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性別平等教育對性別刻板印象、性別角色態度與性別意識的影響**

胡蓮珍^{1*}，白香菊²

摘要

醫學大學學生面臨醫療職場多元性別的情境時，須具性別意識以提供性別平等及更好的醫療保健。學思達教學法以引導學生對議題的思辨，激發學生對知識的好奇、自主學習的習慣、探索答案的內驅力、結合及運用各種學習資源。本研究運用學思達教學法探討「性別與健康照護」課程對醫學大學學生性別刻板印象、性別角色態度及性別意識覺醒的影響。以單組前後測實驗設計，50 位學生為研究對象，了解課程之成效。研究結果發現醫學大學學生的性別刻板印象在課前和課後有顯著差異($p = .027$)。以性別差異分析，性別刻板印象方面，男學生比女學生較趨向性別平等($p = .026$)；而性別角色態度方面，女學生較男學生越趨現代平權($p = .033$)。學生在質性的陳述歸納出二個主題：了解性別規範的影響和說出不平等的待遇。性別照護課程在醫學大學通識教育中具有重要的意義，可降低學生性別刻板印象，有助於學生在未來職場能感知性別和性別差異，應用於臨床實踐。

關鍵字：性別平等、學思達教育法、性別刻板印象、性別角色態度、性別意識

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Introduction

Gender equality education has become increasingly important in recent years as the world continues to strive towards creating a more equitable and just society. In the 2015 UN Member State Leaders Summit, gender equality was listed as a sustainable development goal, having been described as one of the structural determinants of health (The Global Goal, 2022; World Health Organization, 2022). This shows that gender issues are relevant to human health. Gender perspectives are integrated into the curriculum of medical universities mainly to expose students to the effects of gender health issues on healthcare to provide better health, gender equality, and healthcare and to develop practical skills for students to use in their future work (Van Der Meulen et al., 2017; Verdonk et al., 2009). Study has shown that gender inequality in healthcare can result in negative health outcomes for both boys and girls (Heinz et al., 2020). Having an understanding of gendered norms can aid in eradicating gender bias within healthcare, enabling healthcare professionals to provide more equitable care that caters to the needs of all patients, irrespective of gender (Samulowitz et al., 2018). Therefore, it is crucial to integrate gender perspectives into medical education to address these issues and improve healthcare outcomes.

In Taiwan, the Gender Equity Education Act provides a legal basis for curriculum and learning related to gender education (Yang & You, 2017). For 17 years, it has been advocating for gender equality education and is dedicated to

creating educational content, teaching methods, and evaluations that focus on gender equality and related topics. Its goal is to encourage the recognition of gender diversity, eradicate gender discrimination, and advance actual gender equality through education. (Yang & You, 2017). Gender competency is widely recognized as an essential professional competency for healthcare personnel (Siller et al., 2017; Van Der Meulen et al., 2017). Gender education assists healthcare providers in comprehending health and gender-linked subjects, such as sexual orientation, gender identity, and psychological, behavioral, and sexual health. On the other hand, medical education is a form of specialization and resocialization; the mainstreaming of gender education in medical education emphasizes the importance of gender awareness and gender education (Verdonk et al., 2008; Verdonk, Mans, & Lagro-Janssen, 2006).

At present, there is limited research on the effectiveness of gender education in Taiwan. In particular, university courses focus on the teaching of critical thinking skills. Does a course on gender and health care reduce gender stereotypes in university students? Can the course promote more egalitarian attitudes towards gender roles and enhance gender awareness? Given the crucial role of gender education in the medical field, it is necessary and important to enable students to change their stereotypical gender perceptions and attitudes towards gender roles through classroom discussions and reflection, thereby enhancing their gender awareness for future professional settings. Therefore, the purpose of this study is to investigate the impact of the Sharestart pedagogy on students' stereotypical gender perceptions, attitudes towards gender roles, and gender awareness.

Feminism, gender equality education, and healthcare

Early feminism was based on liberal values, striving for equal rights for women, and the "Second Wave Women's Movement" emphasized women's participation in public sphere activities. In the 1980s, feminism became increasingly diverse in its thinking, focusing on gender differences and contextualization. Although there are various schools of feminism, the common concern lies in addressing the oppression of women within cultural and societal contexts, rooted in factors such as race, economic class, gender roles, and family structures, aiming to dismantle oppressive and subordinate power relations and empower women, enhancing their dignity and agency (Tsai & Tseng, 2005). As feminism began to pay attention to the social implications put forth by the medical profession and how these implications affect women's lived experiences. Chesler (1972) recognized the extent to which women were unkind and even hurtful in the practice of medicine. In particular, the healthcare system is still full of patriarchal thinking. From menstruation, pregnancy, contraception, childbirth, breastfeeding to menopause, women are dominated by medicalization, and women's voices and feelings are ignored. Consequently, when women's emotions are deemed unstable, they are attributed to the 'menstrual period' or 'menopausal phase'. The advancements in reproductive technology, although affecting women as the sufferers, further reinforce women's reproductive roles. Furthermore, many medical studies are based on male subjects, and the experience of treatment is biased towards males. It is not known that the clinical manifestations of

some diseases (such as cardiovascular disease) in women are different from those in men. The healthcare system rationalizes these hierarchies, concentrating power in a minority of physicians (mostly male), while the majority of nursing staff (almost exclusively female) occupy relatively disadvantaged position. The incorporation of gender education into feminism contributes to clarify gender system in society and emphasizes the need for gender-aware healthcare that respects individual autonomy and right to information (Campelia, & Feinsinger, 2020; Mohapatra & Wiley, 2019). Harding (1987) emphasized the importance of interpreting women's experiences and re-conceptualizing social practice based on women's interests and values. Thus, gender-awareness healthcare needs to be lucid—that is, patients have the right to know and hope that women have an equal voice, respect, and power rather than being suppressed by male narratives (Williamson, 1999).

The concepts of gender equality education in Taiwan mainly include strengthening critical thinking, implementing human dignity, multicultural care, respecting students' subjectivity, and value clarification (Ho & Tai, 2009). Critical thinking assists students in recognizing diversity in society and dismantling gender bias, discrimination, and stereotypes. Human dignity is based on the basic human rights of the Constitution and is the core value of gender equality. Gender equality education policies are based on the awareness, beliefs and actions of a multicultural society; they teach students to recognize that personal growth is inextricably linked to the sociocultural context. Further, gender role learning is achieved through interactions with people of different genders. The curriculum objectives of gender

equality education encompass the following: in terms of knowledge, the understanding of the growth and development of gender connotation and gender roles and exploring the relationship between gender and social culture; in terms of affection, respecting people with different gender traits, gender identities, and sexual orientations and reducing misunderstandings and prejudices; in terms of action, developing critical, introspective, and practical action (Ministry of Education, 2022).

In the context of medical education and hospital training, Cheng (2020) emphasizes the need to strengthen humanistic literacy and communication skills, while also reducing traditional gender roles and stereotypes in educational content and skills. A deeper understanding of patients' diverse social backgrounds, cultural values, gender identities, and generational differences can help close the "gender gap" in medical education and clinical training. Gender roles play a crucial role in clinical practice, affecting not only the communication between clinicians and patients but also the adaptation of individuals to their own conditions (Celik et al., 2011). It is essential for healthcare providers to avoid gender stereotypes to provide high-quality care, and this requires awareness of gender knowledge and attitudes (Van Der Meulen et al., 2017).

To summarize, incorporating feminist perspectives and gender equality education is vital for fostering gender awareness in healthcare and medical education. In order to deliver exceptional care, healthcare providers must have a comprehensive understanding of their patients' unique social backgrounds, cultural values, and gender identities, and make a concerted effort to eschew gender stereotypes, while promoting equitable care that honors the autonomy and values of each patient.

Gender Equity Teaching Program

The design of gender equality education courses in medical universities focuses on guiding students to think about gender issues. The Sharestart pedagogy developed by Chang (2015) trains students to learn, read, think, discuss, analyze, summarize, express, and write. It is based on the “learner-centred” concept. In the classroom, teachers re-stimulate students’ curiosity about knowledge, the habit of self-learning, the drive to explore answers, the combination and use of various learning resources to unleash their creativity (Chang, 2016). Chang (2015) believed that traditional one-way teaching not only loses the opportunity for students to learn by themselves but also their interest in learning. The main axis of the Sharestart pedagogy is self-study. Students learn “problem thinking”; discussions among students, practice expressions, and teacher integration consolidate, strengthen, and deepen their self-learning ability while continuously improving self-learning efficiency and cultivating various abilities. The five steps of the Sharestart pedagogy include student self-study, problem-solving, group discussion, student expression, and teacher integration. Its operation requires mastering three key points: the production of “question-and-answer-oriented” handouts, student grouping, and teacher guidance (Pai, 2014). The production of handouts is based on questions. Any material, including videos, music, pictures, text, and graphics, can be the content of handouts. Design issues must include four levels of focal discussions, namely objective, reflective, interpretive, and decisional, referred to as ORID (Liu, 2019). After reading the material for self-study, students think about and answer the teacher’s questions. By arousing students’

curiosity, they can enter higher-level abilities, such as understanding, application, analysis, evaluation, and creation. In group discussions, students share their answers while allowing them to guide each other to improve their learning effectiveness. After the group discussion, the teacher asks the students to share the results of the discussion, training their ability to express and promoting learning interest and motivation through the “cooperation and competition” learning mode among groups. Further, the teacher gives supplementary explanations to deepen and broaden the knowledge level of students (Pai, 2014; Chang, 2016).

