"I love you, my dear friend": Analyzing the Role of Emotions in the Building of Friendships in Online Fanfiction Communities

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Abstract. As people continue to develop friendships over the Internet in greater numbers than in-person, the complex factors behind them become important to study. One such factor is emotional expression, and we are motivated to better understand how it plays a role in both continuing existing and building new friendships. In this study, we examined the role of emotions in the formation of different degrees of bonds between members on Fanfiction.net, an online community where members post fanfiction and receive reviews from readers. We developed an emotional taxonomy and used it to qualitatively code 11,292 reviews from Fanfiction.net. We introduce a novel metric of counting characters in reviews, an adjusted character count (ACC). We found that both positive and negative reviews have implications on friendship building, such as through in-depth mentorship and co-creation. Through a mixed-methods analysis of different degrees of emotional expression and review length, we observe users going from shallow connections based on short reviews with low emotional expression to stronger relationships through repeated demonstrations of high emotional investment to tight friendships which transcend the fictional content being exchanged.

Keywords: distributed mentoring · friendship-building · fanfiction.

1 Introduction

Participation in online communities has become an almost unavoidable part of our daily lives, participation which is defined by creating and consuming content. Such engagement with content often involves emotional expression, both publicly in the form of comments/reactions, and privately to people in users' networks through exchanging content. However, while the benefits of participation in online communities for mental health [34], informal learning [22] and community building are well-known, insufficient attention has been given to the importance of emotional expression as a means of building community in online communities. Specifically, there is a need to understand the role of the nature or strengths of these emotions in such community building processes.

In this study, we address this gap through an examination of one of the largest online text-based communities: Fanfiction.net. When an author uploads

a new story or a chapter of an existing story on Fanfiction.net, they may receive comments, or "reviews", which is the platform's primary affordance of communication. These reviews are impactful on writers, with greater numbers of reviews received being correlated with an improvement in writing [18] and with the creation of more content [6]. Researchers have found that authors and reviewers may develop bonds by exchanging reviews [6, 10, 15]. However, reviews are not just important for *what* they say; it also matters *how* they convey their intent, since the emotions expressed in a review may completely alter its impact. As a community as rife with emotional expression, Fanfiction.net is perfect to study for our purpose.

We build on prior work [10] which highlighted the presence of multiple layers of user networks on Fanfiction.net, in accordance to social network theory [12]. We study the importance of nature and degrees of emotional expression in user traversal across such layers in social networks. By manually qualitatively coding reviews for emotions using a taxonomy developed through a grounded-theory approach combined with a quantitative analysis of review lengths and volumes, we contribute to a growing understanding of interaction patterns and emotional expression in online fanfiction communities, and beyond.

We offer three contributions to the field with this work: (1) detailing the characteristics of bonds between users in online Fanfiction communities, (2) providing a rigorously developed and tested taxonomy of emotions expressed by members in online Fanfiction communities, and (3) contributing to a body of work that expressing negative emotions can also lead to community formation in online communities, if they are considered in context.

2   Related Work

2.1   Emotional Expression in Online Communities

Emotions are an inseparable part of social media, to the point where there is a demonstrable "online disinhibition effect" [41] with people preferring to express more emotions online than in-person. Emotional expression from a few users encourages others to be more emotive [23], and expressive participation and recognizing others with similar emotional reactions is also a powerful tool for extending and receiving social support [33] as it serves to both bring together users with shared successes [26] and unite members sharing similar difficulties or losses [11]. Expressing emotions helps construct generalized shared realities [37] between users, a key factor in both the initial formation and the continued progress of their interpersonal relationships.

The nature of emotions – whether positive or negative – expressed also plays an important role in their formation of user connections. Sharing positive emotions leads to finding social support [20, 26], while sharing negative emotions or talking about difficult periods in their lives has resulted in members not being able to find supportive communities [11]. Therefore, the majority opinion about online communities is that expressing positive emotions generates more

positivity and in turn leads to building communities, while expressing negative emotions might not be as effective for community building.

However, we believe that if negative emotions are considered *in context*, they might also be important factors in forming communities of positive support. While mutual anger or negativity can bring together trolls and create destructive communities of misinformation and hate speech [40], expressing negative emotions such as sadness by being vulnerable can bring members together in mutual solidarity. Typically, work along these lines exist in the context of online health communities [27] or conversations about mental health/depression in online spaces [11], where members bond through sharing their struggles and difficulties in similar situations. Our work proposes another such example, considering online fanfiction communities, and argues that it can be extended to other text-based online communities.

2.2   Identifying Emotional expression in Online Communities

In text-based online communities, a common way of identifying and studying emotional expression is through *sentiment analysis*: "a computational treatment of opinion, sentiment, and subjectivity in text" [32]. Such processes typically involve training machine-learning algorithms on a list of sentiment-classified texts, and then applying the trained model to a list of unclassified texts.

