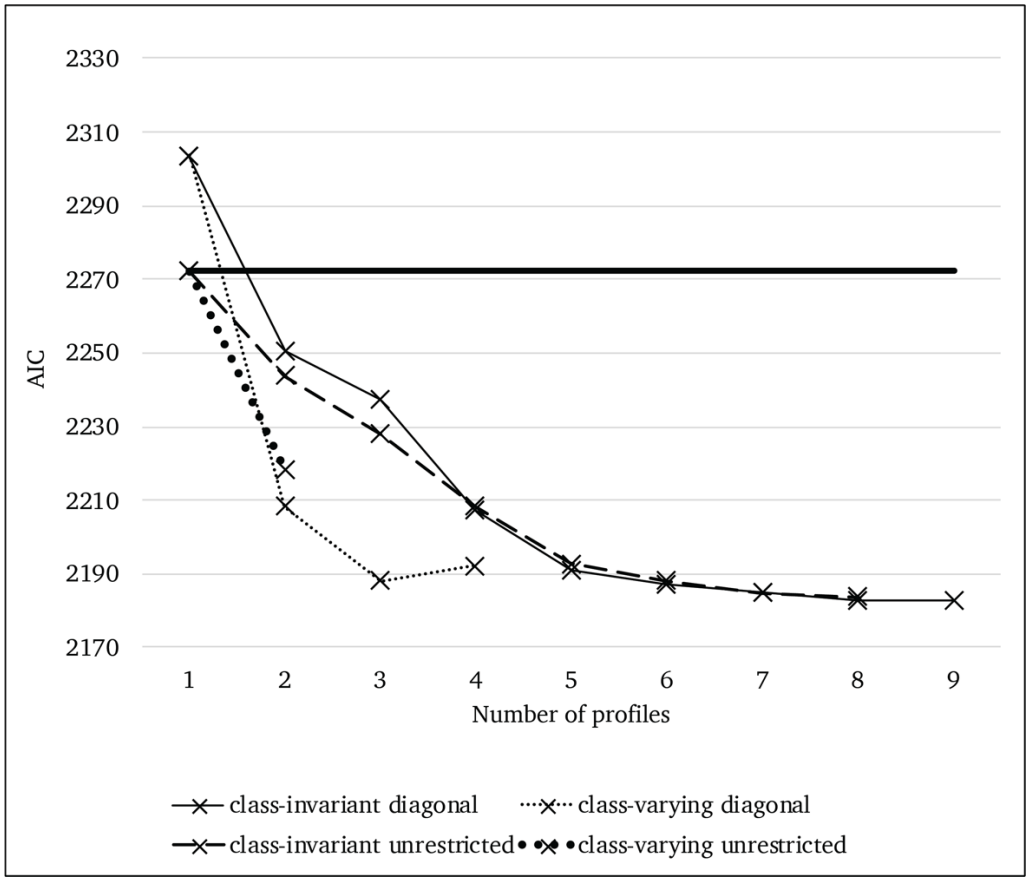
Plot of Approximate Weight of Evidence Criterion (AWE) Values Within Each Variance-Covariance Structure (Time 1)



Note. Bold horizontal line indicates the AWE for the "null" model, i.e. the 1 profile solution in a class-varying unrestricted specification.

Figure 9

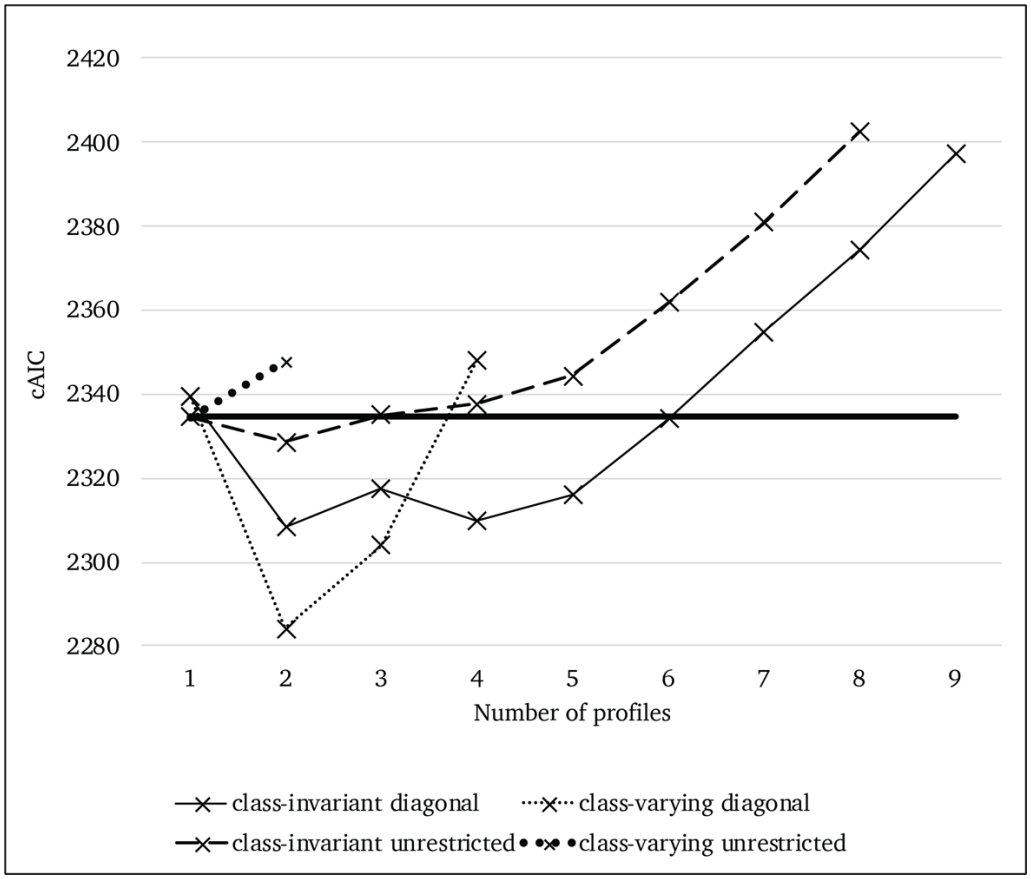
Plot of Akaike Information Criterion (AIC) Values Within Each Variance-Covariance Structure (Time 2)



Note. Bold horizontal line indicates the AIC for the "null" model, i.e. the 1 profile solution in a class-varying unrestricted specification.