Methods

Participants

This study employed a mixed-methods research approach. The subject of the study were students taking gender course at a medical university in Taiwan. Fifty medical university students (9 males and 41 females) participated in this study. Students came from the College of Medicine, the College of Medical Technology, and the College of Health Management, including grades 1 to 4. The College of Medicine includes the Department of Medicine, Dentistry, Nursing, Social Work, and Psychology; the College of Medical Technology includes the Department of Medical Laboratory and Biotechnology, Medical Imaging and Radiology, Physical Therapy, and Speech Therapy; the College of Health Management includes the Department of Nutrition, Public Health, Medical Industry Technology Management, and Occupational Safety.

This study was approved by the Institutional Review Board of Chung Shan Medical University Hospital (CS2-21167) and sited to enroll subjects from December 2021 to June 2022. Notably, students participated voluntarily, and informed consent was obtained before letting them answer the questionnaires.

Measures

Gender Stereotype Questionnaire

This questionnaire was formulated by Fagot (1978) to analyze gender stereotypes, with a total of 55 questions. The students' gender stereotypes—divided into four parts—were measured in terms of personality traits, occupation, family affairs, and toy activities. There are three choices for each item: “Describe a boy”, “Describe a girl”, and “Describe gender-neutral”. If the answer is “Describe a boy” or “Describe a girl”, 1 point is awarded, and if the answer is “Describe gender-neutral”, 0 points are tallied. Higher scores indicate stronger gender stereotypes. The internal reliability of this questionnaire is Cronbach's α of .94, and the internal reliability of the subscales is between .82 and .86.

Gender Role Attitude Scale

This study adopted the gender role attitude scale compiled by Tian (2005). There are 17 items on the scale, scored on a five-point scale. From strongly disagree (1 point) to strongly agree (5 points), the total score ranges from 17-85. Higher

scores indicate more traditional gender role attitudes, and lower scores indicate more progressive gender roles and gender equality. The internal reliability of this questionnaire is Cronbach's alpha of .91.

Gender Awareness Scale

This study used Carnes et al. (2015) to formulate a 7-item gender awareness question and scored a seven-point scale. The scoring method was based on the subjects' views on each question (1 = strongly disagree, 7 = strongly agree); students were instructed to choose the option closest to their own opinion. The questionnaire has a total score of 7-49, with higher scores indicating higher gender awareness of the subjects. Its internal reliability is Cronbach's alpha of .7.

At the end of the questionnaire, students were asked to describe their comprehensive opinions on the course in a narrative way.

Performance

Students who took the gender course covered three colleges and all grades. Classes were held once a week for 100 minutes for 14 weeks. Based on the Sharestart pedagogy, the teacher provided the students with handouts during the class, and the students studied by themselves for 20 minutes. Then, the teacher asked questions and let the students have a focused discussion for 40 minutes. In the ORID mode, the questions were gradually discussed in depth from the objective, reflective, interpretive and decisional levels of focal discussions, encouraging students to reflect

and debate. The topics discussed are listed in Table 1. The students in the class were divided into 7 groups of 9-10 members. After discussion, students in each group input the results in the Zuvio IRS system. The teacher then selected some students from each group to present. Finally, the teacher made a conceptual summary of the problem.

Statistical analyses

Descriptive statistics were used to analyze the basic attributes of the research objects. A paired t-test was used to analyze the differences in students' attitudes toward gender roles, gender stereotypes, and gender awareness before and after class. A one-way analysis of variance (ANOVA) and an independent sample t-test were used to examine the differences in gender role attitudes, gender stereotypes, and gender awareness among students of different gender, grade, and colleges.

The analysis of open-ended questions from students was conducted using content analysis, which allowed for the identification of the students' feedback after completing the course.

Results

Preliminary analyses

A total of 67 students participated in the gender course examined in this study. Of these, 16 did not complete the post-test, and 1 did not complete the questionnaire. Therefore, the final sample included 50 students. Among the participants, 41 (82%)

were female, and 9 (18%) were male. The majority of students were first-year students (70%). In terms of academic college, 16 students (32%) were from the College of Medicine, 23 students (46%) were from the College of Medical Technology, and the remaining 11 students (22%) were from the College of Health Management. More detailed information about the demographic characteristics of the participants can be found in Table 2.

Differences in gender stereotypes, gender role attitudes, and gender awareness before and after class

The total score of students' gender stereotypes before class was 26.7 ± 16.4 , and the total score after class was 22.2 ± 17.7 . This finding indicates that students reduced gender stereotypes after class; notably, the difference was statistically significant ($t=2.275$, $p=.027$). First-year students and the College of Medical Technology students have significant differences, with p-values of .002 and .005, respectively. However, in terms of gender role attitudes and gender awareness, there was no significant difference between before and after class (Table 3). From the analysis of the scores on gender role attitudes, the scores before and after class were 28.5 and 27.5, respectively, indicating that the current gender role attitudes of college students have become progressive and gender equality. Regarding the score analysis of gender awareness, students expressed between "somewhat aware" and "moderately aware".

Differences in basic attributes and gender stereotypes, gender role attitudes, and gender awareness of students before and after class

According to the gender analysis in Table 4, there were statistically significant differences in gender stereotypes and gender role attitudes after class, with p-values of .026 and .033, respectively. Male students have fewer gender stereotypes than female students. However, in terms of gender role attitudes, female students tend to show progressive attitudes and value equality more than male students; in terms of gender awareness, there was no significant difference between male and female students. Further, there were no significant differences in gender stereotypes, gender role attitudes, and gender awareness among students by grade level. According to the analysis of the colleges, there was a significant difference between the three departments before the class ($F=3.517$, $p=.038$); however, there was no significant difference after the class ($F=.588$, $p=.560$). It showed that the gender awareness of students in the three colleges had reached the same level after class.

Feedback from students at the end of the course

Based on students' feedback, there were two main themes identified: understanding the impact of gender norms and speaking out against inequality.

1. Understanding the impact of gendered norms

Through class discussions, students began to reflect on how gendered norms affect society and the differential treatment that individuals receive based on gender differences. Students expressed a desire for society to move towards greater gender equality.

After this semester, I have gained a deeper understanding of gender differences and their treatment in society. I hope that gender equality can be more fully implemented in society.

Learning about gender is very important in this contemporary society, and it has made me more careful about gender issues in my future work.

Through the teacher's lectures and group presentations, many gender issues are problems that we will encounter in our lives. For example, homosexuality and AIDS are viewed differently by the public, and female doctors are discriminated against in the workplace. Let's learn more about their difficulties and hope to eliminate public stigma because we are all the same.

2. Speaking out against inequality

The Sharestart pedagogy not only guides students to think and discuss issues, but also encourages them to express their thoughts bravely. After class, students expressed their opinions on various issues such as gender and health inequality, emphasizing the importance of speaking out and facing and solving problems.

This course has brought me different ways of thinking and concepts. Through this course, I can stimulate more ideas with classmates and teachers.

For this course, I believe that both male and female who have experienced unequal treatment in the workplace should speak out, because this inequality is a problem that both genders face.

Discussion

The main contribution of this study lies in that the use of the Sharestart pedagogy can reduce the gender stereotypes of university students. In terms of gender role attitudes, university students are moving towards progressive equality. In terms of gender awareness, students were between “somewhat aware” and “moderately aware”. From the perspective of gender, male students tended to be more gender equal than female students in gender stereotypes, and female students tended to show more progressive equality than male students in gender role attitudes. After the class, the gender awareness of the students in the three colleges reached the same level. Students presented a clearer understanding of future work that requires attention to gender-based health inequalities to optimize patient outcomes.

