

Mental Health of LGBTQ+ Youth in the Education System: Applying the Agent Based Approach (ABA)

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ABSTRACT: The mental health crisis of LGBTQ+ youth is a real problem with a lot of contributing factors. A meta-analysis conducted in 2011 showed that the mental health of LGBTQ+ youth and risk of depression or suicidality is far higher than their non-LGBTQ+ peers by a rate of 2.92. Further more, CDC data shows that regardless of sex, LGB adolescents are at significantly higher risk of suicide. This paper uses a Systems Thinking-focused Agent Based Approach (ABA) to discuss and analyze the Complex Adaptive System (CAS) of the mental health of LGBTQ+ youth in the education system. It also analyzes these systems that have an adverse effect on LGBTQ+ youth in a time where newly proposed Title IX amendments have the potential to grant Title IX protections to sexual orientation and gender identity within the education system.

Keywords: Agent Based Approach (ABA) | Agent Based Modeling (ABM) | Complex Adaptive System (CAS) | DSRP Analysis | Title IX

Introduction

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THIS PAPER uses a systems lens to examine and explain the Department of Education's proposed new Title IX regulations pertaining to sexual orientation and gender identity in education environments. The new regulations would include protecting both students and faculty from any and all forms of sex and gender discrimination, and require schools to respond quickly and effectively to complaints of sex and gender-based harassment.

However, in terms of athletics, there will be a separate proposal later by policy makers. While Title IX exceptions already permit separate athletic teams based on gender, there are no current protections in place for ensuring transgender and non-conforming students can play sports aligning with their gender identity - those policy choices are determined by state and school policy currently.

Notice of Proposed Rulemaking's (NPRM) provision on De Minimis Harm relating to gender identity has already been partly addressed in Title IX relating to discrimination on the basis of sex, and although gender is not included, it is implied through context that this would also fall under the provision on De Minimis Harm. Simply put, De Minimis Harm is an indicator of the amount of harm associated with an act of discrimination, intentional or not (i.e., misgendering, bullying or discrimination on the basis of sex or gender, etc.).



In previous iterations of this paper, the DSRP analysis/map used structural predictions to reassess the relationships within the analysis that led to the introduction of new components that had not been previously included. This led to a better understanding of how certain parts of this issue are interconnected with Title IX protections, and Precedent, De Minimis Harm. Analyzing the POSIWID of a CRS report identified three main components/systems of interest to the analysis: Title IX Precedent, the Education System, and the Mental Health System.

When pondering the initial intent of analyzing the effect of these proposed Title IX amendments and their effects the scope shifted focus from a general overview of Title IX to a more narrowed focus of what is affecting the mental health of LGBTQ+ youth. The relationships between mental health and Federal and State policy, school policy, court precedent, socio-economic status, age range, and geographic region will be examined. This paper also outlines the changes made and key understandings gained from a systems analysis of the topic.

Methods

AGENT BASED APPROACH (ABA) is a fitting method for examining this system and issues. ABA is an alternative “soft” method to Agent Based Modeling (ABM) that focuses upon the individual agents within a complex adaptive system (CAS). This step based approach to thinking about a CAS that allows for the formation of recommendations to change a system to a more desired state¹.

Why an Agent Based Approach (ABA)?

ABA WAS EMPLOYED instead of ABM for a specific reason - but first, what exactly is ABM and how is it different from ABA? “So, ABM is a derivative of CAS concepts, theoretical structures, and assumptions. Where ABM differs is that it provides a methodology (usually a computer program) for creating a “run-time” model of some given CAS phenomena ... it allows you to see what happens, quickly “tweak” the rules, agents, or environment, and then run the model again to see how the system behavior will change².”