While this approach has been arguably successful with large corpora of texts, there are disadvantages. Such algorithms, if trained on low-quality or biased data, generate unideal outputs [21]. Most algorithmic sentiment analysis also ranges between different degrees of Positive and Negative emotions and are thus unable to recognize many parts of the emotion spectrum [21], though some algorithms do accommodate different emotions like Love, Joy, and Frustration [44]. Finally, algorithmic detection of emotions, especially by large social media spaces algorithms that use such detection to personalize content recommendation, has been viewed by users as invasive and discomforting [2].

An alternative to using algorithmic sentiment analysis is human-encoding text. These approaches combine elements of grounded theory [7] and thematic analysis [3] with techniques such as keyword-spotting [24] and contextual analysis [20]. Manual coding of emotions might be more time-consuming but has several advantages over algorithmic sentiment analysis, such as higher reliability of coded data [21]. We thus adopt a manual approach to emotion detection.

2.3   User Participation in Online Fanfiction Communities

Thomas [43] defines fanfiction as "stories produced by fans based on plotlines and characters from either a single source text or else a canon of work". Fanfiction allows fans to actively engage with their favorite storylines and actively "seek out fellow-fans to gush over their object of affection" [47].

One of the primary reasons that members participate in online fanfiction communities is because of the different forms of social support abundant within such communities. In such communities, a majority of members identify as women or

LGBTQ [30], making them potential safe spaces that are welcoming and positive. Genderqueer individuals who participate in online fanfiction communities leverage this social support and feel more confident to safely self-explore with lesser fear of backlash, as compared to other online communities such as Facebook where such self-exploration can beget high volumes of negativity [14]. Members here also find support through difficult periods of their lives, as participation provides reduced isolation during personally challenging moments in members' lives as they share their stories with other community members and lean on each other to get through their difficulties [39].

To understand the types of bonds and networks formed between members in online fanfiction communities, Campbell et al. [6] proposed the theory of *distributed mentoring*: a form of mentorship in member-networks spanning the globe where everyone has something to contribute to and learn from each other. They note how members find both content-based and social support from the community as they experience personal growth and, in turn, mentor others. This notion of paying it forward is an important aspect of sustaining longer and more meaningful bonds as they jumping to each other's defense when someone receives negative comments while also forming giving and receiving positive, actionable feedback through targeted reviews and rich discussions [18].

Davis et al. [10] applied social network theory [12] to online fanfiction communities, defining 2-3 layers of user networks with the number of users decreasing and the strength of bonds increasing towards the center of the network. We extend this work by studying the effect of emotional expression in the traversal of such networks, using the *Affect* aspect of the distributed mentoring framework.

3   Methods

3.1   Defining Levels of Engagement in Fanfiction Communities

Since Davis et al. [10] do not provide definitions for the aforementioned layers, we begin by providing some terminology for them. Hereafter in this section, we refer to two users: users A and B. We do so because labeling them as 'author' and 'reviewer' would not do justice to the fact that members on Fanfiction.net frequently exist as both [6, 18].

When they directly interact with each other for the first time, users A and B establish a **connection**. At this point, they are simply the newest nodes on each other's social networks, and likely have no information about each other beyond the first set of content exchanged. These connections are weak and, if interactions end here or continue briefly and in shallow terms, they likely will exist at the periphery of each other's social networks and the connection will soon fizzle out. Connections are also most likely to be unidirectional, since a single short interaction might not have much effect on each other.

If the connected users A and B continue to communicate, they may start to form a **relationship**. Such relationships are built on and sustained by large volumes of content exchanged and each other's responsiveness, as well as the

evolution of the nature of content into more thoughtful conversations, as demonstrated by previous work both outside of online fanfiction communities (e.g [42]) and within them (e.g. [6, 19]). These works demonstrate that these relationships are founded and maintained by reciprocal exchanges of high volumes of content at moderate to speedy rates of response.

For the relationship between users A and B to evolve into a ***friendship***, the nature of the content exchanged plays the most important role, more than the volume and frequency of conversations. The users must have a sense of 'Shared Life' [45] and develop a meaningful connection beyond the content of the stories/reviews exchanged.

Therefore, we label Davis et al.'s [10] layers as *connections*, *relationships* and *friendships*, starting from the outermost and moving inwards to the central user. In our analysis, we examine how members on Fanfiction.net exist in these layers for each other, and how they traverse them.