Gender education is important in medical universities, with both educators and teaching materials being key factors that influence its effectiveness (Van Der Meulen et al. 2017). This study employed the Sharestart pedagogy to facilitate focused discussions that helped students to reflect on their own gender biases. Although gender equality education has been incorporated into Taiwan's curriculum since elementary school, providing students with knowledge of the concept of gender equality and gradually eliminating gender discrimination, traditional gendered norms continue to influence individuals deeply. Young boys and girls learn about gender stereotypes from their living environment and the media, shaping their behavior in gender-appropriate ways (Hentschel et al., 2019). In this study, male students in particular exhibited a decrease in gender stereotyping after participating in the course,

which is consistent with Li's (2010) findings that incorporating gender issues into the curriculum can significantly reduce gender stereotypes among male primary school students. Student discussion is a crucial aspect of gender education. In particular, inter-professional and gender-based groups can inspire students to view the connotation of gender stereotypes from multiple perspectives. Gender stereotypes related to personality traits, occupation, family roles, and health care were clarified through group discussion, resulting in a significant reduction of gender stereotypes among first-year students in this study. This indicates that university gender education can help students eliminate stereotypical gender perceptions through discussion and reflection. Through personal reflection and group discussions, students respond with their own experiences that the current social stereotypes on gender still exist. For instance, male nurses in hospitals are often mistaken for physician assistants or face questioning and peculiar looks such as, "Are you a male nurse?" This underscores the need to address and gradually change traditional perspectives on gender within the social and cultural context, starting with the younger generation, in order to eradicate stereotypical gender perceptions.

The role of education is not only to impart knowledge and enhance cognitive abilities but also to shape students' beliefs, values, and attitudes towards societal issues (Du et al., 2021). Studies have shown that experiential learning methods can have a positive impact on students' attitudes (Koponen et al., 2012). In this study, the Sharestart pedagogy involved active learning methods such as case discussions, video discussions, debates, and other forms of interactive teaching that encourage

students to engage in critical thinking and reflection. The findings of this study indicated that female students exhibited more progressive gender role attitudes compared to male students, aligning with feminist perspectives that advocate for equal opportunities and a fair distribution of household responsibilities. Apparently, female students expect to break through the dominating role of the family structure, and to be treated equally in housework and work. In the healthcare system, it is crucial to listen to women's voices and empathize with their lived experiences, while breaking down hierarchical structures and respecting the value of women's work. However, despite the progress made in gender education, there still remains a significant gender gap in the representation of male and female healthcare professionals in the current workplace. Efforts must be made to address this issue and promote gender equality in healthcare. In other words, education plays a crucial role in shaping students' attitudes towards gender equality. Active learning methods such as the Sharestart pedagogy can help students to critically reflect on their beliefs and values towards gender roles and encourage progressive attitudes that promote equality. However, addressing the gender gap in the healthcare workforce requires a concerted effort from educators, policymakers, and healthcare professionals to eliminate gender biases and promote equal opportunities for all.

Gender awareness is a complex construct influenced by a range of social, cultural, environmental, biological, and cognitive factors, including genes and hormones (Carnes et al., 2015; Li et al., 2022). Gender awareness can be developed through deliberate reflection on gender issues in one's life and is associated with automatic brain associations. However, this study found no significant difference in

gender awareness among students before and after the course, indicating that a single course may not be sufficient to produce significant changes in gender awareness. Wang (2005) has suggested that gender awareness is difficult to measure and can only be inferred from a person's words and actions. Additionally, this study found significant differences in gender awareness among students in different colleges, suggesting that students from different backgrounds may have different levels of gender awareness. But students were willing to speak out for gender equality. Future research could explore how the diverse living and learning backgrounds of students in different colleges affect their gender awareness. Based on these findings, it is recommended that gender equality education courses incorporate gender-related elements from daily life, with a focus on elevating students' critical thinking from the level of personal experience to the level of structural and cultural factors that shape gender. This approach may better equip students to develop a deeper and more nuanced understanding of gender equality and to become agents of change in promoting gender equality in society.

The limitation of this study includes the limited scope of students taking the gender course; only 9 male students completed the research questionnaire, which cannot be extrapolated to all university students, and more male students should be encouraged to take courses. Therefore, it is suggested that all students taking gender-related courses can be included in the research object in the future to understand the effect of curriculum intervention. In addition, The qualitative analysis was based solely on students' open-ended responses and did not include in-depth interviews. It is suggested that future research could conduct one-on-one interviews to gain a better

understanding of students' actual thoughts on gender stereotypes, gender role attitudes, and gender awareness after class.

Conclusions

Gender education in medical universities is crucial for preparing students to be gender-aware healthcare professionals. The present study demonstrated that the implementation of Sharestart pedagogy in gender courses can effectively reduce gender stereotypes among university students. Notably, male students showed a more significant reduction in gender stereotypes than female students after the course, while female students tended to exhibit more progressive attitudes towards gender role equality. Interestingly, there were no significant differences in gender awareness among students from the three participating colleges after the course, despite initial differences in gender awareness levels. This finding suggests that the Sharestart pedagogy may be equally effective for students with different backgrounds and experiences. Importantly, the students' after-class statements indicated that they were motivated to apply their newfound knowledge and awareness of gender issues in their future work as healthcare professionals.

Table 1 Gender and Health Care Course Discussion Topics

1. Search for representatives of the women's movement and identify their contributions. What does it mean for modern women?
2. Review the role of women in medical history since ancient times and think about what areas need strengthening in future policy formulation.

3. After watching the video, discuss whether the differences between male and female are by nature or upbringing.
4. Explain the male/female views on menstruation and menstrual inequality could be reduced.
5. Discuss the behaviors that fall under workplace sexual harassment through case studies. What are the preventive actions that can be taken? What will I do if I experience sexual harassment?
6. Considering most family caregivers are women, is it discriminatory against women or men? What physical and psychological problems do the male/female caregivers have?
7. Debate the concept of same-sex marriage.
8. Provide HIV-related literature discussing gender differences and treatment of HIV infection.
9. Discuss the types of domestic violence and explore the physical and mental state of domestic violence victims from a gender perspective.
10. Watch transgender-related videos to discuss the situation of transgender people in the family and society.
11. Discuss the physical and psychological differences between male and female in fertility technology.
12. Debate the topic of surrogate mothers.
13. Discuss gender differences in healthcare workers.
14. Rehearse the discourses and attitudes of medical workers in the face of multi-gender patients.

Table 2 Demographics of research objects (n=50)

Variable	n	%
Gender		
Male	9	18

Female	41	82
Grade		
1 st grade	35	70
2 nd grade and above	15	30
College		
College of Medicine	16	32
College of Medical Technology	23	46
College of Health Management	11	22

Table 3 Scores and paired-t test of students' gender stereotypes, gender role attitudes, and gender awareness before and after the course

Variable	Before the course (m±SD)	After the course (m±SD)	95% CI	t	p
Gender stereotypes	26.7±16.4	22.2±17.7	.529, 8.551	2.275	.027*
Male	21.4±15.2	12.7±11.5	-.775, 18.330	2.119	.067
Female	27.9±16.6	24.3±18.2	-.945, 8.164	1.602	.117
1 st grade	29.9±15.2	22.1±17.4	3.100, 12.614	3.357	.002*
2 nd grade and above	23.1±19.5	21.6±18.7	-2.176, 5.109	.864	.402
College of Medicine	27.0±15.8	22.7±18.7	-4.992, 13.617	.988	.339
College of Medical Technology	24.3±15.2	18.4±16.5	2.003, 9.910	3.125	.005*
College of Health Management	31.4±19.9	29.5±17.6	-10.155, 12.973	.353	.732
Gender role attitudes	28.5±8.4	27.5±7.5	-.867, 2.747	1.045	.301
Male	31.0±13.7	32.3±9.1	-8.615, 5.949	-.422	.684
Female	27.9±6.9	26.5±6.8	-.294, 3.172	1.678	.101
1 st grade	28.3±8.7	27.6±7.8	-1.413, 2.898	.700	.488
2 nd grade and above	28.8±8.1	27.5±7.1	-2.337, 5.137	.803	.435
College of Medicine	30.4±10.3	28.3±8.8	-1.254, 5.379	1.326	.205
College of Medical Technology	26.2±6.1	26.6±6.5	-2.970, 2.275	-.275	.786
College of Health Management	30.5±9.3	28.5±7.8	-2.844, 6.844	.920	.379
Gender awareness	31.9±3.3	32.1±4.3	-1.422, .982	-.368	.715
Male	31.2±4.6	31.6±6.2	-5.374, 4.707	-.152	.883
Female	32.1±3.0	32.2±3.9	-1.347, .956	-.342	.734
1 st grade	32.2±3.3	32.1±4.3	-1.494, 1.665	.110	.913
2 nd grade and above	31.2±3.4	32.1±4.5	-2.727, .861	-1.116	.283
College of Medicine	33.6±2.8	32.9±2.9	-1.523, 2.773	.620	.544
College of Medical Technology	31.4±3.4	31.4±5.0	-1.912, 1.826	-.048	.962
College of Health Management	30.6±3.0	32.4±4.7	-4.681, 1.045	-1.415	.187