ABA is a “soft” alternative to ABM because of a major flaw of ABM. When working with ABM one must be very specific about their rules, agents, environment, etc. to have a predictive outcome. This specificity requirement makes ABM very difficult to work with, consider it a “hard” version of ABA. So, the purpose of using ABA as

¹ Mulyono, Y.O., Sukhbaatar, U., and Cabrera, D., “Hard” and “Soft” Methods in Complex Adaptive Systems (CAS): Agent Based Modeling (ABM) and the Agent Based Approach (ABA), in *Routledge Handbook of Systems Thinking*, edited by Laura Cabrera Midgley, Derek Cabrera, Routledge, vol. 20, 2021, p. 9

² 1

a “soft” alternative is to find theoretical insights of a CAS when ABM is not viable. In this case ABM proved to not be a viable tool for my analysis as ABA makes more sense when analyzing what causes poor mental health for LGBTQ+ youth on an agent based level³.

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Steps to an Agent Based Approach (ABA)

Step 1: DSRP Analysis of the System

WHEN USING ABA there are some prerequisites to utilizing the technique. The first being, an understanding of Distinctions, Systems, Relationships, Perspectives (DSRP) as a theoretical basis for an analytical tool of cognitively mapping a CAS.

Patterns	Elements	
Distinctions (<i>D</i>)	identity (<i>i</i>)	other (<i>o</i>)
Systems (<i>S</i>)	part (<i>p</i>)	whole (<i>w</i>)
Relationships (<i>R</i>)	action (<i>a</i>)	reaction (<i>r</i>)
Perspectives (<i>P</i>)	point (<i>ρ</i>)	view (<i>v</i>)

Table 1: DSRP Basic Structures

Table 1 illustrates how the basic structures of DSRP can be used as a way for one to form approximations of reality and structure those mental models of reality into a discernible and tangible structure. “The DSRP Mapping Method is a stepwise process provided as a heuristic tool for doing DSRP Theory (which is not a stepwise process but a dynamic and organic one). The DSRP Mapping Method illustrates the various things a systems thinker can do at any point in time in the analysis and synthesis of information (there are any number of structural operations that can and do occur simultaneously)⁴.” ⁴ 1

Step 2: POSIWID and CAS Analysis

THE PURPOSE OF A SYSTEM is what it does (POSIWID) and CAS analysis are also crucial prerequisites to utilizing ABA. POSIWID allows one to view the system as it is currently functioning, by identifying what the system is doing and developing a DSRP map a CAS analysis can be performed⁵.

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Step 3: Rubric and Recommendations

Agents from Agents List in step 1.4	Simple Rules for Agent	Backcheck to Step 2.2
Agent Type 1	Simple rules for Agent Type 1	If yes move on, if no fix.
Agent Type 2	Simple rules for Agent Type 2	If yes move on, if no fix.
Agent Type 3	Simple rules for Agent Type 3	If yes move on, if no fix.

Figure 1: Recommendation Rubric Structure

IT IS ALSO IMPORTANT to create a recommendation rubric that outlines principles in which your recommendations will follow before utilizing ABA. This is crucial since creating “recommendation principles” allows one to test the validity of proposed recommendations, refer to Figure 1. (i.e., Any number of recommendations can be made, but in order to be utilized effectively these recommendations must conform to your principles. If said recommendation does not meet your principles it must be rejected)⁶.

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Results

DSRP Analysis of the System

DSRP Structures	Number of Times Used
Relationships (r)	29
Relationships (One-way)	19
Relationships (Two-way)	3
Relationships (No direction)	7
Perspectives	8
Part-Whole Systems (SPW)	5
Popout Parts	3
Part Parties	1
Barbells	2

Table 2: DSRP Structures Utilized in Map

THE GENERAL STRUCTURE of DSRP Analysis is made up of three systems: Title IX Precedent, Mental Health System, and an Education System. Each of these “wholes” are made up of smaller parts with interconnecting relationships, barbells, and similar sub-part-whole systems. Waypoints and relationships allow an outside viewer to easily follow the structure of the map - there are a lot of complexities, so it could be difficult to understand what the map is trying to explain for individuals who are either not familiar with the issue of Mental Health regarding LGBTQ+ Youth, as well as those not familiar with the Plectica software.