3.2 Data collection

We worked with data gathered by Yin et al. [48], which consists of 28 million chapters from 6.5 million stories by 1.5 million authors, and over 176 million reviews from 8.5 million users stretching across 16 years (since 2000) on Fanfiction.net. This dataset is available at http://research.fru1t.me. For our analysis, we first randomly selected 10,000 reviews from this dataset. After coding these 10,000 reviews for emotions (Section 3.3), we identified the stories/chapters which were the most represented in our dataset. We then acquired the rest of the reviews for those chapters from the master dataset, randomly shuffled them to reorder them, and coded those with the intention of fully covering the reviews for those stories/chapters. For these stories, we also read the authors' notes in the chapters (if present) to obtain a sense of the authors' communication with reviewers. We also obtained assosciated metadata, such as authors' notes (A/N), timestamps, reviewer's history of reviewing an author's work, and author's history of reviewing this stories the reviewer might have authored.

Since we conducted manual qualitative coding, we did not want to exceed 12,000 reviews for this analysis and thus restricted this extension to stories with more than 15 reviews per chapter in our original selection of 10,000 reviews. In sum, we coded a total of 11,292 reviews across 6,992 unique stories spanning 9,313 chapters from 1,014 unique authors.

3.3 Forming the Taxonomy of Emotion Codes

We begin our analysis by first determining our taxonomies of qualitative coding. For topics, we adopted Evans et. al's [15] taxonomy of 13 topics of reviews on Fanfiction.net (Shallow Positive, Targeted Positive, Targeted corrective/constructive, Targeted positive and corrective/constructive, Non-constructive Negative, Discussion about the story, Discussion not about the story, One-sided connection, Two-sided connection, Fandom Remarks, Update encouragement, Review fishing, and Miscellaneous), since it is well established within fanfiction

literature [10, 18]. We then determine the taxonomy of emotions, to be consistent in our decision to pre-determine taxonomies of codes before beginning to code.

We began with the 8 primary emotions from Plutchik's Wheel of Emotions [35] (i.e. Joy, Sadness, Acceptance, Disgust, Fear, Anger, Surprise, and Anticipation), and adapted it for our purposes, pursuant to recommendations by Saldana [38]. We randomly selected a test-set of 500 reviews from Yin et al.'s [48] dataset (and not our subset of 11,292 reviews) and began individually coding each review with this taxonomy. A team of five coders conducted this process: two undergraduate, two Masters and one PhD student. During this process, we looked for cases where at least one of the 8 emotions applied perfectly either to the entire review or some of its parts, or when none of these emotions were applicable. Alongside the Wheel, we allowed ourselves to introduce our own codes wherever we felt appropriate, or where we observed in vivo emotion codes (i.e. emotions directly mentioned) [9].

After our individual encoding, we began to compare our usages of the 8 emotions and external/in vivo codes. We first observed that across the five of us, there were no applications of "Acceptance" and "Fear" in the 500 test reviews, so we decided to exclude them from our taxonomy. We each found ample usage of "Sadness" and "Surprise", so we decided to keep them unaltered. We found a majority of us using "Disgust" on its own but also in conjunction with some form of "Disturbed" e.g. for reviews where members described being 'creeped out', so we amended "Disgust" to "Disturbed/Disgust". All of us used "Anger", but also in conjunction with the external code "Frustration" e.g. for reviews where members were angry at the author for not publishing an update soon enough, so we amended "Anger" to "Anger/Frustration". For similar reasons of co-occurrence, "Anticipation" was amended to "Anticipation/Hope" and "Joy" was amended to "Joy/Happiness". However, with "Joy/Happiness", all coders observed there to be over 150 reviews each where we coded "Joy" or something similarly unsure. We therefore determined the need for a milder form of "Joy/Happiness", and therefore introduced the code "Like", following [25].

Further, "Dislike" and "Confused" were introduced because they occurred most frequently in the consolidated list of in vivo codes. "No Emotion" was introduced to avoid situations where we would have to force ourselves to assign an emotion where we could not confidently apply at least one emotion. Finally, we added "Unknown" for non-English reviews to avoid misunderstanding or losing linguistic context in the process of translating these reviews [16, 46].

We thus established a taxonomy of 11 emotions, depicted in Table 1 with definitions and examples. Having arrived at this list, we selected another test-set of 500 reviews, and repeated the above process. The second round of coding did not yield any new emotions, nor did it question the validity of any of the 11 emotions, and the taxonomy was thus formalized.

For our analysis, we divided our taxonomy into Positive, Negative, and Unclassified emotions as also depicted in Table 1. We classified 'Surprise' as a Positive emotion following the lead of Robinson [36], and based on our observations from the test-sets where expressions of surprise are almost always determined

to be positive ones, such as "omg I did NOT see that coming, good twist". For similar reasons, we assigned 'Confused' as a Negative emotion.

Table 1. The taxonomy of emotion codes, along with definitions, examples and type of emotion (Positive, Negative, Unclassified). Note that all examples are snippets from reviews in our dataset.