*p<.05

Table 4 Differences in gender, grade, and college gender stereotypes, gender role attitudes, and gender awareness of students before and after the course

Variable	Gender stereotypes				Gender role attitudes				Gender awareness			
	Before the course		After the course		Before the course		After the course		Before the course		After the course	
	t/F	p	t/F	p	t/F	p	t/F	p	t/F	p	t/F	p
Gender	-1.067	.291	-2.427	.026*	.654	.529	2.201	.033*	-.512	.620	-.431	.668
Grade	1.346	.185	.089	.930	-.210	.834	.045	.946	.975	.334	-.014	.989
College	.684	.509	1.510	.231	1.572	.218	.352	.705	3.517	.038*	.588	.560

*p < .05

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Effects of Gender Equity Education on Gender Stereotypes, Gender Role Attitudes, and Gender Awareness**

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Abstract

Medical students need to be gender awareness in order to provide gender equality and better healthcare when faced with gender-diverse situations in the medical workplace. Through the Sharestart pedagogy, guide students to think about problems, stimulate students' curiosity about knowledge, the habit of self-learning, the motivation to explore answers, and combine and utilize various learning resources. This study used the Sharestart pedagogy to explore the effect of the "Gender and Health Care" course on medical students' gender stereotypes, gender role attitudes, and gender awareness. This study was designed as a single-group pre- and post-test experiment, and 50 students participated in it. The results of the study found that the gender stereotypes of medical university students were significantly different before and after class ($p=.027$). Based on the analysis of gender differences, in terms of gender stereotypes, male students are more gender-equal than female students ($p=.026$). In terms of gender role attitudes, female students tended to be

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more modern and equal than male students ($p = .033$). Students in their qualitative statements identified two main themes: understanding the impact of gendered norms and speaking out against inequality. Gender care courses are of great importance in the general education of medical universities, which can reduce students' gender stereotypes, help students perceive gender and gender differences in the future workplace, and apply it to clinical practice.

Keywords: Gender equality, Sharestart pedagogy, Gender stereotypes, Gender role attitudes, Gender awareness

末世抑或啟示？：瑪格麗特·愛特伍《瘋狂亞當》 三部曲的人性再探索*

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摘要

瑪格麗特·愛特伍是加拿大的知名作家，擅長融合各種文類，創作關切當代重要議題的作品。《瘋狂亞當》三部曲歷時十年完成，包括《劍羚與秧雞》、《洪水之年》與《瘋狂亞當》等三部小說，觸及生物醫學、基因工程、女性自主、人類世和後人類主義等主題，被視為可預見未來世界之社會性寓言。在《劍羚與秧雞》中，透過單一男性敘述者的角度，呈現生物醫學和基因工程在毫無倫理規範下，發展出一個過度依賴生物科技的醫療化社會，及其衍生的各種疑慮。《洪水之年》則透過多重女性敘事角度，對「無水之洪」的災難提供一個多元的視角，她們在日記中記錄了她們的經歷，殘存的書寫記錄象徵著希望和文明的保存。《瘋狂亞當》是三部曲中的最後一部小說，在《瘋狂亞當》中，愛特伍想像一個新世界，各種生物為了生存而合作，倖存的舊人類與基因改造的新人類、新物種，形成新的生態系與動態平衡，最終打破了人類中心論的觀點，在各物種彼此相互依存的關係網絡中，重塑自我認同。作品想要呈現內容可視為災難後重生的啟示錄，而非世界毀滅的末世錄。本文視《瘋狂亞當》三部曲為一整體概念，針對作品中的生物資本主義、女性自覺與人類世等概念，進行整體分析。透過愛特伍的宏觀敘事，深入探討人性中的潛在野心，因過度追求發展所導致的破壞，以及倖存人類的韌性及災難中重生的可能性。

關鍵詞：瑪格麗特·愛特伍、《瘋狂亞當》三部曲、生物資本主義、女性自主性、啟示錄

* 本論文一部分概念發想於作者於 2022 年受邀為漫遊者文化所出版的 *Oryx and Crake* 中文版《劍羚與秧雞》所撰寫之中文導讀。本論文將此初步概念延伸、深化，同時整合哲學和社會學理論視角系統性探討《瘋狂亞當》三部曲作品。本論文部分成果獲科技部計畫「以文淑世：醫療人文跨領域研究」(MOST 107-2420-H-009 -003 -MY3)補助，特此致謝。

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Introduction

Margaret Atwood, a renowned Canadian and North American literary figure, ingeniously weaves together various genres to create a narrative style that spotlights cutting-edge, contemporary issues. With a body of work that has evolved from early explorations in feminism and life governance to more recent examinations of ecological environment, the Anthropocene, biomedicine, and the ethical dialectics of posthumanism, Atwood crafts powerful and thought-provoking allegories for future societies. For instance, her widely recognized novel, *The Handmaid's Tale*, paints a vivid picture of a surveillance society that controls women's reproductive lives, suggesting a potential reality that could materialize in our world. Atwood's critically acclaimed *MaddAddam* trilogy, which includes *Oryx and Crake* (2003), *The Year of the Flood* (2006), and *MaddAddam* (2013), took the author a decade to complete. The release of the novel *MaddAddam* in 2013 marks the completion of Margaret Atwood's eponymous trilogy. The inaugural novel of the series, *Oryx and Crake*, vacillates between a dramatized depiction of apocalyptic desolation and a compelling narrative recounting the cataclysmic events precipitating such devastation. Both past and present are focalized through the character Jimmy-Snowman, who bifurcates himself into Jimmy, his corporate-world persona, and Snowman, his post-apocalyptic identity, wherein he laments the losses incurred and his own ensnarement (Raschke, 2014). Similarly oscillating between past and present apocalyptic events, *The Year of the Flood* centers on the experiences of two female characters, Toby and Ren, who remain outside

the corporate utopia, thereby offering insight into most lives constituting the pleebland. Lastly, the post-apocalyptic *MaddAddam* delineates a motley group of human survivors and the Crakers, the environmentally-adapted humanoids engineered to supplant humankind, as they collectively embark on a fresh start amid a ravaged world. Interestingly, the first novel, *Oryx and Crake*, hit shelves in 2003 during the SARS epidemic and quickly climbed to the top of North American best-seller lists. Fast-forward nearly 20 years, and with Covid-19 menacing the globe, the book's relevance is strikingly poignant.

Atwood (2004) is recognized for her endorsement of the delineation between the genres of “science fiction” and “speculative fiction,” as she explicates that while science fiction encompasses narratives featuring elements beyond our current capabilities and inaccessible realms, speculative fiction utilizes concepts and technologies that are already within our reach. Put differently, speculative fiction entails expanding on existing ideas, rather than the absolute innovation characterizing science fiction. The trilogy represents Atwood's introspection and critique of the unchecked growth of biomedicine and genetic technology, depicting scenarios that eerily mirror the current human condition. Indeed, Atwood has remarked that her works should not be pigeonholed as science fiction, but rather as speculative novels. The subjects and issues she tackles pertain to the present-day human experience, grounded in fact-based conjecture rather than abstract imaginings. In this sense, Atwood's literary works serve as timely and perceptive lens through which to examine the future of our society.

Margaret Atwood's *MaddAddam* trilogy, a captivating series, transports readers to a desolate world that emerges after the collapse of human civilization due to a devastating man-made viral pandemic. The trilogy masterfully interweaves the narrative perspectives of various characters, taking us back in time to understand the events leading up to this catastrophic reality. Atwood also introduces us to the genetically engineered Crakers, offering a glimpse into the potential origins of a new civilization. In *Oryx and Crake*, Atwood delves into the dangers of unchecked biocapitalism, the misuse of genetic technology, deepening class divisions, gender enslavement, and the apocalyptic vision of a world where memory and reality become inextricably intertwined. The second novel, *The Year of the Flood*, shifts its focus to the survival of marginalized civilians who have been forsaken by rapacious corporations. It also highlights "God's Gardeners," a green-minded religious group that challenges the corporate-driven technological landscape. This tale unfolds in a world ravaged by an artificial virus, where the remnants of a bygone civilization are barely discernible. Finally, *MaddAddam* weaves together the series' parallel plots, concentrating on the reconstruction of the world following the devastating pandemic. The novel seamlessly connects the numerous narrative perspectives from across the trilogy. The *MaddAddam* trilogy serves as a powerful exploration of humanity's capacity for destruction and resilience. Atwood's vivid storytelling captivates readers, forcing them to confront the consequences of their actions and consider the potential for rebirth in the face of catastrophe.