While explaining the DSRP structure, some of the waypoints will be used as figures. First, I will break down the Education System. The Education Amendments of 1972 have been highly influential and are best known for introducing Title IX into law. As you can see the court case of *Bostock v. Clayton County* (2020) had a profound impact on the Education Amendments, hence why there is a relationship between them. Pictured below you can also see a pop-out part for Title IX Exemptions. While not pictured here, there are three non-directional relationships between Title IX Exemptions and School Level (i.e., Primary/Secondary School and College/University).

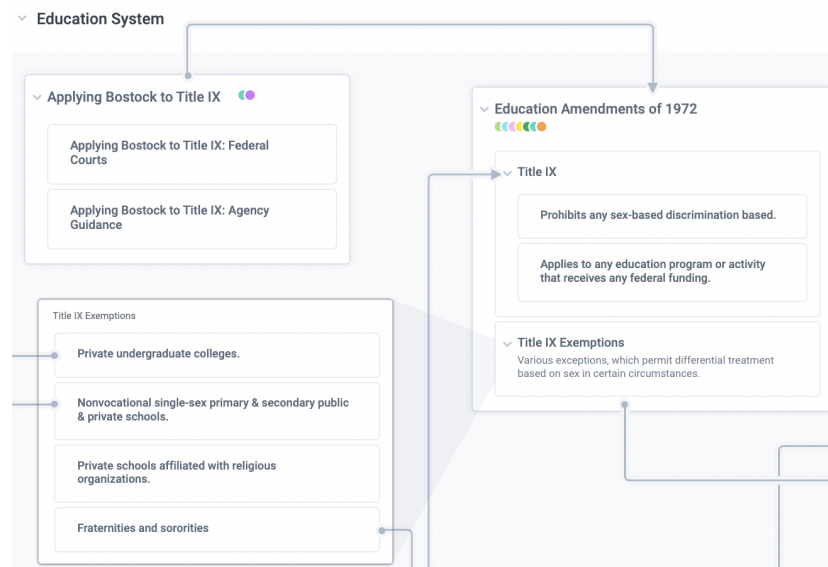


Figure 2: Education Amendment of 1972

You can also see when referring to the systems map there is a relationship between Proposed Title IX Amendments and Title IX. This is because if these amendments are passed they will directly affect Title IX and Title IX Exemptions by interacting with existing statutory and regulatory exemptions, refer to Figure 2.

In Figure 3 you can see that Title IX Discrimination is a part-whole in of itself - while Trans and Non-Conforming Students as well as Policy create the barbell structure by sharing a relationship with Title IX Discrimination. You may also notice two relationships labeled "School Policy" and "State Policy." These relationships tie the Education part-whole system to Title IX Precedent part-whole system.

The Title IX Precedent system is also tied to the Mental Health part-whole system through a relationship connection *Bostock V. Clayton County* (2020) located in a part-whole list under Set Precedent to Provision of De Minimis Harm Gender Identity.

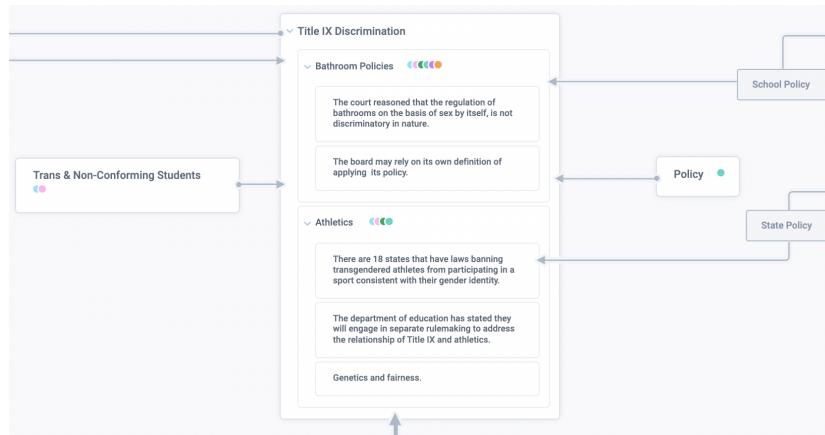


Figure 3: Title IX Discrimination

The Mental Health part-whole system has a lot of moving parts so I will only outline its structural aspects. The first structural component pictured below is on the right. This is a part-whole system of Discrimination. It shows the relationships between Sex-based harassment, Gender Identity, Sexual Orientation, and Transphobia, Homophobia, etc. Of course this part-whole also shares a direct relationship with Mental Health, refer to Figure 4.