Emotion Code	Definition	Example	Emotion Type
Like	The reviewer expresses generic or slightly positive emotions, without going into too much depth.	Wow, I really like this chapter	Positive
Joy/Happiness	The reviewer has more than just a slightly positive reaction to the story and has taken time to adequately express this.	I LOVE this story! Excellent work!	Positive
Anticipation/Hope	The reviewer is expressing their hope of seeing upcoming work.	Good job I'll be waiting for more	Positive
Surprise	The reviewer is surprised, either pleasantly or otherwise.	Whoa I did not see that coming	Positive
Dislike	The reviewer expresses generic or slightly negative emotions, without going into too much depth.	I was a little disappointed	Negative
Disturbed/Disgust	The reviewer expresses discomfort with the content of the story, either with some specific parts or the general tone.	Ugh Snape makes me want to crawl out of my skin	Negative
Anger/Frustration	The reviewer expresses an extreme negative reaction either to the story or the lack of updates.	This is absolutely garbage	Negative
Sadness	The reviewer expresses sadness, either mildly or through tears	Broke my heart :,(I cried a bit	Negative
Confused	The reviewer expresses confusion, as most often indicated by one or more questions.	Why would Harry do that??	Negative
Unknown	The text is either indecipherable or is in a language other than English.	me encanta!	Unclassified
No emotion	Any emotion cannot be reliably assigned to the text.	I'm a Boy	Unclassified

We allocated a list of ordinal (and not discrete) scores to our Positive and Negative (and not Unclassified) emotions because we had a rationale for keeping degrees of emotions different in our taxonomy without quantifiably comparing differences, as mentioned above e.g. with 'Like' and 'Joy/Happiness'. We define 'Joy/Happiness' to be stronger than 'Like' in Table 1, so 'Joy/Happiness' is classified as Strong Positive. 'Like', 'Anticipation/Hope' and 'Surprise' are all Mild Positives. Similarly for Negative emotions, we classify 'Anger/Frustration' and

'Disturbed/Disgust' as Strong Negatives, while 'Dislike', 'Confused' and 'Sadness' are all Mild Negatives. We only combine emotions when they are either entirely Positive or Negative, as explained in Table 2, and not in instances where reviews are coded with a mixture of Positive and Negative emotions. We make no claims about the overall Positive/Negative effect of a combination of Positive and Negative emotions, since we do not classify any emotions as perfectly complementary to one other e.g. we cannot say that 'Like' indicates the *same* amount of positivity as the amount of negativity captured by 'Dislike'.

Table 2. Classification of scores obtained as a combination of emotions

Combination of emotions	Resultant scores obtained
1 Mild emotion	Mild
$\geq$ 2 Mild emotions and 0 Strong emotions	Moderate
$\leq$ 1 Mild emotions and 1 Strong emotion	Strong
$\geq$ 2 Mild emotions and $\geq$ 1 Strong emotions	Very Strong
$\geq$ 0 Mild emotions and $\geq$ 2 Strong emotions	Very Strong

3.4   Applying the Taxonomy of Codes to the Data

After formalizing the taxonomy of emotion codes, we began coding our dataset of 11,292 reviews with emotions and topics. We coded the data in batches of 500 reviews (292 for the last batch), with each batch being coded by three independent coders. Reviews could be coded for any non-zero number of emotions and topics, since no emotions or topics were defined as mutually exclusive.

Like during our test encodings, we continued to take advantage of affect labels (wherever present) that corresponded to emotions in our taxonomy, either directly or as a synonym. We also used seed words [1] where certain words/phrases immediately correlated to certain emotions, e.g. phrases like "update soon!" and "I can't wait" were determined to be seed phrases for "Anticipation/Hope."

Further, we incorporated Liu et al.'s [28] suggestion of leveraging real-world knowledge and our understandings of what emotions are evoked by real-world events, e.g. a review containing "My mother is sick" was coded 'Sadness' because we felt that in most cases of the mother's illness, the child experiences sadness. With a fully formed taxonomy, we deemed it a powerful contextual attribute to add to our qualitative coding process. However, we still avoided using personal preferences or knowledge regarding fandoms during coding.

At the end of each batch of 500 reviews, the coders met to discuss disagreements. For each disagreement, each coder laid out their rationale for their encoding and the group voted by simple majority on an agreed-upon encoding. All reviews were first consolidated before progressing to the next batch, to hopefully observe progressively fewer disagreements in future encodings as a result of these consolidation conversations. The observed disagreement rate (percentage of 500 reviews where disagreements needed to be resolved) decreased from 19% in the

first session to under 4% in the last session. To measure inter-rater reliability (IRR), we use the Generalized Cohen's Kappa [17], because of its robustness over Cohen's Kappa [8] (the most-used IRR metric) in being able to handle a mixture of mutually and non-mutually exclusive categories.

