Empathy as Innovation:
Assessing the Perception of Empathy in Scientific Writing

Poster 46

Martha Gauthier, Heather Nyce, Susan Daniels, Laura Watts*

Lumanity Inc., Yardley, PA, USA.
*Presenting author.

Introduction

- In a health care setting, the perception of empathy (defined as the ability to understand the personal experience of a patient) is associated with improved patient satisfaction, compliance, psychological well-being, and clinical outcomes[1-4]
- Over 500 measures/questionnaires applicable to health care have been published that assess empathy and/or compassion through self-reported, peer-reported, and corollary-reported scales[2]
  - However, these measures largely evaluate interpersonal interactions and communication
- While the primary goal of scientific writing may be to convey accurate, clear, and objective data, the value of empathy should not be overlooked as it can connect scientific content to the human experience behind the data, thereby fostering a deeper understanding of its impact on patients and communities
- To our knowledge, no metric exists that specifically evaluates empathy in written scientific material

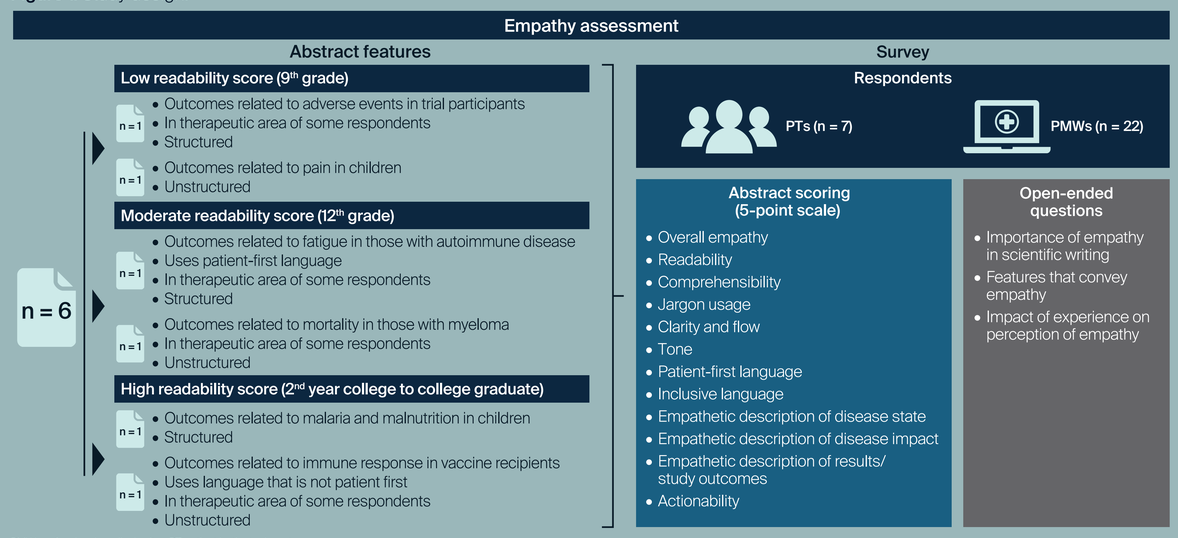
Objective

- To evaluate what features patients/patient advocates (PTs) and professional medical writers (PMWs) perceive as empathetic in scientific writing to inform the development of an empathy metric

Methods

- Two blinded reviewer groups (PTs and PMWs) participated in a survey in which they answered open-ended questions related to the importance of empathy in scientific writing; additionally, respondents scored 6 scientific writing samples, which ranged in Flesch-Kincaid Grade Level (9th grade to college graduate), for 12 features, including overall empathy, using a customized 5-point Likert scale (**Figure 1**)
- The writing samples were also evaluated using 7 additional standardized readability metrics
- Regression analysis was used to examine associations between scores for overall empathy, standardized readability, and all other features evaluated for the writing samples
- A definition for empathy was not provided in the survey
- All respondents provided written informed consent

Figure 1. Study design.



PMW, professional medical writer; PT, patient/patient advocate.

Results

Survey Respondents

- A total of 29 respondents with experience in 5 distinct therapeutic areas participated in the study (**Table 1**)
  - All PTs were ≥40 years of age, while most PMWs (95.2%) were 30 to 49 years of age
  - Most respondents were female (75.9%), held a master's degree or higher (86.2%), and reported reading scientific or health-related information daily (79.3%)