Figure 10

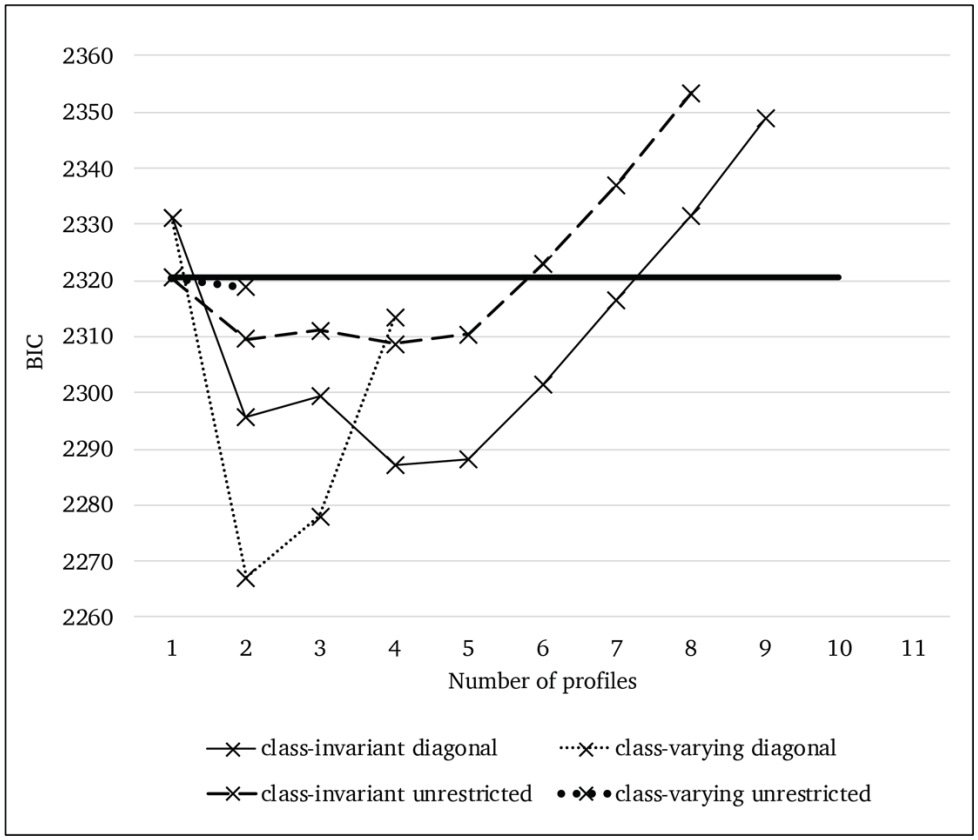
Plot of Consistent Akaike Information Criterion (cAIC) Values Within Each Variance-Covariance Structure (Time 2)



Note. Bold horizontal line indicates the cAIC for the "null" model, i.e. the 1 profile solution in a class-varying unrestricted specification.

Figure 11

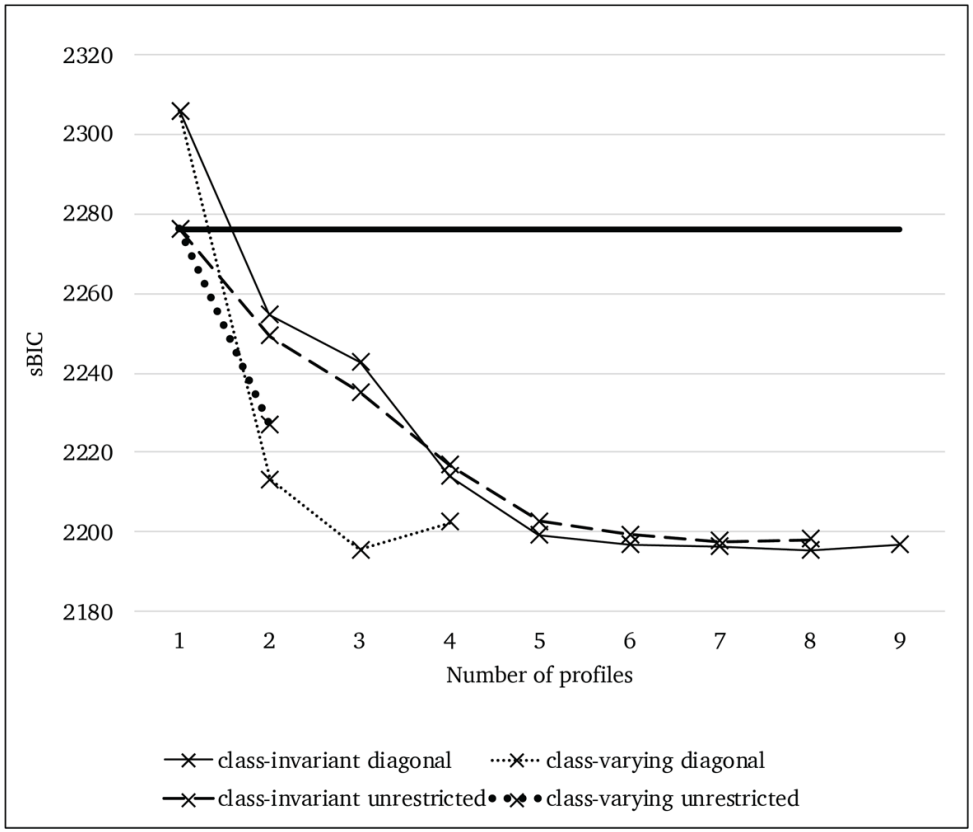
Plot of Bayesian Information Criterion (BIC) Values Within Each Variance-Covariance Structure (Time 2)



Note. Bold horizontal line indicates the BIC for the "null" model, i.e. the 1 profile solution in a class-varying unrestricted specification.