3.5 Adjusted character count (ACC)

Our metric of length was an adjusted character count (ACC) as opposed to word count, because we observed reviews in our dataset containing different intentional (mis)spellings of words such that counting them as words would lead to a loss of emotional strength. For example, reviews such as "I love it!" and "I LOOOOOOOVE IT!!" are both three words, but the latter expresses a far stronger emotion through the use of capitalization or repetition of characters [4].

We counted emojis through their individual characters, instead of as one, since they provide stronger expressions of emotions than words [29] and therefore we counted them as more than just a single character. For a similar reason [5], we count capitalization as an extra character. We were careful to not make this extra addition for grammatical capitalizations such as at the start of sentences, in "I", at the start of proper nouns or for acronyms. Table 3 provides a detailed explanation of the metric of the ACC.

Table 3. Illustrative examples of adjusted character count

Review	ACC	Explanation
I love this!	10	I = 1 + love = 4 + this = 4 + ! = 1 =¿ 10
I LOVE THIS :)	20	I = 1 + love = 4 + this = 4 + :) = 2 =¿ 11 + 10 (capitalizations) - 1 (adjusting I) = 20
I love Harry!	11	I = 1+ love = 4 + Harry = 5 + ! = 1 =¿ 11 + 2 (capitalizations) - 2 (adjusting I and H) = 11

4   Findings

Table 4 contains percentages and counts of each emotion in our qualitative coding process, accompanied by agreement scores. The numbers sum up to exceed the total number of reviews coded since emotions were not mutually exclusive.

We excluded 1,022 reviews that were coded as Unknown, and 253 reviews coded as No emotion from our analysis. Based on our classification of emotions as Positive or Negative, we categorized the reviews as Positive or Negative if they had *exclusively* Positive or Negative emotions expressed, respectively. If reviews contained both Positive and Negative emotions, we classified them as Mixed.

We identified 1,014 unique authors and 6,586 unique reviewers. We classify reviewers into two groups: those who only leave a single review on an author's work (hereafter referred to as *single-reviewers*), and those who write multiple

Table 4. Percentages of emotions in reviews, with agreement scores.

Emotion	Percentage of Reviews	Agreement scores
Like	29.01% (N = 3,275)	0.579
Joy/Happiness	40.75% (N = 4,602)	0.588
Anticipation/Hope	38.16% (N = 4.309)	0.739
Dislike	1.65% (N = 186)	0.881
Disturbed/Disgust	2.90% (N = 327)	0.903
Anger/Frustration	3.44%(N = 368)	0.862
Sadness	7.93%(N = 896)	0.860
Surprise	2.52% (N = 285)	0.876
Confused	2.51% (N = 284)	0.823
Unknown	9.06% (N = 1,022)	0.997
No emotion	1.73%(N = 253)	0.622

reviews on the same author's work (hereafter referred to as *repeat-reviewers*). We identified 3,674 single-reviewers and 2,912 repeat-reviewers in our coded data. It is important to mention that before labeling a user as a single-reviewer of a story, we examine within Yin et al.'s [48] larger dataset whether they are indeed single-reviewers, accounting for the fact that our sample selected reviews at random and could easily mischaracterize members as single-reviewers just because they are represented only once in our selection.

We now define, based on our observations over a combination of qualitative analysis of review texts and quantitative analysis of review counts and lengths, the characteristics of *connections*, *relationships*, and *friendships* in the following sections. All quotes presented in this section are obfuscated to protect the anonymity of members who wrote them, in accordance with best practices for protecting their privacies.

4.1 Defining Connections

We defined *connections* to be shallow, mostly one-time interactions between members. We also imagine that this layer of the social network will contain the largest number of members.

We first observe that there are more single-reviewers (N = 3,674) than repeat-reviewers (N = 2,912). There is a correlation present between being a single-reviewer and writing 'Shallow Positive' reviews with Mild Positive emotions, reviews requiring the least effort and investment from the reviewer [18]. Single-reviewers write Shallow Positive reviews with Mild Positive emotions (N = 1,398; mean ACC = 133.67 characters) with a significantly (Mann-Whitney U test, p = 0.002) higher mean ACC than repeat-reviewers (N = 548; mean ACC = 119.52 characters). Finally, we observe that there are a few repeat-reviewers (N = 89) who only write Mild Shallow Positive reviews (mean ACC = 78.07 characters). Most of these repeat-reviewers leave 2 reviews (74%) on an author's work, and some write 3 (26%). Some illustrative examples of Mild Shallow Positive reviews, either from single or repeat-reviewers, are:

"Good."
"I like your writing."
"Keep it up."

Therefore, we characterize such single-reviewers who write Mild Shallow Positive reviews and repeat-reviewers who write 2-3 Mild Shallow Positive reviews as having *connections* with the author.