Table 1. Survey respondent demographic characteristics

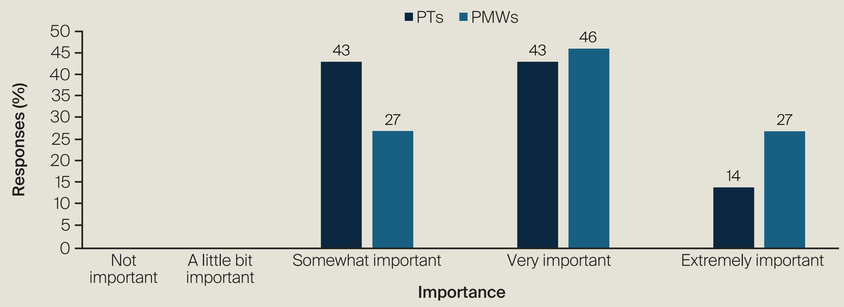
Characteristic, n (%)	PTs (n = 7)	PMWs (n = 22)
Age category, y	(n = 7)	(n = 21)
18-29	0	1 (4.8)
30-39	0	12 (57.1)
40-49	2 (28.6)	8 (38.1)
50-59	4 (57.1)	0
60+	1 (14.3)	0
Gender identity		
Female	3 (42.9)	19 (86.4)
Male	3 (42.9)	2 (9.1)
Transgender	1 (14.3)	0
Prefer not to respond	0	1 (4.5)
Education		
Some college, but no degree	2 (28.6)	0
Bachelor's degree	2 (28.6)	0
Master's degree	1 (14.3)	1 (4.5)
Professional or doctorate degree	2 (28.6)	21 (95.5)
Respondent identified as		
Patient	2 (28.6)[a]	5 (22.7)
Patient advocate	5 (71.4)[a]	1 (4.5)
Caregiver	2 (28.6)	2 (9.1)
Therapeutic area		
Hematology/oncology	1 (14.3)[b]	8 (36.4)
Infectious disease	1 (14.3)	7 (31.8)
Autoimmune disease	4 (57.1)	3 (13.6)
Endocrinology	0	2 (9.1)
Rare disease	2 (28.6)[b]	2 (9.1)
Reading activity		
Daily	3 (42.9)	20 (90.9)
Weekly	2 (28.6)	2 (9.1)
Monthly	2 (28.6)	0
Most common types of scientific reading material[c]		
Peer-reviewed scientific journal articles	6 (85.7)	22 (100)
Articles from health-related news websites or magazines	6 (85.7)	14 (63.6)
Government health websites (eg, CDC, NIH)	5 (71.4)	14 (63.6)

CDC, Centers of Disease Control and Prevention; NIH, National Institutes of Health; PMW, professional medical writer; PT, patient/patient advocate.
[a]Two respondents identified as both a patient and patient advocate.
[b]One respondent had experience with both oncology and rare disease.
[c]Respondents could check all options that applied; the top 3 most-selected options are reported.

Opinions Regarding the Importance of Empathy

- All PTs and PMWs considered empathy to be at least "somewhat important" to scientific writing, with 57.1% of PTs and 72.7% of PMWs rating empathy as "very" or "extremely" important (**Figure 2**)

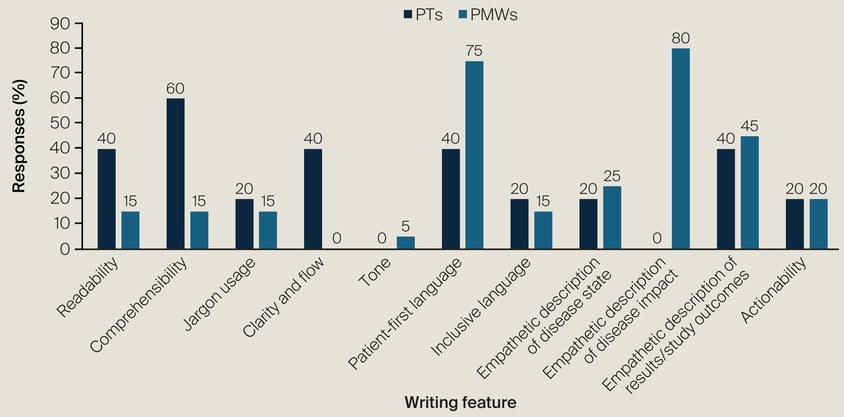
Figure 2. Overall importance of empathy in scientific writing.



PMW, professional medical writer; PT, patient/patient advocate.

- When asked to rate which 3 of the measured features were most important to convey empathy in scientific writing, PTs frequently selected comprehensibility (60.0%), readability (40.0%), clarity and flow (40.0%), the use of patient-first language (40.0%), and an empathetic description of a study's results/outcomes (40.0%; **Figure 3**)
  - PMWs frequently selected an empathetic description of a disease's impact (80.0%), the use of patient-first language (75.0%), and an empathetic description of a study's results/outcomes (45.0%)

Figure 3. Features identified as important to convey empathy in scientific writing.

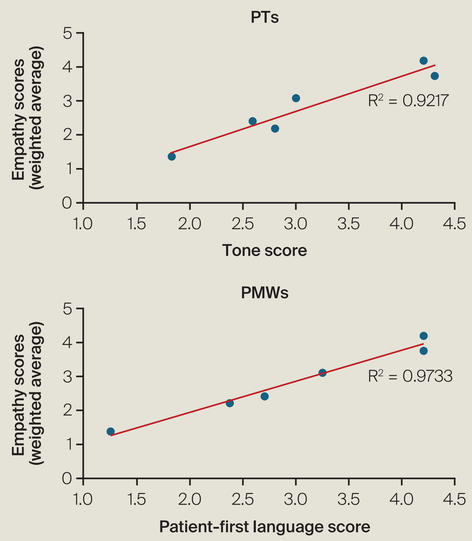


PMW, professional medical writer; PT, patient/patient advocate.