Figure 12

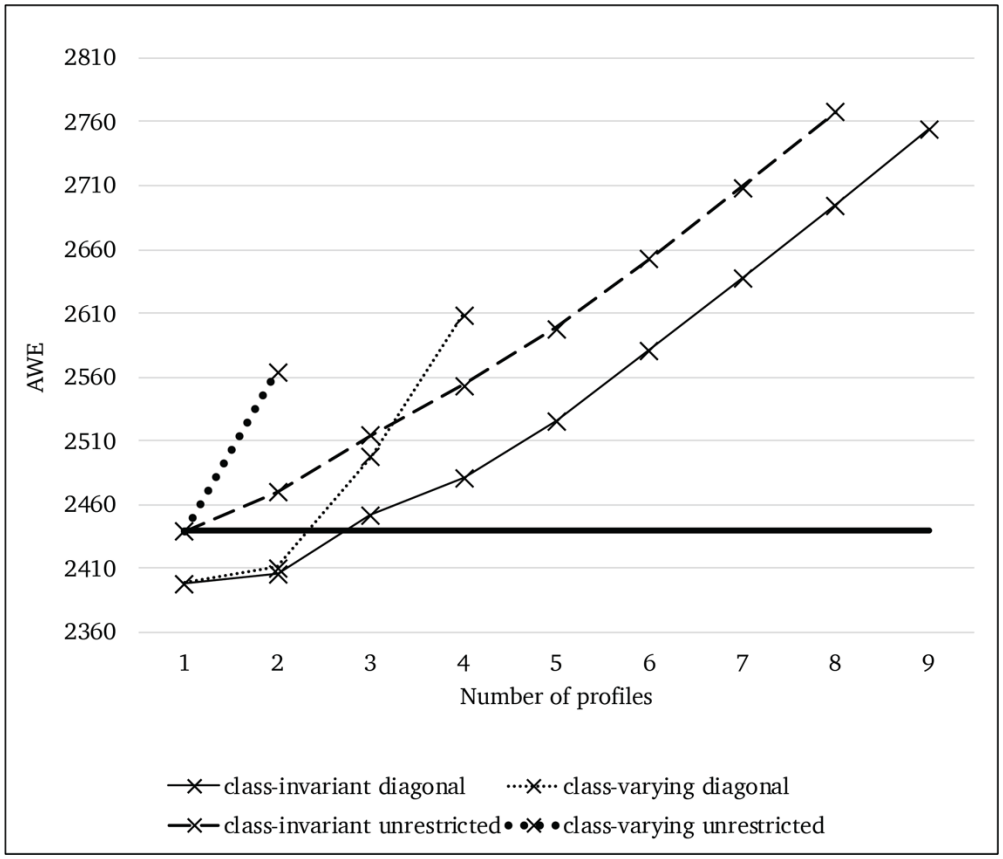
Plot of Sample Size Adjusted Bayesian Information Criterion (sBIC) Values Within Each Variance-Covariance Structure (Time 2)



Note. Bold horizontal line indicates the sBIC for the "null" model, i.e. the 1 profile solution in a class-varying unrestricted specification.

Figure 13

Plot of Approximate Weight of Evidence Criterion (AWE) Values Within Each Variance-Covariance Structure (Time 2)



Note. Bold horizontal line indicates the AWE for the "null" model, i.e. the 1 profile solution in a class-varying unrestricted specification.

Figure 14

Average Scores on Each Indicator For Each Profile in the Latent Profile Solution for Time 1 (Scores Were Converted to z-Scores)

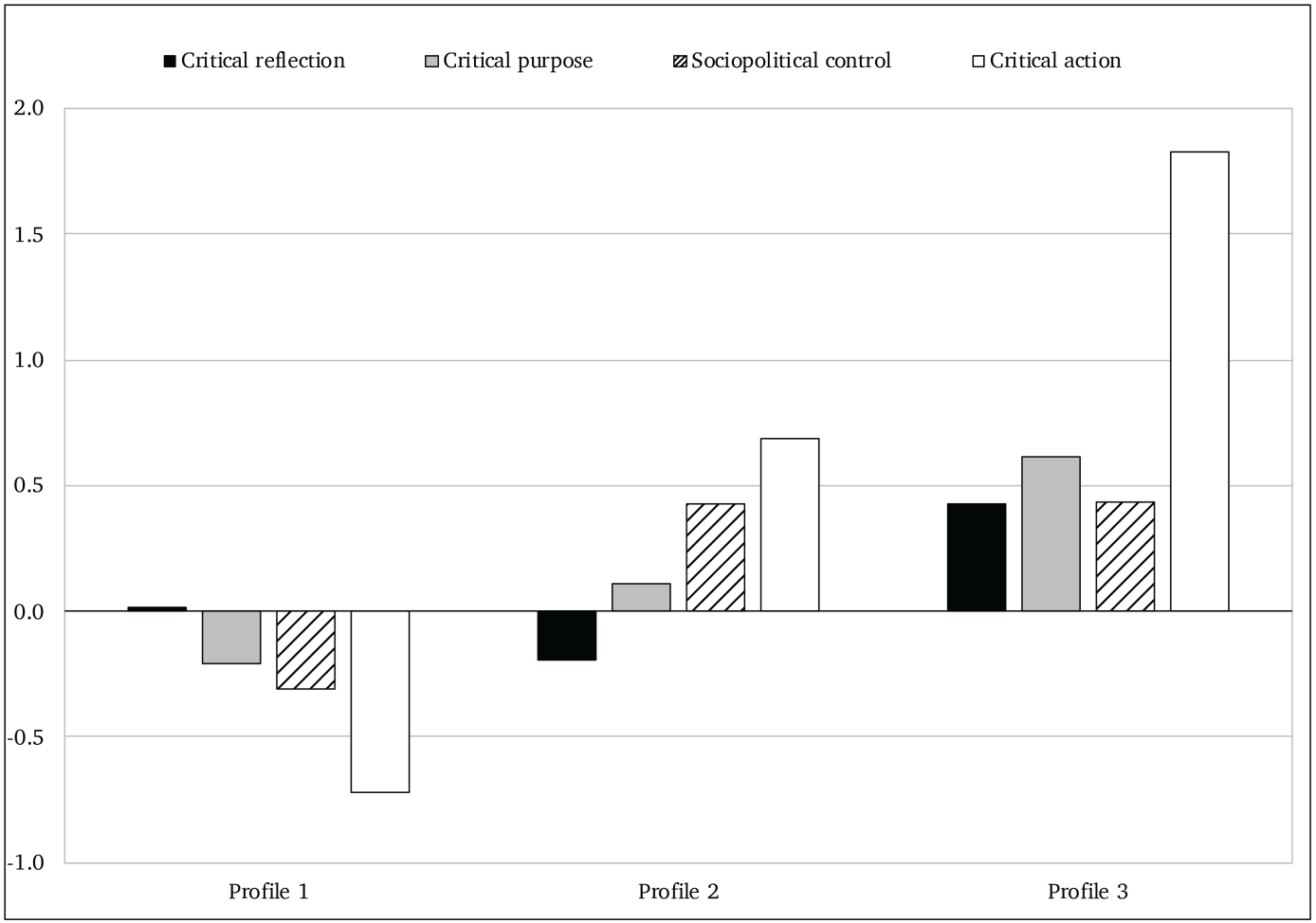


Figure 15

Average Scores on Each Indicator For Each Profile in the Latent Profile Solution for Time 2 (Scores Were Converted to z-Scores)