Analyzing societal and cultural responses to environmental crises, Dawson (2014) offers an incisive framework for scrutinizing the implications of environmental shifts on aspects such as gender, race, and class. Atwood's work augments the broader conversation on the ideological facets of reactions to environmental alterations. The trilogy, set in a world recovering from collapse instigated by corporate privatization and consumerism, critically examines the adverse repercussions of uncontrolled capitalism and rampant consumer culture on our ecosystem (Dawson, 2014). While these themes are undoubtedly explored, the trilogy concurrently investigates the intricacies of human behavior, the tenacity of individuals, and the potential for optimism and renewal. By intricately weaving these components, Atwood paints a picture that transcends a simple dystopian world, offering instead a multifaceted and layered depiction of human existence in an evolving environment.

Investigating the eco-feminist views on nature and technology as depicted in Margaret Atwood's initial dystopian environmental narratives, Copley (2013) holds that Atwood reshapes standard generic conventions to depict a desolate future. In this future, traditional global politics have disintegrated, replaced by unbridled consumerism and the commercialization of nature. Nevertheless, in the midst of the ruin, a ray of optimism is perceived as characters fostering a deep admiration and reverence for the natural environment.

Margaret Atwood's *MaddAddam* trilogy, as interpreted by Yates (2020), is a portrayal of the metamorphosis from human society to a post-humanist, multispecies

collective. Atwood reshapes the pastoral narrative, prompting a redefinition of human sociality that contemplates its potential extinction. According to Yates (2020), Atwood's trilogy engages with and contextualizes various historical and philosophical discourses, proposing a departure from traditional human writing to incorporate nonhuman forms. This interpretive perspective ignites a vibrant dialogue between established and nascent narrative structures, scrutinizing our understanding of literature and communication within the landscape of a rapidly evolving world.

The *MaddAddam* trilogy ought not to be perceived as mere imaginative endeavors, as Atwood's demarcation intimates; conversely, they function as pedagogical accounts that foresee the disastrous repercussions of extant neoliberal market economies exerting control and capitalizing on the continuous progress in biotechnology. This culminates in a biocapitalist framework, in which the tangible and genomic components of life ascend as the predominant commodities for exchange. As the epigraph of this essay expounds, Atwood (2014b) deftly employs the medium of fiction, characterized as “an uttering, or outering, of the human imagination,” to evocatively depict the hazards concomitant with unrestrained anthropocentric bioscientific “progress.” Drawing from existing research, this article endeavors to delve into themes of biocapitalism, feminist agency, and companionship, along with the concept of the Anthropocene, as they emerge within the trilogy. Through a comprehensive examination of these critical components, this piece aspires to augment the scholarly discourse surrounding the *MaddAddam* trilogy.

Biocapitalism and the Modern Prometheus

Oryx and Crake embodies the contemporary anxieties and disorder presented by genetic technology. In the novel, the primary antagonist, a scientist colloquially referred to as Crake, characterizes humans as “faulty hormone robots” (Atwood, 2003). This reductionist viewpoint serves to diminish the gravity of human suffering, consequently enabling Crake’s endeavors to orchestrate a genocide under the guise of planetary salvation by engineering a virulent pandemic. Crake is a radical environmentalist, or even an eco-fascist scientist, with extreme ideals. He believes he has ample justification for creating a new world, destroying the ugly reality of the present through the spread of a mutated, man-made virus called the “Waterless Flood.” This plague wipes out a world plagued by corporate monopolies, biocapitalist hegemony, rampant sexual enslavement, and the medicalization and commodification of “custom-made perfection” in genetic engineering, all of which contribute to the drastic class divisions among humanity. Thus, a divine-like retribution is enacted through this human-created pandemic.

Crake and his genetically engineered post-human species the Crakers can be seen as a representation of the concept “Modern Prometheus,” a term that originates from the subtitle of Mary Shelley’s acclaimed novel *Frankenstein*. Like the Promethean fire and Victor Frankenstein’s monster, the Crakers are products of the transgression of natural laws, serving as a manifestation of human intellectual prowess and ambition that echo the myth of Prometheus. Prometheus, as described in Greek mythology, defied divine orders by stealing fire from the gods and gifting it to humanity. This act of rebellion

marked a pivotal moment for humanity's progress, but it was also a significant breach of natural laws.

Crake, in his genius, manipulates genetic codes to engineer a new species that would replace flawed humanity. In his pursuit of an ideal form of life, Crake, akin to Prometheus and Frankenstein, steps into the realm traditionally occupied by nature or gods. He disrupts the course of natural evolution, pushing beyond established moral and biological boundaries to produce the Crakers. As Bouson (2004) points out, while they represent an idealized form of life, immune to disease, aging, and violence, their existence also raises profound ethical questions and confronts humanity with the disturbing reality of manipulating life at its most fundamental level. This radical experiment, much like Prometheus's gift and Frankenstein's creation, represents the double-edged sword of human innovation—while it heralds new possibilities, it also introduces unprecedented risks.

The metaphor of creation in the novel resonates with the Western humanist tradition, questioning whether humanity has crossed ethical boundaries in nature and assumed the role of a creator. Genetic modification technology is like the forbidden fruit in the Garden of Eden, and Crake writes his own Genesis. Destruction and creation are intertwined, two sides of the same coin, relying on each other. The deadly, mutated virus brings about a mass extinction, paving the way for the creation of a brave new world inhabited by the genetically engineered "Crakers." Stefan Helmreich (2008) offers an insightful explication of the concept, stating that during the epoch of biotechnology, wherein the potentials and prospects offered by biological substances, notably stem cells

and genomes, are progressively incorporated into endeavors aimed at manufacturing and pursuing monetary gains, an unprecedented form of capital is emerging known as biocapital. This definition elucidates the emergence of a unique form of capital within the context of contemporary biotechnological advancements, wherein biological materials are harnessed for commercial and monetary gain. As Amelia Defalco (2017) indicates, Crake's posthuman aspiration – supplanting humanity with an ostensibly superior, engineered life form – epitomizes the logical, albeit homicidal, apotheosis of the biotechnological fixation pervading the MaddAddam universe. Throughout these novels, the fascination with biology as a form of technology effectively marginalizes notions of accountability, duty, and the emotional as well as ethical aspects of human existence, relegating them to the periphery of insignificance.

In *Oryx and Crake*, the unrestrained development of biomedical and genetic engineering has evolved into a form of technological domination. The abuse of gene-editing technology has crossed ethical boundaries, leading to the near-collapse of distinctions between species. This phenomenon has given rise to biocapitalism, where genetic technology and excessive medicalization have turned the human body into a form of capital. Corporate regimes of governance exert control over bodies through surveillance and regulatory techniques, redefining the politics of life. The omnipresent advertising slogans and subliminal marketing messages found throughout the novel create cognitive biases within individuals and society at large. These biases involve the pursuit of beauty, intelligence, and health, as well as the ingrained ideology that perfection is attainable. Through genetic technology, these perceived “imperfections” or

“deviations” can be “corrected,” foreshadowing a medicalized society where overreliance on medical technology alters the natural course of life.

Within the *MaddAddam* trilogy, the deceptive perception of human self-determination and invulnerability inherent to market-driven ideologies and bio-capitalistic practices is depicted during its calamitous culmination, whereby the unfettered commercialization of existence triggers its near annihilation. Atwood’s literary works insinuate that the disregard for interdependence, affectivity, and responsibility poses a grave threat, invoking a post-humanist viewpoint through the dramatization of a calamitous anthropocentrism that perceives organic matter – encompassing the planet’s flora and fauna as well as the human body’s cellular information – as marketable, utilitarian entities (Defalco, 2017). The excessive growth of capitalism has also resulted in corporate conglomerates seizing control of state machinery, leading to a stark stratification of society. The population is divided into two distinct classes: highly skilled technocrats and ordinary citizens. The world is split in two: wealthy individuals and technological elites reside in fortified, secure corporate compounds, protected by private security forces, while ordinary people live amidst danger and chaos in crowded civilian districts, collectively referred to as “pleeblands.”