4.2   Defining Relationships

We defined *relationships* to be based on repeated interactions with high volumes of content exchanged, and the nature of the content being more thoughtful than shallow connections. For this analysis, we focus only on repeat-reviewers since, by definition, single-reviewers do not exchange content repeatedly. This is motivated by our observations that Positive reviews from repeat-reviewers (N = 2,258; mean ACC = 168.50 characters) are significantly longer (Mann-Whitney U test, p = 0.043) than those from single-reviewers (N = 3,107; mean ACC = 163.19 characters). The same is true for Negative reviews (Mann-Whitney U test, p = 0.036), as Negative reviews from repeat-reviewers (N = 265; mean ACC = 161.89 characters) are significantly longer than those from single-reviewers (N= 284; mean ACC = 154.10 characters), though no such statistically significant difference was observed for Mixed reviews (Mann-Whitney U test, p = 0.052) from single or repeat reviewers. These results lead us to infer that repeat-reviewers are more engaged with an author's work than single-reviewers. The summarized data for the reviews from single and repeat-reviewers is shown in Table 5.

Table 5. Summary of type of reviews from single and repeat-reviewers

Type of Reviewer	Type of Review	N	Mean ACC
Single	Positive	3107	163.19
Single	Negative	284	154.10
Single	Mixed	281	247.91
Repeat	Positive	2258	168.50
Repeat	Negative	265	161.89
Repeat	Mixed	523	312.76

We further note most (61%) repeat-reviewers moving from writing Mild Shallow Positive reviews (mostly Positive, but also some Negative) to more expressive (i.e. Moderate and beyond) reviews coded with a variety of topics. While this does not mean that they do not ever again write Mild Shallow Positive reviews after their first Moderate or stronger review, the progression from Mild Shallow Positive reviews into more expressive ones indicates an increasing degree of thoughtfulness. We also observe that repeat-reviewers express Strong Positive emotions (N = 346; mean ACC = 188.37 characters) with a significantly

(Mann-Whitney U test, p = 0.029) higher mean ACC than single-reviewers (N = 427; mean ACC = 160.99 characters). The same is true for Very Strong Positive emotions (Mann-Whitney U test, p = 0.021) i.e. repeat-reviewers express Very Strong Positive emotions (N = 67; mean ACC = 284.45 characters) with higher mean ACCs than single-reviewers (N = 212; mean ACC = 153.67 characters). These results further strengthen our finding that as a member keeps reviewing an author's work, they get more invested and write more emotive reviews.

A case study is presented below as qualitative evidence. All quotes are presented from repeat reviewers in the order in which they were submitted, though quotes presented after each other do not imply that they are consecutive.

Case Study 1

Exciting first chapter! Can't wait for more! - coded as Like + Anticipation/Hope + Shallow Positive + Update encouragement (this is this reviewer's first review for any story by this author, and is on the first chapter of this story).

You captured it all. Everything from <quote from story> to <character name1> and <character name2>'s reaction. I especially enjoyed the <quote from story> line. - coded with Joy/Happiness + Targeted Positive.

Thanks, <reviewer> for your consistent reviews and support! (author, in A/N of a chapter).

You are so goddamn talented! Your writing style is incredible...I am sorry for not reviewing every chapter, I keep hitting next as soon as I finish!!...Keep 'em coming! - coded Joy/Happiness + Anticipation/Hope + Targeted Positive + Discussion about the story (this is an excerpt from a longer review, the entire review has an ACC of 456 characters).

Thank you to all my lovely fans ... ¡reviewer¿, your reviews were very helpful to me... (author in A/N in last chapter of story).

This was a wonderful journey ... I am so happy to have been a part of this... - coded as Joy/Happiness + Shallow Positive (this is an excerpt from a longer review with ACC 684 characters, on the last chapter of this story).

In this example, the reviewer began with Moderate Positive emotions which were more than just Shallow Positive and continued being expressive with Moderate/Strong Positive emotions, leading to a bidirectional conversation with the author outside of the context of the story.

While we have thus far considered Positive emotions in the context of relationship-building, our data shows evidence that Negative emotions too can lead to relationship formation, if they are considered in the contexts in which they were written. We present one such example of a short interaction between an author and a reviewer where the reviewer expresses mostly Negative emotions, but they still develop a relationship.

Case Study 2

> *Noooo! That is so sad... damn cliffie!* - coded as Sadness + Anger/Frustration + Update encouragement + Discussion about the story (this is this reviewer's first review for any story by this author, and is an excerpt from the longer review which has a total ACC of 291 characters)
> *UGH WHY DO YOU ALWAYS LEAVE AT SUCH A CLIFFIE* - coded as Anger/Frustration + Update encouragement
> *Special s/o to ¡reviewer name¿ for your reviews* (author, in A/N of a chapter).
> *I'm SO ANNOYED rn when is the next chapter coming??* - coded as Anticipation/Hope + Anger/Frustration + Update encouragement
> *Thank you for the reviews, ¡reviewer name¿. Your continued hatred towards ¡character name¿ told me that I was writing him well* (author in A/N in last chapter of story).
> *What a beautiful ending, I'm still crying ... thank you for writing this* - coded as Sadness + Joy / Happiness + Shallow Positive (this is an excerpt from a longer review with ACC of 551 characters, on the last chapter of this story).