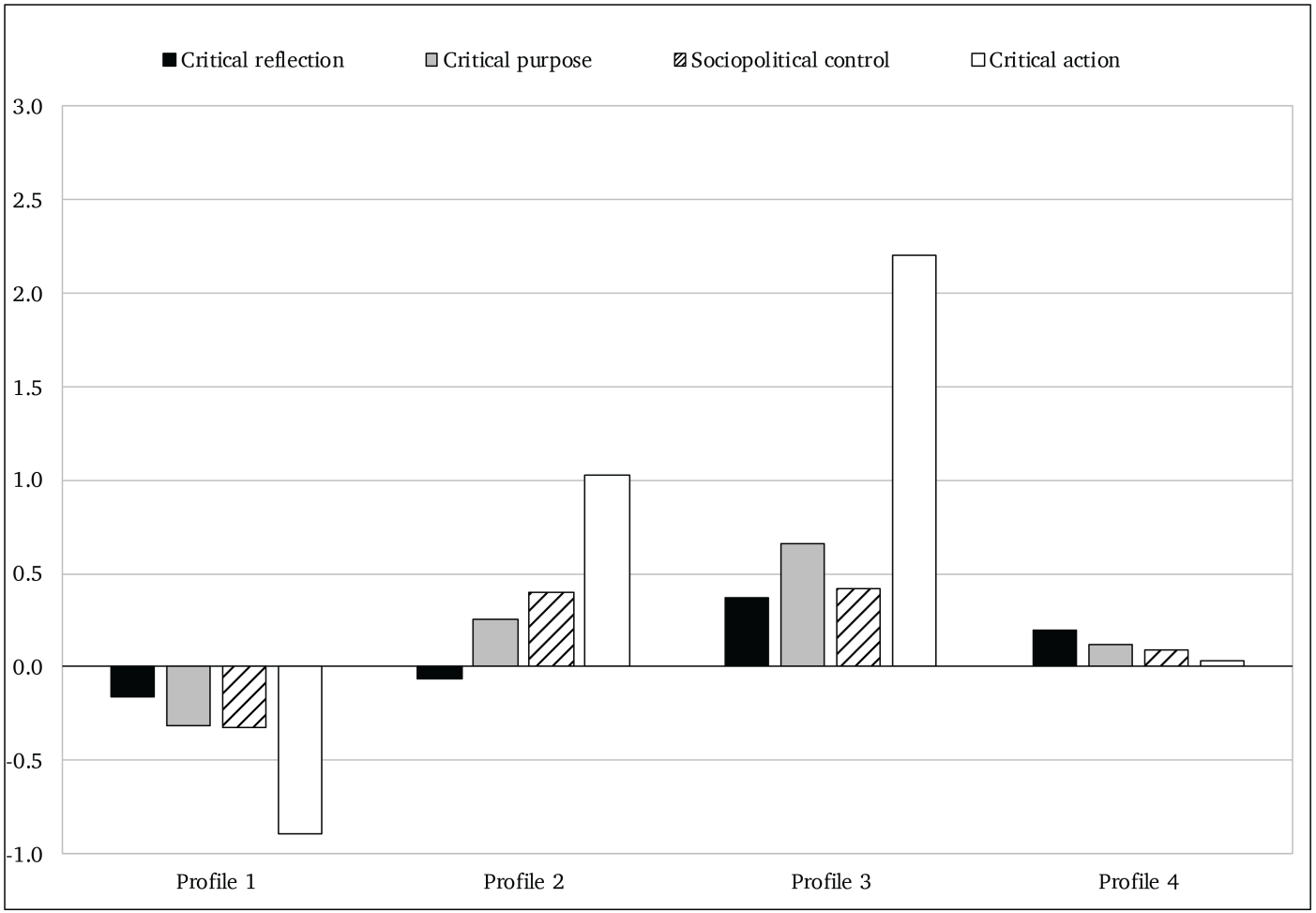
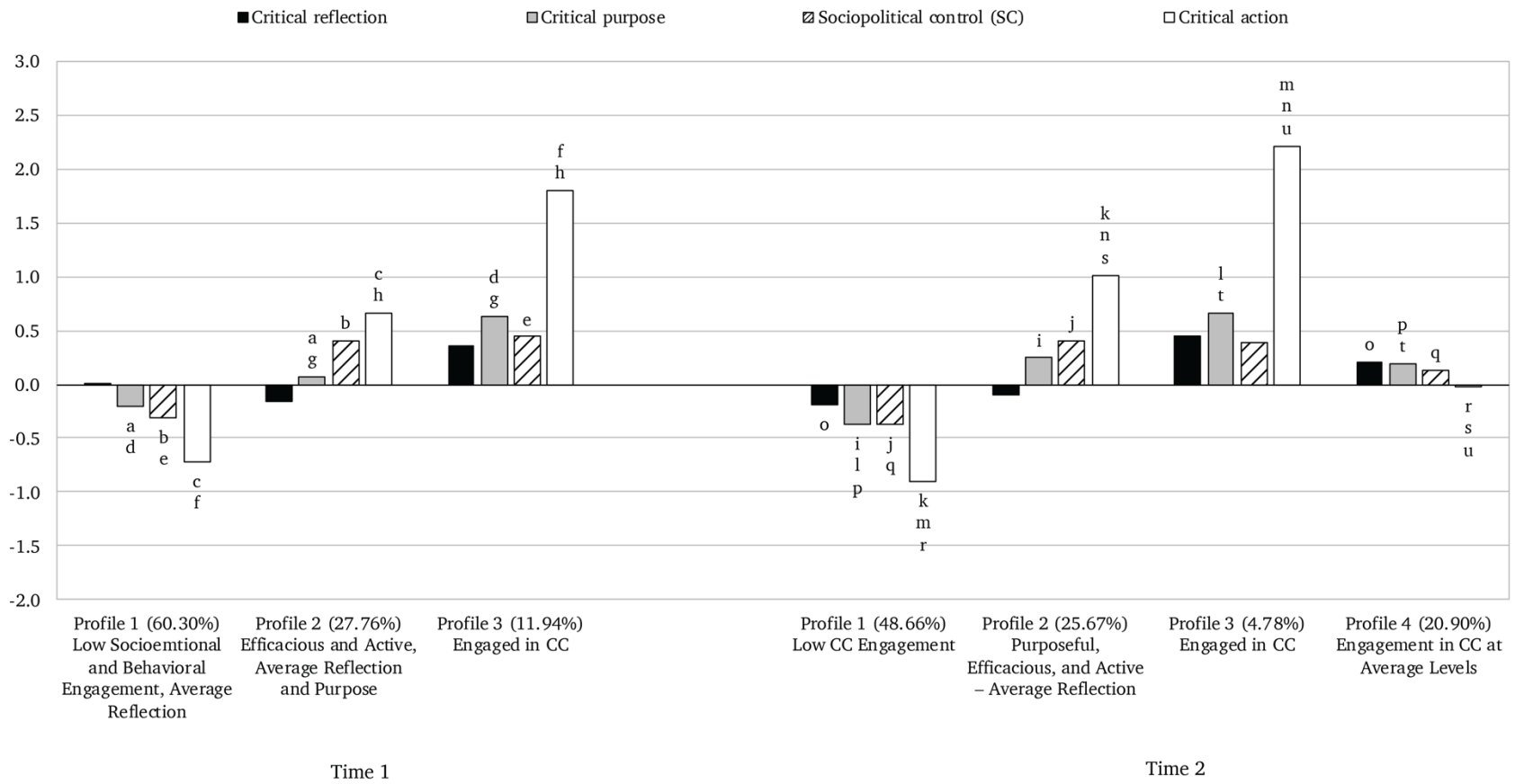