Features Associated With Empathy in the Writing Samples

- Multiple features were strongly associated with the perception of empathy in the writing samples; however, the perception of an empathetic tone exhibited the strongest and most significant correlation for PTs (R^2 = 0.9217 [P <0.01]; **Figure 4**)
  - Patient-first language exhibited the strongest and most significant correlation with empathy for PMWs (R^2 = 0.9733 [P <0.001])
  - For both PTs and PMWs, respectively, an empathetic description of a disease's impact (R^2 = 0.9070 [P = 0.003] and R^2 = 0.9544 [P = 0.001]) and jargon usage (R^2 = 0.9071 [P = 0.003] and R^2 = 0.9041 [P = 0.004]) were also strongly and significantly correlated with the perception of empathy in the writing samples

Figure 4. R^2 coefficient and P values comparing empathy scores and writing features in scientific writing samples.

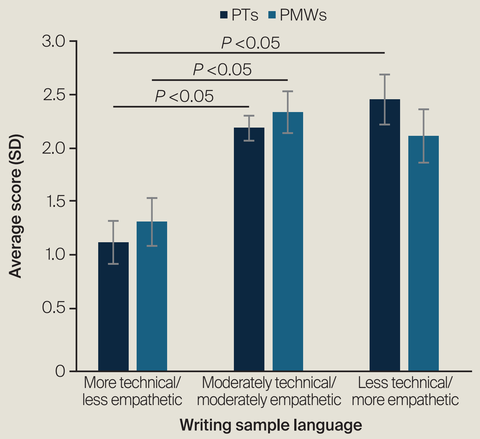


PMW, professional medical writer; PT, patient/patient advocate.

Writing feature	PTs (n = 7) R^2	PTs (n = 7) P value	PMWs (n = 22) R^2	PMWs (n = 22) P value
Flesch-Kincaid Grade Level	0.8638	0.007	0.6146	0.065
Respondent-rated features				
Readability	0.7171	0.033	0.7323	0.030
Comprehensibility	0.7748	0.021	0.7758	0.020
Jargon usage	0.9071	0.003	0.9041	0.004
Clarity and flow	0.8081	0.015	0.7248	0.032
Tone	0.9217	0.002	0.8371	0.011
Patient-first language	0.7732	0.021	0.9733	<0.001
Inclusive language	0.8003	0.016	0.9458	0.001
Empathetic description of disease state	0.8712	0.007	0.9560	0.001
Empathetic description of disease impact	0.9070	0.003	0.9544	0.001
Empathetic description of results/study outcomes	0.8648	0.007	0.9560	0.001
Actionability	0.6758	0.045	0.7269	0.031

- PTs significantly preferred scientific writing samples that were moderately technical and moderately empathetic (P <0.05) or less technical and more empathetic (P <0.05) to those that were more technical and less empathetic (**Figure 5**)
  - PMWs significantly preferred scientific writing samples that were moderately technical and moderately empathetic compared to more technical, less empathetic writing samples (P <0.05)
- When comparing readability scores from 8 standardized metrics to PT or PMW scores for empathy, the SMOG index showed the strongest and most significant correlation for both groups (R^2 = 0.938 [P = 0.001] and R^2 = 0.7136 [P = 0.034], respectively; **Table 2**)

Figure 5. Preference for writing samples based on level of technicality and empathy.



PMW, professional medical writer; PT, patient/patient advocate.

Table 2. R^2 coefficient and P values comparing standardized metric readability scores with empathy scores in scientific writing samples.

Readability metric	PTs (n = 7) R^2	PTs (n = 7) P value	PMWs (n = 22) R^2	PMWs (n = 22) P value
Flesch-Kincaid Readability (Grade Level)	0.8638	0.007	0.6146	0.065
Automated Readability Index	0.7778	0.020	0.5620	0.086
Flesch Reading Ease	0.7756	0.021	0.5049	0.114
Gunning Fog Index	0.7992	0.016	0.5463	0.093
The SMOG Index	0.9380	0.001	0.7136	0.034
Original Linsear Write Formula	0.3230	0.239	0.1756	0.408
Linsear Write Grade Level Formula	0.7430	0.027	0.5144	0.109
New Dale-Chall Readability Formula	0.7562	0.024	0.6650	0.048

PMW, professional medical writer; PT, patient/patient advocate; SMOG, Simple Measure of Gobbledygook.

Conclusions

- Patients/patient advocates and professional medical writers who participated in the survey indicated that the perception of empathy in scientific writing was important
- Incorporating key features (such as an empathetic tone, patient-first language, and an empathetic description of a disease's impact, as well as limiting jargon and balancing technical details) may enhance the perceived empathy of written scientific materials, potentially improving comprehension and increasing the impact of scientific writing for diverse audiences

References

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Disclosures

MG, SD, and LW are employees of Lumanity Inc. HN is a former employee of Lumanity Inc.

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