Next, pictured below on the right is the part-whole system of Geographic Region which has a relationship with Mental Health, refer to Figure 5. The Geographic Region is made up of a part-whole list called Political Region, which is broken into two small list parts (i.e., Red States [Liberal County, Conservative County] and Blue States [Liberal County, Conservative County]). Political Region is part of a barbell jig that shows a relationship with Urban Area and Rural Area. Climate while not connected to anything within the Geographic Region is also an important relationship/measure when observing mental health. (i.e., is someone getting enough sunlight?).

The structure of the map also illustrates perspectives. For instance "On Campus Resources" has the perspective of Transgendered, Gender non-conforming, and Non-LGBTQ+ students, as they may or may not utilize the mental health resources provided by campus. The other two perspectives depicted in this map are the School Board and Faculty for "On Campus Resources". These two perspectives are also important because they administer resources and determine how they are distributed/accessed.

This is the fourth iteration of this systems thinking analysis on the mental health of LGBTQ+ youth in education conducted. Through multiple iterations a better understanding of the topic was gained as well as prolific structural predictions.

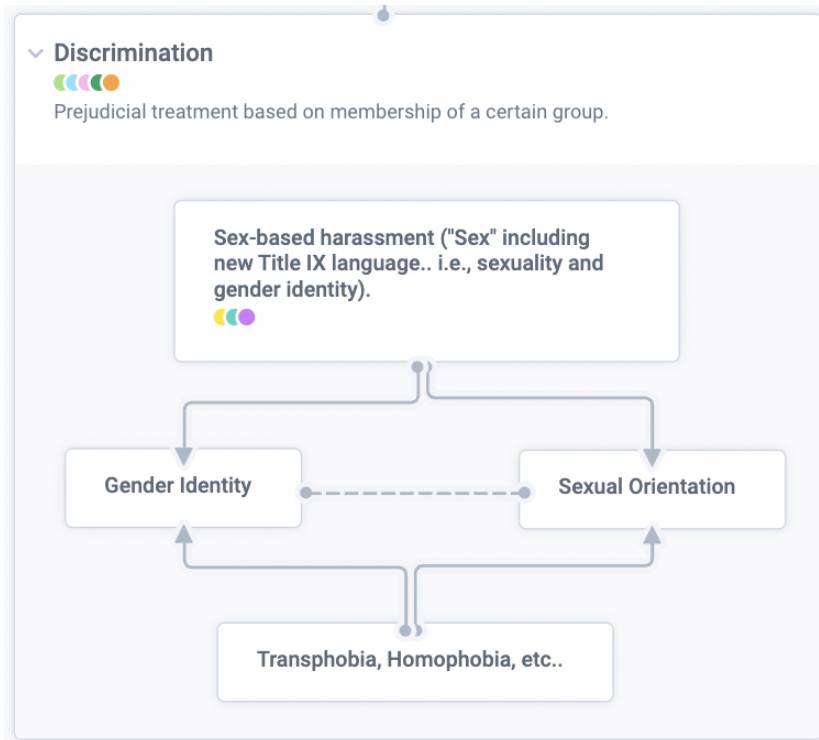


Figure 4: Discrimination

Additionally, when comparing the DSRP structure to empirical research found that the DSRP analysis coincides with generally agreed upon findings. Research from the annual review of clinical psychology found the minority stress theory can be applied to sexual and gender minorities. When applying this theory sexual minority mental health disparities can be explained and line up with existing data metrics. When keeping minority stress theory in mind the DSRP mental map shows some identified stressors that affect sexual and gender minorities' mental health⁷. Additionally, a meta-analysis from 2011 found that rates of depression and suicidality are far higher in LGBTQ+ youth, a ratio of 2.92 comparative to their non-LGBTQ+ peers⁸. Furthermore, CDC data also showed a significantly higher risk for LGBTQ+ youth. Both findings not only align with what was identified under mental health within the DSRP map in reference to high rates of poor mental health⁹, but also reaffirms some structural predictions made within the DSRP map (e.g., Title IX Discrimination, Discrimination based on gender identity or sexual orientation, Transphobia, Homophobia, De Minimis Harm, Geographic regions, Social relationships, Age range, etc.)