Figure 16

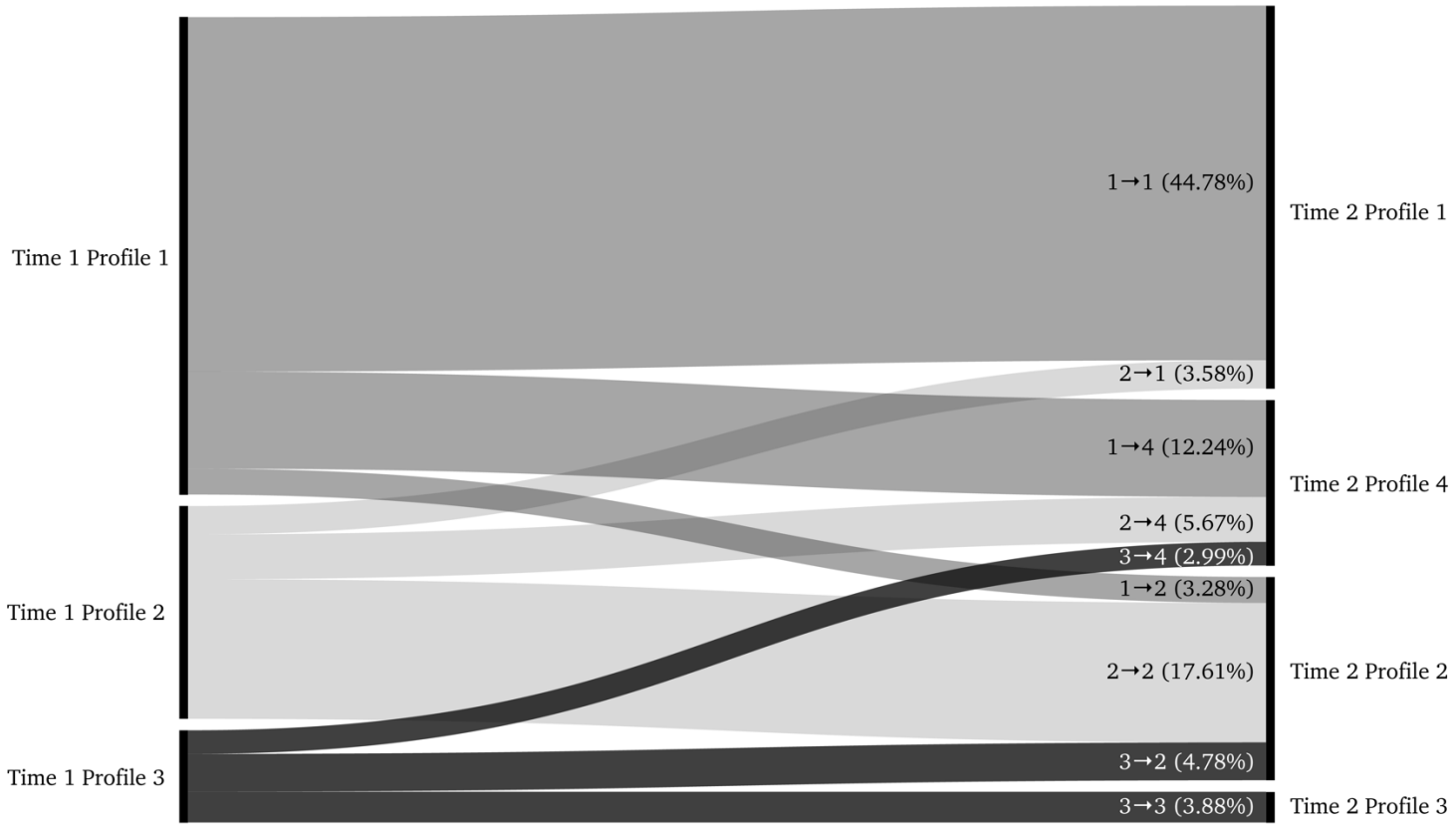
Average Scores on Each Indicator For Each Profile in the Latent Profile Transition Solution (Scores Were Converted to z-Scores)



Note. Percentages in parentheses represent the proportion of participants from the total number of participants at each time point that were assigned to that profile via modal assignment. Pairs of letters indicate significant differences ($p < .05$) in average scores on each indicator, with Holm-Bonferroni correction for multiple tests.