Thus, we characterize reviewers who leave thoughtful and expressive reviews over the course of the author's work, sometimes even leading to a conversation from the author's side, as having formed relationships with the authors.

4.3   Defining Friendships

We defined friendships as the strongest form of user bonds, where members must demonstrate some sense of 'Shared Life' [45] through meaningful conversations beyond the content of the story. We imagine such bonds to the strongest, and the fewest in number. Through our findings, we demonstrate one such set of interactions between an author and a reviewer. Some excerpts of the conversation are illustrated below.

> *Loving it so far! Keep it up* - coded as Like + Anticipation/Hope + Shallow Positive + Update encouragement (this review is on the first chapter of this story, this reviewer has reviewed other work by this author before).
> *Pretty good overall. You have a remarkably interesting story... ¡making suggestions for improvement¿... DM me if u want to talk more!* - coded as Like + Discussion about the story + Targeted positive and corrective/constructive.
> *Thank you so much for your help with this story! I'm off to review yours!* (author, in A/N of a chapter).
> *Your writing has helped me so much, you have no idea.* - coded as Like + Discussion not about the story.
> *Take care of yourself! The updates can wait, most important is ur health.* - coded as Like + Discussion not about the story (in response to the author in the previous A/N talking about going through a difficult personal situation and not being able to write as frequently).

Thank you <reviewer> for your lovely messages, they help me in my tough time (author, in A/N of next chapter).
It has been a privilege to come on this journey with you, looking forward to what you do next! - coded as Joy/Happiness + Anticipation/Hope + Discussion about the story + Update encouragement (this review is on the last chapter of the story).

We observe an author and a reviewer starting out with low interaction and gradually growing into friends. They provide each other behind-the-scenes support, both with their writing and as a supportive individual during times of difficulty, and publicly uplift each other. We characterize such bonds as friendships.

5   Discussion

5.1   Traversing Across Connections, Relationships and Friendships

We define the three forms of bonds that members can form in online fanfiction communities as connections, relationships and friendships. In this section, we explore the processes by which such bonds form and strengthen over time.

We observe that the formation of the initial *connection* is the result of the first interaction, which can be short and surface-level. If the members do not communicate further after this, or if they only exchange stories and Shallow Positive reviews a few more times, the bond does not grow any stronger.

Section 4.2 narrates an interaction which began as two members not having previously had bidirectional interaction growing into a *relationship* based on sustained reviews which become more emotive and demonstrate the reviewer's deep investment into the author's work. This investment is publicly appreciated by the author, and by the end of the conversation, it is apparent that the two share a bond stronger than a peripheral connection. .

Finally, Section 4.3 captures a brief excerpt of a conversation where two members developed a strong bond through the course of long, sustained interactions. We cannot speculate whether they had a relationship prior to the first review on this story, but since the reviewer had written at least one review on this author's prior work, we can state that there was at least a unidirectional connection. However, through their interactions, they definitely pass through the relationship stage through their bidirectional interaction and reviewing each others' work. They grow into a *friendship* stage where the author acknowledges the reviewer as an important source of support through difficulties in their personal life. Such support is indicative of a stronger bond beyond the fictional content exchanged, and likely to be sustained beyond the conclusion of the story.

5.2   Building Connections, Relationships and Friendships

Connections In Section 4.1, we observe the abundance of single-reviewers who leave short reviews with Mild emotional expression on an author's work, or repeat-reviewers who write 2-3 similarly short and Mildly emotive reviews.

Though connections are the outermost layer of the three-tiered social network and contain the weakest bonds [12], they form an important part of a member's community experience. Our finding that members in the connection layer write short, Shallow Positive reviews with Mildly Positive emotions contributes towards the established understanding of online fanfiction communities being largely supportive spaces, a major reason behind which are such single-reviewers. Their short but positive reviews might not individually have an impact on the author, but together they aggregate to form an abundance [6] of positive reviews that create an environment which uplifts the author and may deter trolls.

Relationships Section 4.2 indicates that repeat-reviewers move from writing Mild Shallow Positive reviews to expressing stronger emotions in more depth and higher levels of engagement with the author's work, sometimes even leading to a bidirectional conversation. Within Davis et al.'s [10] three-tiered structure, such relationships would fall in the second layer. Members in this layer are important for the author because the accretion of commentary [6] and the continued threads of conversation where the same familiar names show up in the reviews of every chapter creates a strong sense of community for the author. In some cases, as in Section 4.2, this leads to the authors having a small conversation with the reviewer and building a relationship. Like on other online communities where exchanging support and positive messaging leads to relationship formation [31], repeat-reviewers and authors on Fanfiction.net form bidirectional relationships through positive feedback loops of updates and reviews, creating mutually positive feelings among all parties and leave them eager for more.