⁷ 2⁸ 3⁹ 4

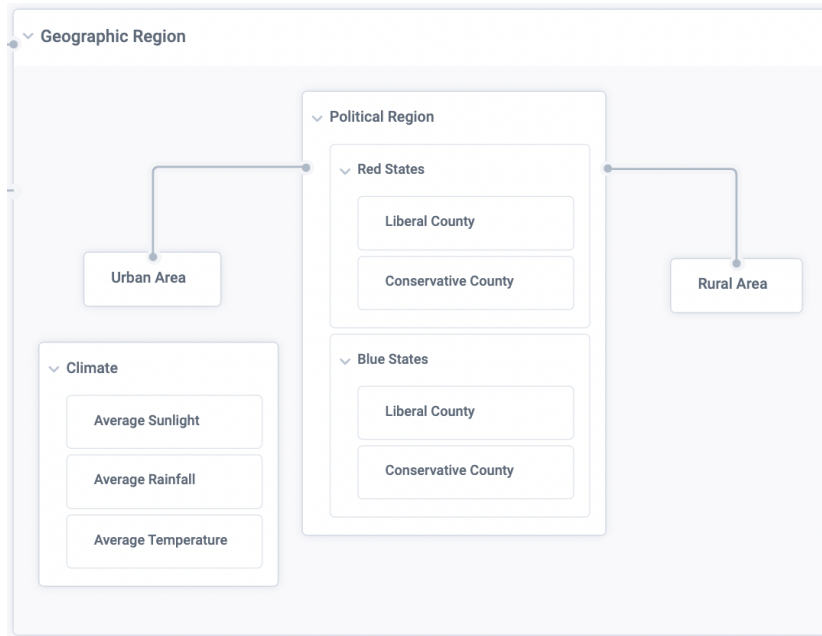


Figure 5: Geographic Region

POSIWID Analysis

IN THE POSIWID there are three identified systems: Education, Title IX Precedent, and Mental Health. These three systems were analyzed with a POSIWID lens to explain how the systems are currently functioning. The analysis also lists the future POSIWID which is an idealized version of said systems. The root differences are actions identified that could lead the current POSIWID to the future POSIWID.

CAS Analysis

AS PICTURED in Table 4, there are seven major agents within the three systems in this analysis. These agents are: the LGBTQ+ Community, Non-LGBTQ+ Students, LGBTQ+ Students, Faculty, School Board, Policy Makers, and the Supreme Court. All of these agents follow current simple rules that lead to their current system level behavior.

These simple rules that the salient agents follow all affect the systems and the agents within these systems greatly. From an ABA process the simple rules of the individual agents inform the CAS. By examining the individuals in these systems through ABA the current CAS system and its outcomes specific interventions/recommendations can be made to change these behaviors.

POSIWID ANALYSIS			
Problem Statement	Current POSIWID	Future POSIWID	Root Difference
Education	- Underfunded public schools. - Usually limited gender and sex education.	- Adequate funding. - More gender and sex education provided.	- Pro-youth and education policy from states and schools. - Understanding of how vital sex education and safety is.
Title IX Precedent	- No Title IX protections for LGBTQ+ youth in schools. - Conservative States (i.e., Texas) have active anti-trans policy.	- Protections for LGBTQ+ youth in schools. - Federally imposed anti-discrimination to halt anti-trans policy.	New Title IX amendments proposed September 23, 2022 pass.
Mental Health	- Lack of resources. - Circumstances outside of school.	- Adequate resources available for LGBTQ+ youth. - Supportive and inclusive environment.	Provide key services to improve mental health and foster a healthy environment for LGBTQ+ youth.