Figure 17

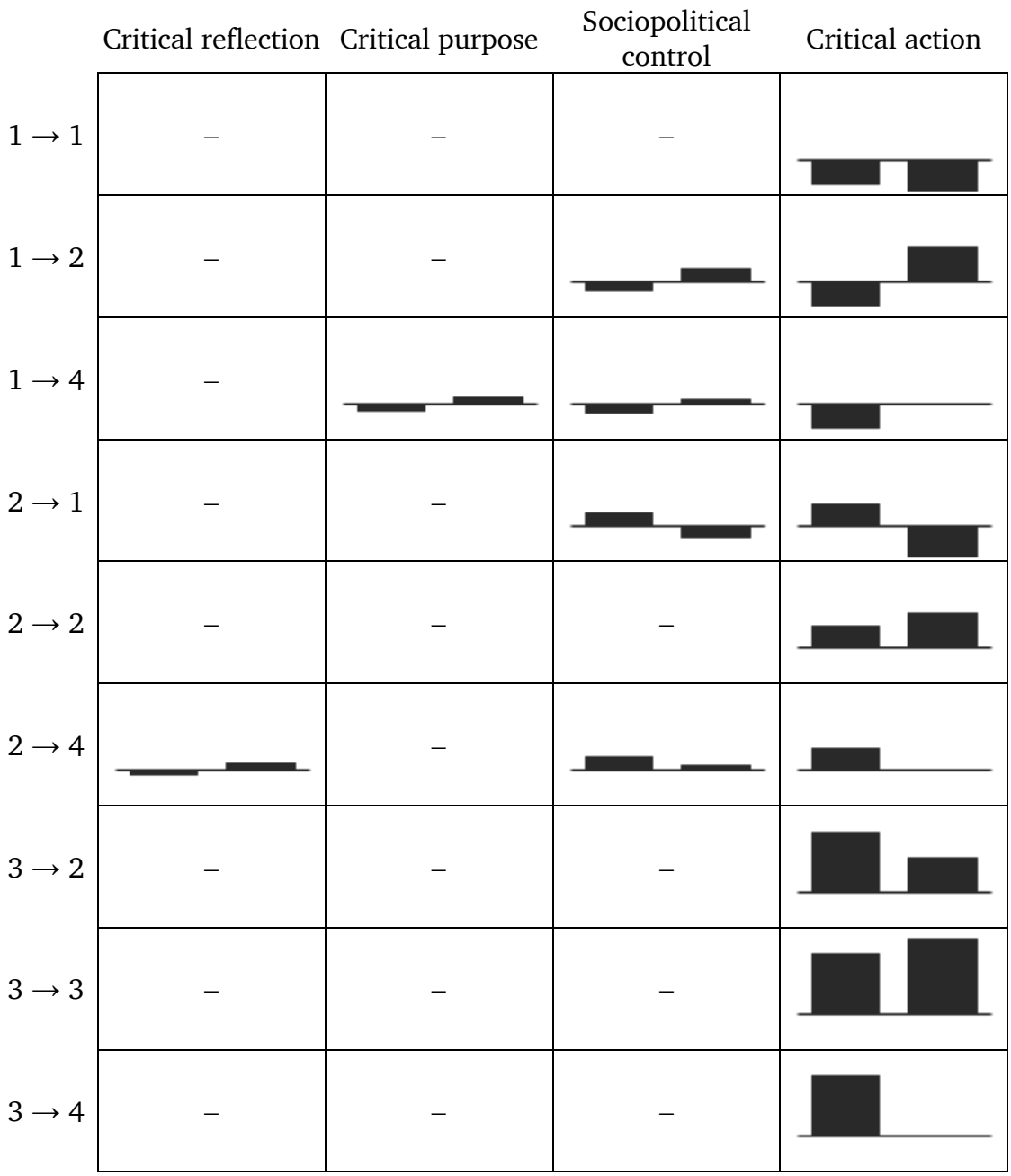
Sankey Diagram Showing Proportions of Participants Transitioning From Profiles at Time 1 to Profiles at Time 2



Note. For each transition labeled A→B, the percentage in parentheses represents the proportion of the entire Time 1 sample that was modally classified into this transition. The Sankey diagram omits three transitions that had less than 1% of the Time 1 proportion classified into it.

Figure 18

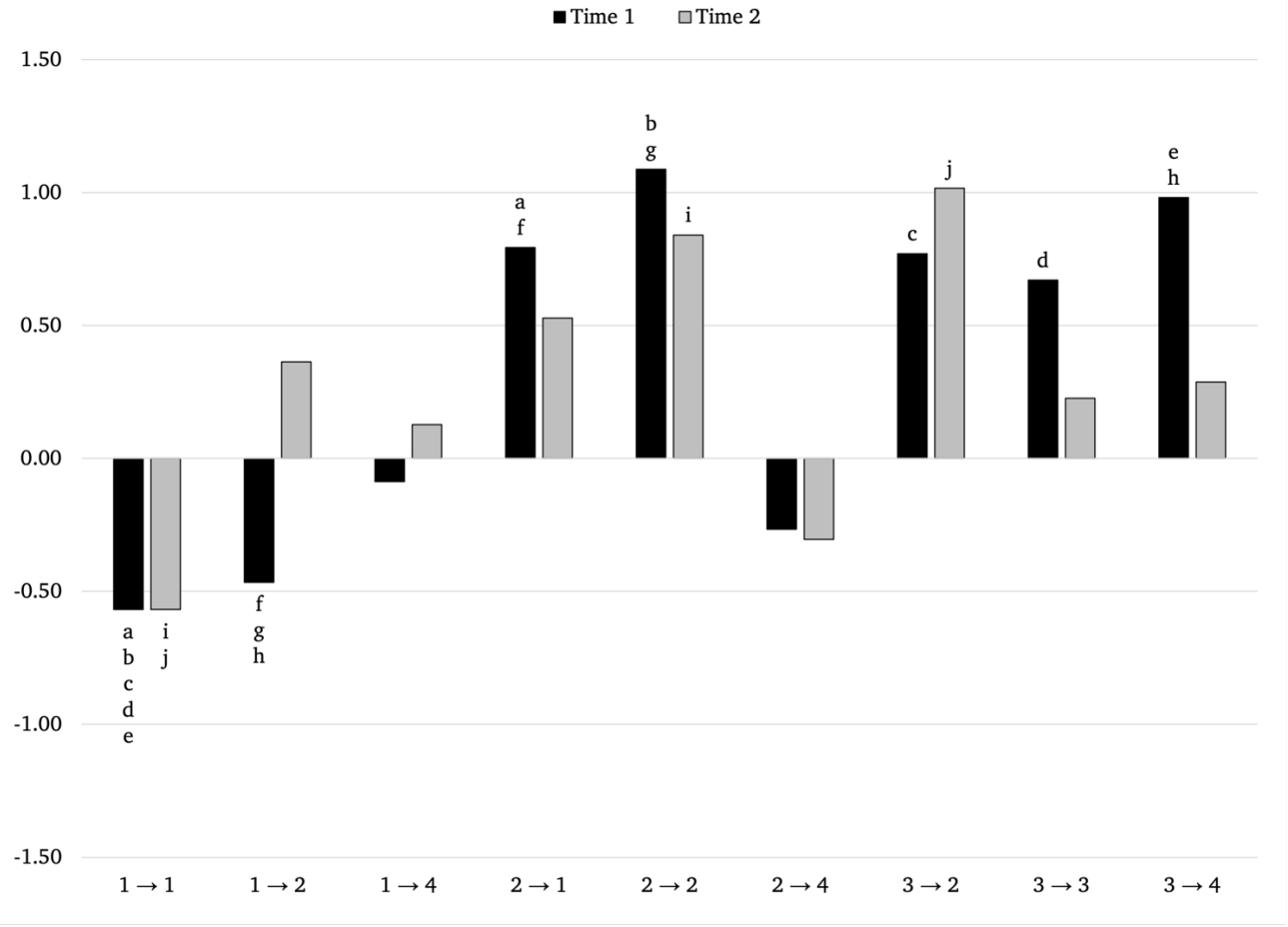
Statistically Significant Changes in Indicators Over a Transition Depicted as Column Sparkline Charts



Note. Dash denotes the indicator did not change by a statistically significant amount over the transition. Column sparklines represent increases or decreases in the indicator, with the horizontal axis representing the sample mean for the indicator.