This extreme class distinction means that residents of the compounds must apply for permission to venture into the city and are forbidden from roaming the pleeblands alone. Corporate security forces are responsible for “maintaining and monitoring” the status quo, further enforcing the separation between the classes. Rosi Braidotti (2013)

contends that this iteration of biocapitalism is paradoxically post-anthropocentric, noting that “advanced capitalism,” by investing in and profiting from the scientific and economic control and commodification of all living entities, engenders a paradoxical, opportunistic post-anthropocentrism, as market forces readily capitalize on life itself. The emphasis on market economies, which relegates human existences to the periphery, indeed presents an ironic post-anthropocentric notion, seemingly subverting rather than engaging with post-humanist critique. Nevertheless, the commercialization of human existence invariably engenders pecuniary gains for particular segments of the human population; consequently, progressive capitalism or bio-capitalistic systems perpetuate their anthropocentric emphasis on human requisites, advantages, and aspirations. The *MaddAddam* trilogy presents human-induced catastrophes as a critique of capitalist technoscience, which objectifies and commodifies life, neglecting the aspects of affectivity and accountability. These developments, which entail the hazardous consequences of transhumanist biotechnology, simultaneously obstruct ethical relationships and provoke post-catastrophe interspecies collaboration, thereby alluding to the potential for posthumanist renewal.

Oryx and Crake, at this point, portrays commercial development disguised under the guise of science, waving the banner of false issues that claim to solve human problems and improve human lives. In reality, the genetically modified animals produced by corporations for profit only create more challenges for human society. The advent of the “post-genome era” has opened the Pandora’s box of hidden genetic codes.

If not used cautiously, this force will have a far greater impact on civilization than the Industrial Revolution. This book challenges our perceptions, definitions, and imaginations of life's limits in various everyday experiences.

Polyphony Perspectives and Feminist Companionship

In *The Year of the Flood*, a more expansive ensemble is featured compared to *Oryx and Crake*, which also comprises Jimmy and Crake in minor capacities. Atwood leverages this broader scope to accomplish what Frederic Jameson (2009) defines as an “expansion of narrative viewpoint to encompass the profound space of establishments and collectives.” The narrative delivers a more intricate depiction of the broader society, in which governmental responsibilities have been assigned to sinister private enterprises known from *Oryx and Crake*, such as AnooYoo, CorpSeCorps, HelthWyzer, and others, with a specific focus on God's Gardeners. The community's development is chiefly scrutinized through the viewpoints of Toby and Ren. Ren becomes a member of the organization at the age of eight, relocates to the HelthWyzer compound at fifteen, and is employed at the upscale adult entertainment establishment “Scales and Tails” during the pandemic. Toby, initially dubious of the Gardeners' theological principles, enlists as a young adult, ascends to the role of an Eve, and later assumes a new persona as an AnooYoo spa supervisor. In spite of losing connection with the collective, she upholds her conviction in the Gardeners' tenets, fashioning an “Ararat” to endure the pandemic outbreak.

The Year of the Flood runs parallel in time to *Oryx and Crake* but shifts its focus to the lives of ordinary people living outside the high-walled compounds in the pleeblands. Unlike the first installment, which is narrated from the male perspectives of Crake and Jimmy, *The Year of the Flood* explores the human catastrophe caused by the same infectious disease through the eyes of women. The story unfolds through the diaries of Toby and Ren, showcasing Atwood's attempt to create defiant female characters who challenge patriarchal or mainstream ideologies. These diverse female consciousnesses and identities contribute to a polyphonic narrative of women's survival.

Oryx and Crake poses the issue of sustainability as a matter of human self-domestication, yet proffers an alarmingly literal response. *The Year of the Flood* endeavors to present a perspective on the problem that acknowledges the full extent of evolved human nature without rejecting it, instead accepting the associated liabilities (Bergthaller, 2010). The narrative encompasses a similar time frame and adheres to a comparable pattern as *Oryx and Crake*, initially delineating the circumstances of its protagonists—Toby and Ren, both former affiliates of God's Gardeners are situated in the post-cataclysmic status. The narrative subsequently oscillates between the diegetic past and present, gradually unraveling the characters' previous existences through a sequence of examinations while concurrently propelling the plot towards their reconnection with other withstanding adherents of the cult. The concluding chapter amalgamates the narrative of *The Year of the Flood* with the ending of *Oryx and Crake*, exposing the identity and fate of the three inscrutable individuals whom Snowman encounters at the culmination of the antecedent book.

Atwood, celebrated for her enduring focus on female subjugation and perseverance, amplifies this pivotal theme in *The Year of the Flood*. The narrative elucidates the disquieting sphere of human cruelty and sexual predator-prey dynamics, as experienced by youthful postfeminist protagonists like Amanda and Ren. Atwood (2009) depicts the CorpSeCorps' allowance for mobs to operate barbaric, cannibalistic corpse disposal businesses with few supply-side costs. These enterprises procure organs for transplantation and, as conjecture intimates, subject the eviscerated remains to the clandestine processing of SecretBurgers grinders (Atwood, 2009). By employing the trope of cannibalism, Atwood highlights the unrestrained inclination towards consumption, which lies at the core of the societal framework prevalent in Western and European contexts (Bouson, 2011). In *The Year of the Flood*, she expounds on this concept through the utilization and concretization of the allegory of corporate anthropophagy, delineating a world governed by omnipotent conglomerates.

Atwood develops and broadens a corresponding notion consistently manifested in her literary works – the “metaphoric consumption of women in North American culture” (Hall, 2008). She exposes Blanco, the predatory manager of SecretBurgers, who perceives the women working for him, such as Toby, as his prey. The correlation between women and the corporeal, entrenched in the “long tradition of female objectification that facilitates, even encourages, the transformation of the female subject into mere flesh” (Defalco, 2017), is obvious in Toby's narrative. Furthermore, *The Year of the Flood* derives a substantial portion of its grotesque dread from its portrayal of the

male “carnification” of the female subject, the diminution of a woman to a fleshy entity, sustenance, or a decomposing cadaver (Defalco, 2017). Portrayed as a brutal man, Blanco treats women as mere property, subjecting them to sexual exploitation and maltreatment. He even goes as far as victimizing these women, reducing them to mere objects rather than acknowledging them as individuals deserving of respect and dignity. The grotesque tattoo on Blanco’s back functions as a potent representation of his chauvinistic perspectives on women as thoughtless, indistinguishable vessels and carnal subordinates.

Though focusing on the narrative voices of females, Atwood underscores the generational rift between feminists and postfeminists by presenting the experiences of both Toby and Ren. In her portrayal of Toby and Ren, Atwood emphasizes the generational divide between feminists and postfeminists, while critically examining contemporary postfeminist culture (Bouson, 2011). Through the portrayal of middle-aged Toby, Atwood concurrently offers a critical examination of modern postfeminist culture by interweaving second-wave feminist and postfeminist ideologies in the narrative of Ren, another female survivor, aged 25 during the plague. While the middle-aged feminist Toby remains acutely conscious of potential challenges in male-female power dynamics, the younger postfeminist Ren, raised within the privileged Compounds and the collective God's Gardeners, seems to acquiesce to her own sexual commodification and degradation. For example, Ren ultimately secures a job at Scales and Tails, a SeksMart where women’s sexuality is denigrated rather than esteemed

(Atwood, 2009). Emerging from her postfeminist milieu, permeated by a pervasive corporate business mentality fixated on profit margins, Ren, employed as an aerialist at Scales, perceives her own existence exclusively as a sexual commodification. In a global landscape characterized by the prevalence of genetic technology and the medicalization of enhancements, female bodies have increasingly become subjected to the forces of biocapitalism. This narrative encourages readers to reevaluate, within the framework of globalization, the progression of biomedical technology, and the commercialization of healthcare services. Additionally, it incites contemplation on potential redefinitions of gender politics, the marginalization of nonconforming bodies, and the commodification of bodily augmentations.

In contrast to the first book's single-narrator retrospection of events, *The Year of the Flood* presents multiple narrators reflecting on the catastrophe of the Waterless Flood from various angles. Instead of the pessimistic despair monologue in *Oryx and Crake*, this sequel conveys an optimistic polyphony. The two female narrators, unaware of other potential survivors, decide to document their experiences in diary form. Although they firmly believe they are the sole survivors of the disaster and that their diaries may not serve as witnesses to the collapse of civilization, the act of writing itself embodies hope. The preservation of writing as a symbol of civilization signifies an anticipation of the future, with a lingering belief that someday, someone might read these records. Although the God's Gardeners sect witnesses the apocalyptic visions of the post-calamity world with a peaceful attitude and a fatalistic belief in the inescapability of the

Waterless Flood, creating a somber undertone, the narrative provides a humorous structure to counterbalance or, minimally, alleviate the tragedy that follows. The reinterpretation of the biblical scripture of “The Fall of Man” as a visual representation of falling evokes a wry smile, neutralizing and counterbalancing the tragedy and pessimism of the fall through its humor on a higher level.