Table 3: POSIWID Analysis

Note: Race and religious affiliation are not an included factor in this analysis of salient agents and simple rules, simply LGBTQ+ affiliated or not.

Rubric and Recommendations

ALL RECOMMENDATIONS that are made should not violate the recommendation rubric's rules described below. There are four recommendation rules and five specific interventions/recommendations for these systems. All the special interventions/recommendations below abide by the rules laid out within the rubric.

Discussion

THE MOST CRITICAL PART of understanding the results of mental health on LGBTQ+ youth when using an ABA process is that many factors lead to the deterioration of mental health - many of which are not even directly connected to mental health yet influence factors that do share an identified connection. The DSRP Analysis section below will outline a few of these factors and also briefly discuss how these factors connect to both mental health and minority stress theory in the context of sexual orientation and gender identity.

List of Salient Agents	Current Simple Rules	Current System Level Behavior
LGBTQ+ Community	Foster a sense of community for all LGBTQ+ people.	Create safe spaces for LGBTQ+ people.
Non-LGBTQ+ Students	Attend school and socialize with peers.	Either allies, or perpetuate biases, micro-aggressions, or discrimination (either purposefully or not) through socialization.
LGBTQ+ Students (i.e., gay, lesbian, bi, trans, nonbinary, etc).	Attend school, socialize with peers, possibly deal with discrimination or some form of De Minimis Harm.	Face biases, micro-aggressions, or discrimination through policy or social spaces that negatively affect their mental health. (i.e., affected by Minority Stress Theory).
Faculty	Work at the school: administer, teach, etc.	Uphold school policies.
School Board	Set standards and policy for school.	Dependent on geographic region and population makeup of the school district set inclusive or discriminatory policy.
Policy Makers	Create policy.	Dependent on geographic region and population makeup of the state set inclusive or discriminatory policy.
Supreme Court	Rule on specific cases and uphold precedent.	Uphold set precedent and interpret cases such as Bostock v. Clayton County to allow for discriminatory school policy on the basis of sex. (i.e., allowing schools to decide if they want to allow transgendered or nonconforming students to use the bathrooms of their choice).

Table 4: CAS Analysis

Recommendation Rubric
No specific recommendation should violate these rules:
1. Must be non-discriminatory.
2. Must provide an Inclusive environment.
3. Must provide adequate resource availability for students.
4. Must engage with LGBTQ+ youth outside of school.
Specific Interventions/Recommendations
Intervention/Recommendation #1: Create inclusive environments safe for LGBTQ+ youth in and out of school. Motivate students outside of the classroom through opportunity, outreach, etc.
Intervention/Recommendation #2: Provide adequate resources for mental health (i.e., Student disability services, counseling, hotlines, etc).
Intervention/Recommendation #3: Enforce new Title IX amendments if passed.
Intervention/Recommendation #4: Provide additional information resources about the LGBTQ+ community.
Intervention/Recommendation #5: Mandate some level of gender and sex education.

Table 5: Rubric and Recommendations

DSRP Analysis of the System

WHEN EXAMINING LGBTQ+ youth mental health by using the ABA process the results show that there are many factors that contribute to an individual's mental health. A few more individualistic characteristics identified are age range (e.g., 10-17 and 18-24), personal nutrition / diet (this can be influenced by school policy for lunches), and a two way relationship between social relationships and mental health, since social relationships (i.e., Classmates, Friends, Acquaintances, Partner, Family, etc.) are really quite impossible to account for on an individualistic level while examining an issue this large. So, the relationship is denoted as a question mark. There is a two-way relationship affecting both mental health and social relationships, but it can radically differ per individual.