Figure 19

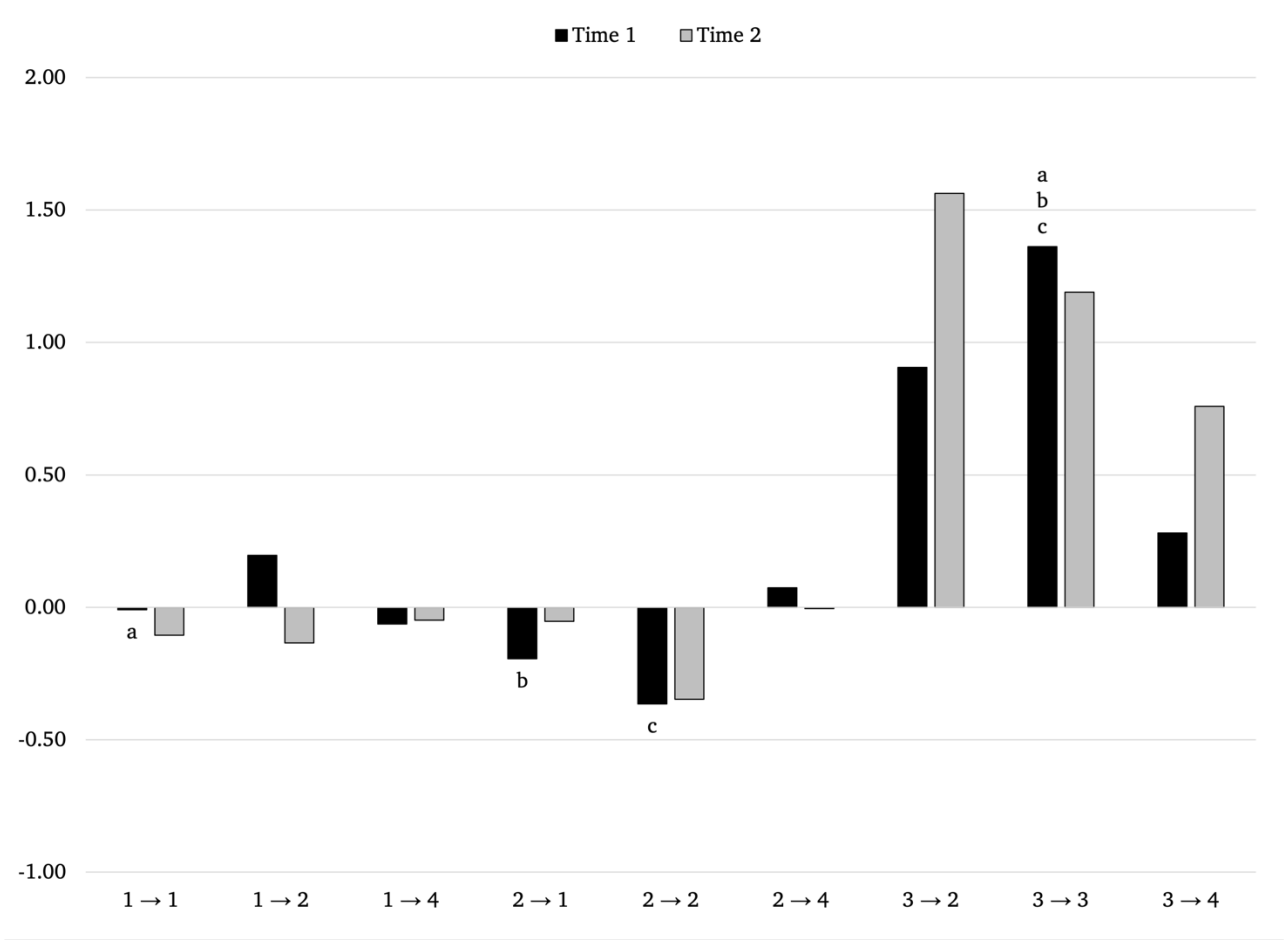
Average Levels of Contribution Associated with Each Transition as z-Scores



Note. Pairs of letters indicate significant differences in average levels of contribution ($p < .05$). A Holm-Bonferroni correction was applied to raw p-values to account for performing multiple tests.

Figure 20

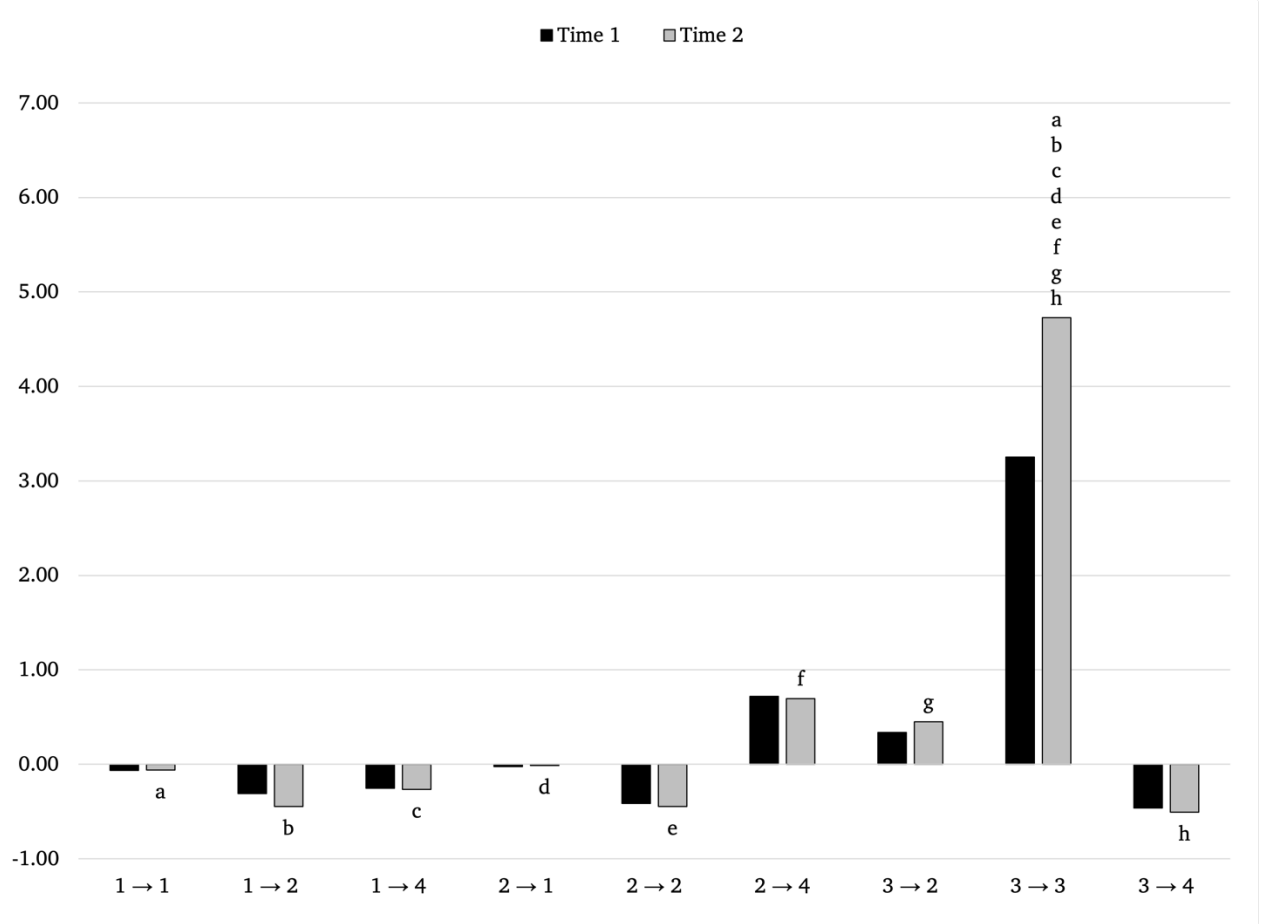
Average Levels of Emotional Problems Associated with Each Transition as z-Scores