Friendships In Section 4.3, we explore the formation of a friendship between users, going above and beyond the relationship stage with the nature of their back-and-forth conversations. Within Davis et al.'s [10] three-tiered structure, this would be the innermost layer where the bonds are the strongest. Since this layer is expected to contain the least number of members, it perhaps explains why we were able to find only one concrete example to illustrate this. The members described show a sense of 'Shared Life' [45] beyond the exchange of fanfiction content and reviews. The authors foster each others' development as writers through bidirectional exchanges of feedback, and stand by each other during periods of personal difficulty in their lives. We see the friendship grow from the initial reviews, which start from being simply complimentary and then grow into providing more thoughtful feedback, as they then indicate a having a growing impact on each others' lives.

We thus establish the importance of different types and degrees of bonds between members in online fanfiction communities that contribute to improving their experiences and participation. Each degree plays an important and irreplaceable part, and create a positive and supportive community that makes everyone feel valued.

5.3   Contextual Importance of Negative Emotions

While we observe the importance of expressing Positive emotions to various degrees affect the formation of connections, relationships and friendships among members of Fanfiction.net, we also observe that, when they are considered in context, some Negative emotional expression too can be a factor in those processes. In Section 4.2, a majority of emotions expressed by the reviewer are Negative, but upon considering them contextually, we observe how they contribute to the formation and sustenance of a relationship between the author and the reviewer. The reviewer expresses Sadness as a result of a deep immersion within the story and the plight of the characters, and their Anger/Frustration at the many cliffhangers reflects the author's success at hooking them to the story. Their investment and emotive reviews are helpful to the author, as they acknowledge, and contributes towards the author's future chapters [18]. Considering such expressions of Anger/Frustration as negative or hateful does not do justice to this investment and would fail to notice the impact of such expectations in the formation of the relationship. Thus, the Negative emotions expressed by the reviewer are not indicative of hatred, but rather signs of a strong engagement. Through this example, we demonstrate how, in some cases, even expressing Negative emotions can lead to the formation and sustenance of relationships in online communities, if the content of such text be considered in the contexts in which they were written.

5.4   Accounting for Unequal Bond Strengths between Members

We also believe that it is important to account for potentially unequal bond strengths between members on Fanfiction.net, especially between authors and reviewers. For instance, while an author might only have a weak *connection* with a reviewer by virtue of receiving a single or a few short reviews, the reviewer might actually have a lot stronger unidirectional feeling towards the author's work. For instance, the reviewer might really like every chapter update posted by the author, and the work might speak to them beyond the content of the fanfiction, but they might not leave long reviews or any reviews at all. Silently reading, or lurking, is a common practice on Fanfiction.net [13], which makes it difficult to definitively study whether connections, relationships and friendships are always equally reciprocated between members. While we believe that the relationships and friendships presented in Sections 4.2 to 4.3 are equally reciprocated, it is also important to acknowledge that some bonds in online fanfiction communities might not be equally strong on both sides. This might be especially true for connections and relationships, though friendships as we define them require a sense of strong reciprocity.

5.5   Implications for Distributed Mentoring

Our findings have implications for the furthering the theory of distributed mentoring [6]. Our biggest contribution is on the *Affect* attribute of the framework which was previously only defined to encompass feelings of positivity to moderate the effect of negative comment. Our investigation shows the importance of emotive expression towards building a strong sense of community. We also found that Positive emotions extend beyond just counteracting negative comments to a whole spectrum of excitement and encouragement where reviewers seem to ride the characters' successes, celebrate the authors' enthusiasm and extend comfort to authors experiencing personal struggles. We believe that *Affect* in distributed mentoring is so much more than just providing emotional support – it is a way to understand the importance of emotionally charged reviews on an author's personal and professional development.

6   Conclusion

In this study, we observe different types of user engagement on Fanfiction.net, and the importance of emotional expression in the formation of relationships and friendships between members. We find evidence of users forming connections, relationships and friendships based on emotional expression, both Positive and Negative. We observe the formation of connections as a result of a single interaction between authors and reviewers, relationships based on the exchange of long and frequent bidirectional communication with strong emotional expression, and friendships founded and sustained on deep and meaningful emotionally-charged conversations extending beyond the fictional content of stories.

Our mixed-method analysis deepens our understanding of *Affect* in distributed mentoring and underscores the role of both positive and negative emotions in friendship and learning, implying that the success of an online community may depend on the presence of an environment where members feel encouraged to express their emotions and connect with others over similar ones.

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