Other relationships to mental health also permeate when using the ABA process such as geographic region which in itself is a part-whole made up of political regions, states, urban vs rural areas, and climate. These factors can affect mental health by themselves, but these features of geographic regions can also affect socioeconomic status which in turn also affects mental health. So using an ABA process one can see that geographic region can affect an individual's mental health through a number of factors.

Discrimination is also an essential factor to examine when analyzing mental health of LGBTQ+ youth through an ABA process. Sex-based harassment, transphobia, homophobia, etc. can be extremely detrimental to one's own psyche. This can also be examined through minority stress theory.

"MINORITY STRESS THEORY (MEYER 1995, 2003) HAS PROVIDED A FOUNDATIONAL FRAMEWORK FOR UNDERSTANDING SEXUAL MINORITY MENTAL HEALTH DISPARITIES (INST. MED. 2011). IT POSITS THAT SEXUAL MINORITIES EXPERIENCE DISTINCT, CHRONIC STRESSORS RELATED TO THEIR STIGMATIZED IDENTITIES, INCLUDING VICTIMIZATION, PREJUDICE, AND DISCRIMINATION. THESE DISTINCT EXPERIENCES, IN ADDITION TO EVERYDAY OR UNIVERSAL STRESSORS, DISPROPORTIONATELY COMPROMISE THE MENTAL HEALTH AND WELL-BEING OF LGBT PEOPLE¹⁰."

¹⁰ 2

This theory not only pertains to discrimination towards an individual who is a part of the LGBTQ+ community, but it also pertains to the provision on De Minimis Harm and Gender Identity set by the precedent of *Bostock v. Clayton County* 2020.

As mentioned in the excerpt written above, many factors share a relationship with mental health and affect it in some form or manner.

As discussed, minority stress theory and the added effects on one's psyche from discrimination or the provision on De Minimis Harm and Gender Identity are directly related to mental health. However, these relationships already discussed are not the only contributors. For instance, Title IX discrimination (i.e., Bathroom Policies and Athletics) also have a direct relationship with both De Minimis Harm and Gender Identity and mental health for transgendered and nonbinary students. Title IX discrimination is influenced by the Education Amendments of 1972, Title IX exemptions, *Bostock v. Clayton County*, and the U.S. Constitution's Equal Protection Clause.

POSIWID Analysis

IN EDUCATION, the current POSIWID is that public schools are underfunded and usually limited in gender and sex education. A future POSIWID would include adequate funding and more gender and sex education being provided. By addressing the root differences in the education system many issues running parallel to and contributing to LGBTQ+ mental health could start to be addressed while also holding true to the recommendation rubric.

Second, Title IX Precedent. The current POSIWID being that there are no Title IX protections for LGBTQ+ students in schools. Additionally some conservative states (e.g., Texas) currently have an active anti-trans policy in schools. A future POSIWID would allow for the same protections afforded to others through Title IX to be given to LGBTQ+ students, and also federally imposed anti-discrimination to halt anti-trans policy that is currently active. The root difference is reliant on the passing of new Title IX amendments proposed on September 23, 2022 that would extend Title IX protections to sexual orientation and gender identity.

Lastly, mental health. The current POSIWID shows a general lack of resources at schools, again this is due to inadequate funding - there are also circumstances outside of school that are harming mental health. A future POSIWID would be able to allocate adequate resources for the mental health of LGBTQ+ youth and also create a supportive and inclusive environment. The root difference being the provision of key services that would differ per school district but would work to adhere to the policy recommendation of fostering a healthy environment for LGBTQ+ youth.

CAS Analysis

THE MAIN TAKEAWAYS from the CAS analysis indicate that there are a lot of factors contributing to a declining mental health of LGBTQ+ youth, many of the factors are exacerbated by geographic region and the politics and weather that happen within these regions. Socio-economic status and other factors can also be related to geographic region depending on the individual in the ABA model, as well as other factors not included in this analysis to keep the scope of study focused. Such as: political parties and their divisions, religion and religious organizations, etc.