Note. Pairs of letters indicate significant differences in average levels of contribution ($p < .05$). A Holm-Bonferroni correction was applied to raw p-values to account for performing multiple tests.

Figure 21

Average Levels of Risk and Problem Behaviors Associated with Each Transition as z-Scores



Note. Pairs of letters indicate significant differences in average levels of contribution ($p < .05$). A Holm-Bonferroni correction was applied to raw p-values to account for performing multiple tests.

Appendix

Survey Items

1. Critical reflection (cc01, cc02, cc03, cc04)

Here are some questions about the way things might be in the United States. The questions are only about whether you think the statements are <u>true</u>. *You can think some things are true even if you don't like them.*	**Almost Never True**	**Usually Not True**	**Sometimes True**	**Usually True**	**Almost Always True**	**I don't know/I'm not sure**
In the U.S., certain racial or ethnic groups have fewer chances to get a good high school education.	○	○	○	○	○	○
In the U.S., poor children have fewer chances to get a good high school education.	○	○	○	○	○	○
In the U.S., women have fewer chances to get good jobs.	○	○	○	○	○	○
In the U.S., it is harder for people of certain racial or ethnic groups to get ahead because they face discrimination.	○	○	○	○	○	○

2. Sociopolitical control (pyd16, pyd33, aec01)

How much are the following statements like you?	**Not at all like me**	**A little like me**	**Kind of like me**	**A lot like me**	**Just like me**
I feel like an important member of my local community.	○	○	○	○	○
Adults in my town or city listen to what I have to say.	○	○	○	○	○

Please choose how much you agree or disagree with each statement. You can mark "I don't know/I'm not sure" if you have not thought about that topic.	**Strongly Disagree**	**Disagree**	**Neutral (Don't have a strong opinion)**	**Agree**	**Strongly Agree**	**I don't know/I'm not sure**
I believe I can make a difference in my community.	○	○	○	○	○	○

3. Critical purpose (prp23, prp24, prp25)

People may have different types of goals for their lives. Below is a list of goals. How important is each goal to you?	**Not Important**	**Sort of Important**	**Important**	**Very Important**	**Extremely Important**
Fight for equality, fairness, and justice	○	○	○	○	○
Work to fight social and economic inequality	○	○	○	○	○
Do something about racism or other forms of discrimination	○	○	○	○	○

4. Critical action (act01, act03)

Here is a list of different types of activities people can get involved in. Please tell us how much you did each kind of activity over the <u>past 12 months</u>.	**Never**	**Rarely (1 or 2 times)**	**Sometimes (every few months)**	**Often (a few times a month)**	**All the time (at least once a week)**
Political activities are things like voting for or supporting a leader, candidate, or issue you believe in. These activities could be in your school, your city, or your state.	○	○	○	○	○
Social activism includes things like going to a demonstration about an issue you care about, trying to get others to recycle, or sharing your opinions or beliefs through messages on your clothing or buttons.	○	○	○	○	○

5. Contribution (act02, act06, act07, act08, act09)

Here is a list of different types of activities people can get involved in. Please tell us how much you did each kind of activity over the <u>past 12 months</u>.	**Never**	**Rarely (1 or 2 times)**	**Sometimes (every few months)**	**Often (a few times a month)**	**All the time (at least once a week)**
Community service activities are things like helping organize a neighborhood or community event, volunteering with an organization to do things like tutor younger children or help out an animal shelter, or doing things to help improve your neighborhood.	○	○	○	○	○
Cultural activities are things like going to meetings about your culture as part of being in a club or organization, or learning a language from your culture.	○	○	○	○	○
Organized sports or other physical activities are things like being on a sports team, or going to sports lessons or exercise classes.	○	○	○	○	○
Organized arts-based activities are things like theater or music group, painting or other art lessons, or band.	○	○	○	○	○
Academic clubs are things like math club, mock trial, or debate team.	○	○	○	○	○

6. Emotional problems (ep03)

Below are some statements that may or may not describe you. How much are the following statements like you?	**Not at all like me**	**A little like me**	**Kind of like me**	**A lot like me**	**Just like me**
I am often unhappy, depressed, or tearful.	○	○	○	○	○

7. Risk and problem behaviors (pb01, pb03, pb04, pb05)

In the <u>past 12 months</u>, how many times have you…	**Never**	**1 time**	**2 times**	**3-4 times**	**5 or more times**
Stolen something from a store?	○	○	○	○	○
Hit or beat someone up?	○	○	○	○	○
Damaged property (for example, breaking windows, scratching a car, putting paint or graffiti on walls)?	○	○	○	○	○
Carried a gun, knife, or something else as a weapon to hurt another person?	○	○	○	○	○

8. Classroom discussions about social justice (ci01, ci02)

Please answer the following questions about classes at your school. How often do the following things happen?	**Never**	**Rarely**	**Sometimes**	**Most of the time**	**Always**
In my classes, we learn about people and groups who work to make society better.	○	○	○	○	○
In my classes, we learn about problems in our society and what causes them.	○	○	○	○	○

In your school, do you discuss or hear discussions about groups of people who are treated unfairly because of their characteristics.

○ Never ○ Rarely ○ Sometimes ○ Most of the time ○ Always ○ I don't know

9. Open classroom climate (ci05, ci06)

Please answer the following questions about classes at your school. How often do the following things happen?	**Never**	**Rarely**	**Sometimes**	**Most of the time**	**Always**
Adults encourage students to make up their own minds about issues.	○	○	○	○	○
Students can give their opinions in class, even when their opinions are different from other people's opinions.	○	○	○	○	○