The concept of “the Fall” embodies multiple connotations. As Fredric Jameson elucidates in his commentary on *The Year of the Flood*, “the Fall” within Atwood’s trilogy represents a progressive shift towards “Americanism” that is anticipated to transpire in the foreseeable global future, culminating in a state where the designation “American” becomes obsolete (2009). Furthermore, this all-encompassing Americanism incites Crake to devise his worldwide pandemic virus, a ferocious, rapacious deed that emulates Americanism. In presenting an incisive denunciation of global Americanism within *The Year of the Flood*, Atwood concurrently articulates a profound apprehension that has persistently haunted Western civilization and manifested itself through utopian aspirations and their corresponding dystopian anxieties: the notion that scientific progressions may not yield a forward-looking utopian future, but rather precipitate humanity’s regression into a barbaric dystopian antecedent (Bouson, 2011).

In *The Year of the Flood*, Atwood asserts that logical cognition necessitates not solely words but also significant narratives, including myths, to comprehend individual life trajectories and form a collective identity awareness. Analogous to the Crakers’ enthusiastic expectation of Toby’s creation story descriptions, their mental faculties are

utilized for not only dreaming and vocalizing but also for storytelling capabilities. The tome, whether as a significant narrative in its own right or concerning the existences of its fictional personas, is comparable to the myth of Revelation, bestowing meaning and salvation to individuals amidst moments of acute turmoil and subjugation.

As Atwood elucidates a cautionary denunciation within *The Year of the Flood*, revealing the voracious inclinations and fierceness of a concurrent society driven by unrestrained consumerism concomitant with ecological and communal exploitation, she concurrently insinuates an optimistic prospect towards the novel's denouement. Atwood implies that the motley assemblage of human survivors—encompassing Toby, Ren, Amanda, Shackie, Croze, Zeb, and an assortment of MaddAddam scientists—may possess the capacity to reconstitute society and inaugurate a novel socio-political utopian redoubt within the dystopian vestiges of the antecedent regime.

A Brave New World: Apocalypse or Revelation?

The *MaddAddam* trilogy, in some respects, exemplifies the application of dialecticism as an interpretative strategy, integrating an array of viewpoints. This dialectical method is evident in the exploration of male viewpoints represented by characters like Crake and Jimmy, contrasting with the female perspectives of Toby and Ren. In the concluding novel, *MaddAddam*, a synthesis of the narratives from *Oryx and Crake* and *The Year of the Flood* occurs, further exemplifying the dialectical framework employed in the paper. This approach allows for the examination of conflicting ideas, characters, and themes, ultimately fostering a deeper understanding of the complex dynamics within the trilogy.

Dialecticism, as a theoretical framework, offers a valuable lens for analyzing this literary work by recognizing the interplay and contradictions between different elements. It acknowledges the inherent tensions and opposing forces present within the three narratives, main characters, and even themes, highlighting the dynamic nature of humanity in jeopardy within the milieu of catastrophe. Through the application of dialectical analysis, readers can uncover the complexities and nuances that emerge from the juxtaposition and synthesis of contrasting perspectives. Within the context of the *MaddAddam* trilogy, the theory of dialecticism facilitates an exploration of the multifaceted nature of the themes and characters, allowing for a more comprehensive interpretation.

The final novel, *MaddAddam*, continues from where the first two books left off, yet the narrative method constantly revisits past events for revision and expansion. Hence, Atwood's *MaddAddam*, the concluding novel in her esteemed trilogy, can be seen as a synthesis to the previous two books. It overlays and synthesizes the complex narratives and thematic undercurrents manifested in *Oryx and Crake*, as well as *The Year of the Flood*. Set in a post-apocalyptic milieu precipitated by a cataclysmic global pandemic, the novel scrutinizes the ramifications of unbridled technological progression, corporate hegemony, and the moral quandaries arising from genetic manipulation and biotechnological endeavors and unfolding further possibilities.

MaddAddam reveals the world's landscape in a new era following the apocalyptic flood and the ensuing plague. Survivors must regress to foraging, harvesting, and

restricted cultivation, coexisting in the novel ecosystem with various life forms, such as genetically modified organisms, employing elementary instruments and techniques. Since the 20th century, human activities have led to significant environmental changes, such as accelerated resource consumption, rapid population growth, and the “Anthropocene” shaped by late capitalism—all of which are brought to a close in the trilogy’s final chapter. Yet, does the end of the old human civilization in the novel mirror the Dark Ages that followed the fall of the Western Roman Empire in European history? The answer is clearly negative. Just as emerging archaeological evidence suggests that Europe’s Middle Ages were not a dark era of civilizational decline, as previously assumed by historians, the material and spiritual development levels simply unfolded differently without regression. Similarly, in the novel’s story, although humans no longer dominate the planet following the catastrophe, the new world of species equality can be likened to a neo-medieval age, still in disarray but with the potential for diverse possibilities. Thus, the apocalyptic view of *MaddAddam* extends beyond the end of human history and represents the end of humanity’s oppression of the planet. A new civilization, teeming with possibilities, is emerging.

Atwood adeptly employs the theme of storytelling as a vehicle to navigate the dystopian landscape and examine the human capacity for resilience and hope. Atwood not only contemplates the potentially disastrous implications of unchecked human ambition and environmental exploitation but also foregrounds the power of storytelling as a means of constructing identity, preserving history, and fostering community within a dystopian context. The novel further highlights the role of storytelling in reconfiguring

and reimagining dystopian narratives, thereby facilitating the emergence of a more equitable, sustainable society from the remnants of a devastated world.

Ultimately, as Atwood posits, the paramount significance of storytelling, when examined through the lens of evolutionary trajectories, can be attributed to its critical role in facilitating human endurance and persistence. Genetic anthropologists posit an inherent human curiosity, driven by potential dangers or opportunities. Neurological research indicates memory evolved for anticipating the future, crucial for survival, leading to humanity's development of shortcuts to navigate future trajectories for millennia (Atwood, 2014b). The act of reciting tales furnishes the human species with a pronounced evolutionary edge. By disseminating crucial intelligence encapsulated in indelible, and thus replicable structures, members of our species can bolster their likelihood of persistence. Atwood posits that storytelling the future has the capacity to stimulate collective thinking and facilitate alterations in our fate via political endeavors. Consequently, literary creations that imagine the future serve as "blueprints," as they provide an opportunity to outline potential circumstances if we were to pursue an extension of our current trajectory, thus enabling us to determine if that is indeed the path we wish to follow.

In the final chapter of *MaddAddam*, titled "Book," Blackbeard, the adult Craker, narrates and documents the experiences of Toby during her lifetime. The primary narrative perspective in the trilogy undergoes a significant transformation, initially centering on male characters, Crake and Jimmy, then transitioning to female figures,

Toby and Ren, and ultimately culminating with the post-human Craker, Blackbeard. Although the Crakers possess the final interpretive authority, Toby's continuous storytelling – covering the genesis of the new era, the rituals of the God's Gardeners, and the shaping of myths – ensures the preservation and transmission of these fragmented records and snippets through the written word. This endows the Crakers and their mixed descendants with a perception of selfhood and significance, connecting them to the legacy of the old human race.

The emergence of symbolic thinking among the Crakers, including the development of their own religion despite their creator's intentions, not only highlights the fallibility of utopian architects but also suggests that an intrinsic element crucial to the Crakers' survival is manifesting in their inherent inclinations (Harland, 2016). In her trilogy, Atwood exhibits a profound fascination with the poetics of storytelling. Atwood has commented that the *MaddAddam* trilogy is not entirely apocalyptic in tone, as the destruction of human civilization in the story is not solely due to human activities causing environmental collapse, which in turn triggers ecological catastrophe and human annihilation. Instead, it is the result of a deliberate act of bioterrorism using artificially engineered viruses to systematically destroy humanity. The underlying, albeit hidden, motive is to preserve the integrity of Gaia, the natural world, by preventing the extinction of species due to human activities. Thus, the *MaddAddam* trilogy offers an alternative imaginative and interpretative lens for the environmental apocalypse.

Perhaps Atwood's trilogy is closer to the essence of a revelation instead of apocalypse. Examining a variety of interpretations and emphasizing the narrative

methods of world-building accompanied by their corresponding ethical frameworks, Atwood's trilogy permits readers to arrive at their own moral judgments regarding the ecological crisis via aesthetic simulations, while avoiding the imposition of unequivocal solutions. This characteristic differentiates her speculative fiction from other contemporary apocalyptic narratives and reestablishes a connection to the original connotation of apocalypse as revelation (Bender, 2019). The *MaddAddam* Trilogy discloses that through storytelling human beings shape worlds, necessitating the development of novel and diverse narratives to forge improved futures. Atwood's tome portrays a novel epoch in which flora and fauna thrive in the wild, enveloping the deteriorating remnants representing the erstwhile civilization. With a whimsical turn, she envisions post-human Crakers acquiring the skills of writing and storytelling, evolving into beings more human than their originators could have ever anticipated. The *Waterless Flood* is not an apocalyptic catastrophe of species extinction, but rather a turning point that ushers in a new era and reveals new hope. No matter how intense or traumatic the upheaval, the new world unfolding in the story is one of a post-human age.