It is clear that the mental health of LGBTQ+ youth has continued to decline in the United States and since many factors are contributing to this mental health decline there is not a single solution. However, the newly proposed Title IX amendments would be able to create more inclusive environments for LGBTQ+ youth if passed. This is crucial as the Supreme Court has made decisions contributing to worsening mental health and discrimination of LGBTQ+ students such as *Bostock v. Clayton County* which states regulating bathrooms on the basis of sex by itself, is not discriminatory in nature - leaving school boards to decide if people can use the bathroom according to their gender. The Supreme Court has also taken a backseat on Athletics and this has instead fallen to State Policy. Currently 18 States have laws banning transgendered students from participating in sports consistent with their gender identity. Unfortunately the newly proposed Title IX amendments will not affect athletics as negotiation during the drafting process forced athletics to be cut from the amendments.

While a lot of these factors can be examined in an ABA frame of reference some of these factors are more institutionalized and will require both time and other agents such as policy makers to eventually and change them. Mental health is a complex problem, there are a lot of moving parts and a lot of relationships and dynamics at play, but steps can be taken to better mental health for LGBTQ+ youth.

Rubric and Recommendations

THE RUBRIC AND SPECIFIC interventions/recommendations for these systems have been valuable for both identifying and creating effective interventions/recommendations to improve all three of my outlined systems: Education, Title IX, and Mental Health. As long as these recommendations hold weight when held constant with the rules outlined in the rubric, certain systematic changes can start to be made at both an institutional level and individual level through an

ABA framework.

The first rule is that the recommendations must be non-discriminatory. This is meant to prevent or correct any future/current policy in schools that negatively harm the well being and mental health of LGBTQ+ youth. This rule is critical as many school and state policies have anti-transgender rules in place that are not protected by current Title IX protections. The recommendations must prevent this discrimination from continuing. This is the basis for the first recommendation (Create inclusive environments safe for LGBTQ+ youth in and out of school. Motivate students outside of the classroom through opportunity, outreach, etc.) and the third recommendation (Enforce new Title IX amendments if passed).

The second rule is that recommendations must create an inclusive environment. This is similar to the first rule. However, non-discriminatory policy is not analogous to fostering an inclusive environment. Therefore recommendations four (Provide additional information resources about the LGBTQ+ community) and five (Mandate some level of gender and sex education) are crucial to creating an inclusive environment. Recommendation four (Provide additional information resources about the LGBTQ+ community) would allow non-LGBTQ+ students and staff to be more aware of the mental effects of non-inclusive behavior and discrimination that burden many LGBTQ+ students and youth at large. While recommendation five would act as a device for educating many students both LGBTQ+ and not about gender and sex. Many school districts, especially in the South, teach abstinence in place of sex education, which is not an adequate substitute that can lead many young people to practice unsafe sex. This recommendation also allows for students to better understand the differences between sex and gender - naturally fostering a more understanding and inclusive environment for all students.

The third and fourth rule on the recommendation rubric is providing adequate resource availability for students and engaging with LGBTQ+ youth outside of school. These rules cover both recommendations two and four. Recommendation two (Provide adequate resources for mental health (i.e., Student disability services, counseling, hotlines, etc.)) allow for LGBTQ+ students to access resources they might not otherwise have used such as hotline services, telehealth, etc. This creates adequate resource availability for students and engages LGBTQ+ youth outside of school. While recommendation four (Provide additional information resources about the LGBTQ+ community) would allow for non-LGBTQ+ students as well as faculty to learn more about the LGBTQ+ community at large.

All these recommendations follow what has been laid out in the rubric rules such that they: are non-discriminatory, provide an

inclusive environment, provide adequate resource availability for students, and engage with LGBTQ+ youth outside of school. This is crucial to keep the validity of the recommendations meant to both address the issues of mental health of the LGBTQ+ youth in the education system, and to reduce the increased risks these youth face.



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