The *MaddAddam* trilogy offers an innovative interpretation of the apocalyptic concept by recasting it as a form of revelation, using a multilayered narrative structure, and implementing a unique and progressive typology. The traditional understanding of the apocalypse signifies a devastating event signifying the world's demise, often linked to a literal interpretation of biblical predictions and the quest for end-of-the-world indicators. However, within the frame of the *MaddAddam*, the apocalypse is reconceptualized as an indication of a forthcoming era (Northover, 2017). To expand on

this, the primary catastrophic incident known as the Waterless Flood in the series can be viewed as a radical release or salvation from the prevailing adversities, rather than an actual calamitous termination (Northover, 2017). Hence, the apocalypse here symbolizes a constant potential for creative freedom. On the other hand, the term revelation denotes the process of disclosing or making something known and anew. In the *MaddAddam* trilogy, it implies the disclosure of a new era, a period full of opportunities, and a rewriting of the pre-existing world. Revelation is perceived as a tool for redemption and renewal, providing optimism and a new beginning. The trilogy reinterprets the concept of apocalypse as a revelation of a new age, rather than a catastrophic end.

Atwood prompts her readers to envision a sustainable future that contrasts with the catastrophic possibilities that male narrators like Jimmy, Crake, and Zeb appear to envisage, by establishing a posthuman ethical framework that relies on intra-subjective interactions with nonhumans and our shared surroundings. Jennings (2019) underscores the significance of these interactions in facilitating the resurgence of the human species. This perspective provides an intellectually stimulating depiction of a prospective future, where harmonious coexistence with nature is emphasized. In *MaddAddam*, Atwood postulates a world where diverse entities cooperate and establish alliances to extend their existence within this ravaged world. By portraying agency as a continuous process of collective negotiation, homo sapiens survivors of the apocalypse must revise their relational interplays with nonhuman entities by reassessing their standards for personhood. Identity formulation via a relational network serves as the genesis of the emergence of the agency.

Conclusion

Based on the analysis of Margaret Atwood's *MaddAddam* trilogy and its treatment of themes such as biocapitalism, feminist agency, companionship, and the Anthropocene, readers are encouraged to delve into the intersection of science and humanities. By exploring literary works that delve into the consequences of technological advancements, societal control, ecological crises, and gender dynamics, readers can generate reflections and identify potential research paths. For instance, examining dystopian novels that depict the impact of scientific progress on humanity or delving into feminist literature that explores the struggles and resilience of female characters in oppressive societies can yield fruitful research directions. Moreover, texts that tackle themes of commodification, surveillance, and the blurred boundaries between species provide opportunities for comparative studies. By embracing this approach, readers can expand their understanding of how literature reflects and comments on various aspects of the human experience, opening up avenues for prospective research topics.

In her influential work, "Negotiating with the Dead: A Writer on Writing," Atwood (2002) articulates her interpretation of a writer's task. She draws on the essence of a statement from the biblical *Book of Job* to encapsulate the role of the writer, suggesting that the author stands as the sole survivor entrusted with the duty of narration. A discerning reader might agree that Atwood, embodying the role of a messenger,

approaches us with meticulous care. This isn't solely because images from history intermittently dance in her consciousness. Rather, it suggests that her ultimate ambition goes beyond the mere recounting of an alternate timeline's global catastrophe. Atwood asserts that the *MaddAddam* trilogy is not merely about the end of the world or dystopian scenarios, as the central catastrophic event, the Waterless Flood, is not a simple ecological disaster, but rather the consequence of bioterrorism foreseen in the work itself. The tripartite series can be interpreted as an imaginative exploration of all future possibilities rather than solely as the end of all possibilities, as implied by the biblical myth of the apocalypse (Bender, 2019). Offering an unconventional portrayal of the eschatological event, this interpretation suggests a deviation from traditional understanding, highlighting a creative approach to examining and explaining potential future outcomes. Instead of adhering to the simplistic and fatalistic conclusion often linked with the apocalypse, this alternative viewpoint fosters an imaginative investigation of diverse future possibilities. By doing so, it disputes the idea that the end of times represents the absolute termination of all prospects. When analyzing the trilogy through this perspective, it becomes apparent that the underlying themes and messages possess greater complexity and nuance than those discovered in the standard interpretation of the scriptural allegory. Consequently, the tripartite series surpasses the superficial associations typically attributed to biblical myths and encourages a more profound, multifaceted comprehension of the apocalypse.

In a manner reminiscent of the events in the novel, the Covid-19 pandemic since the end of 2019 has led humanity on an uncharted journey with no clear path ahead. Throughout history, the tug-of-war between infectious diseases and human civilization has been a recurrent theme, akin to an eternal recurrence. On one hand, advancements in medical technology, the development of vaccines and antibiotics, and modern urban planning that improves public sanitation have all significantly reduced the threat of infectious diseases to human survival. However, excessive development has led to ecological destruction, overcrowding due to urbanization, and the rapid spread of new forms of infectious diseases facilitated by international transportation. While humanity constantly reflects and learns, it also repeatedly falls into the same pitfalls. Yet in this cyclical process, perhaps all we need is to accumulate small but decisive choices, and the arc and curves of history will eventually change.

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Apocalypse or Revelation?: Humanity Reconsidered in Margaret Atwood's *MaddAddam* Trilogy*

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Abstract

Margaret Atwood, a prominent Canadian and North American author, masterfully blends various genres to address contemporary issues, such as feminism, the Anthropocene, biomedicine, and posthumanism, crafting powerful allegories for future societies. Her critically acclaimed *MaddAddam* trilogy, which took a decade to complete, explores these themes across three novels: *Oryx and Crake*, *The Year of the Flood*, and *MaddAddam*. This article aims to investigate the themes of biocapitalism, feminist agency and companionship, and the concept of the Anthropocene within Atwood's *MaddAddam* trilogy, providing a holistic analysis of these crucial aspects. In *Oryx and Crake*, the rampant development of biomedical and genetic engineering leads to a form of technological domination, blurring the lines between species and resulting in biocapitalism where human bodies become capital. Corporate governance, surveillance, and the pursuit of perceived perfection further entrench a medicalized

* A fraction of the initial conceptualization of this article stems from a succinct Chinese guide reading the author was cordially invited to write for AzothBooks' Chinese rendition of *Oryx and Crake*. The present study strives to methodically organize and enhance these nascent concepts, while concurrently integrating philosophical and sociological theories to facilitate the processes of interpretation and analysis. The author wishes to thank the Ministry of Science and Technology (National Science and Technology Council) for the sponsorship. Project no. : MOST 107-2420-H-009 -003 -MY3.

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society with an overreliance on technology. The *MaddAddam* trilogy emphasizes the calamitous repercussions of anthropocentricity, neoliberalism, and biocapitalism, as the unfettered commodification of life ultimately brings about its near destruction. *The Year of the Flood* provides a polyphonic view of the “Waterless Flood” catastrophe through multiple female narrators, unlike the single-narrator perspective in *Oryx and Crake*. Atwood emphasizes women’s victimhood and survival by exploring the experiences of postfeminist characters like Amanda and Ren, who face human cruelty and sexual predator-prey dynamics. Although they believe they are the only survivors, the female narrators record their experiences in diaries, symbolizing hope and the preservation of civilization, anticipating that their records may be read in the future. *MaddAddam*, the concluding novel in Atwood’s trilogy, serves as a synthesis of the intricate narratives and themes found in *Oryx and Crake* and *The Year of the Flood*, presenting the story as more of a revelation than an apocalypse. The trilogy emphasizes narrative world-building and ethical frameworks, allowing readers to form their own moral judgments on the ecological crisis through aesthetic simulations. In *MaddAddam*, Atwood conceptualizes a realm wherein various beings cooperate for the sake of survival, as the remaining human populace adjusts their interactive dynamics with nonhuman counterparts by reevaluating the parameters for individuality. This ultimately underscores the aspect of agency as an ongoing procedure of self-construction of identity within an interdependent network of relationships. In conclusion, this article examines the *MaddAddam* trilogy as a whole, delving deeply into human potential for devastation and endurance through Atwood’s enthralling narrative, which compels readers to face the repercussions of our deeds while contemplating the possibility of renewal amid calamity.

Keywords: Margaret Atwood, *MaddAddam* trilogy, biocapitalism, feminist agency, revelation