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Posted Date: 20 October 2023

doi: 10.20944/preprints202310.1319.v2

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Testing a Psychological Tool to Enhance Hope in People with Stroke; a Qualitative Study

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Abstract: Introduction: Hope is an essential concept for rehabilitation of people with stroke. The current study extended research on the model of emotions, adaptation, and hope (MEAH) by extending it according to a previously established framework of hope. Methods: An interpretive hermeneutic phenomenological study was conducted. People with stroke living in the community of the West Midlands were included. Physiotherapy students received training as part of a research placement to deliver a single intervention session using an extended version of the MEAH. Content analysis of the responses to the MEAH were taken and a process evaluation was undertaken in the form of a semi-structured interview after the intervention. Results: Seventeen individuals (70.1±12.2 years) with stroke were included. Results considered the responses to the MEAH as a therapeutic driver and a process evaluation from people with stroke that undertook the intervention. Important scoring differences were noted for those who could and those who were not able to set goals. The MEAH tool appeared to be one way to help develop goals for people with stroke in a personalised way, however the value of the tool was identified by those who did not set a goal. Positive experiences of the intervention were reported across all people with stroke. Discussion: The MEAH tool may be one way to support stroke rehabilitation and enhance the therapeutic encounter between physiotherapists and people with stroke.

Keywords: Stroke; Physiotherapy; Goals; Hope; Training

1. Introduction

Unmet psychological needs contribute to poor quality of life for people with stroke [1]. For instance, a third of people with stroke experience some form of depression [2]. It is possible that a cycle exists between limited participation in activities following stroke and negative emotions including depression, anxiety, apathy and energy levels [3]. Physiotherapists play an essential role in rehabilitation of people with stroke [4] and are required by the Health Care Professions Council to provide psychological skills as part of rehabilitation [5]. Creating motivation during rehabilitation is important to increase independence after rehabilitation has ended [6]. However, managing psychological needs in stroke is often not a high priority and when they are attempted can be ad hoc [7]. Supporting hope during stroke rehabilitation is an essential psychological skill [1,8].

Physiotherapists are considered an important source of information for hope which aids post-stroke recovery [9]. Hope is associated with improvements in emotional distress but also the ability to engage and be motivated to take part in stroke rehabilitation [8]. Physiotherapists are required to manage hope and expectations of change. The ability to do this is consistently seen as a challenging task [10]. For instance, improvements in functioning post-stroke can help individuals search for new possibilities, stagnation or a lack of change following a stroke can make individuals more reluctant to hope [8]. It is important that physiotherapists understand that hope can be significantly challenged by negative information but can be maintained when framed in a positive way [1]. Wiles et al [10] identify the danger of healthcare professionals challenging what they perceive as 'unrealistic' hopes, as this can be more psychologically damaging than leaving the individual to adapt to the reality of

 doi:10.20944/preprints202310.1319.v2

their situation in their own time. Given the above, psychological support that enables hope following a stroke is extremely important and physiotherapists need to be adequately trained to provide hope.

Brief tools designed to support the psychological needs of people with stroke are required to ensure the best outcomes from rehabilitation [11]. One brief therapeutic tool that has been designed to capture the expression of hope is called the model of emotions, adaptation, and hope (MEAH). The MEAH is designed to enhance therapeutic interactions by focusing on what the individual finds difficult or most challenging at that moment in time. It uses this information to then consider that difficulty in the relationship to hope and the future, acceptance in the present, as well as the individual's level of energy and feelings regarding the difficulty [12]. This provides a brief (within a 10-minute interaction) way to document essential psychological constructs in stroke. For instance, acceptance has been identified as negatively associated with depression and anxiety [13] and low acceptance can be identified as a risk for developing mental health disorder [14]. As a result of this relationship, acceptance should be examined early during rehabilitation for people with stroke [15]. Further to this, energy is considered central to the ability to cope and be motivated, but it can be depleted and may need consideration for how it is restored [16]. Further to this, a broader understanding and context for hope is important. The MEAH prevents a narrower view of hope being considered by therapists such as realistic hope, or false hope. These types of hope may then be perceived as needing correcting or challenging [17].

MEAH training has been demonstrated to enhance physiotherapy student confidence in communication, increase their perception of dealing with challenging interactions and is associated with a greater understanding of how to create empowering interactions [18]. More recently the MEAH training has demonstrated similar positive results during high-fidelity stroke-based simulation [11]. However, the MEAH tool requires further testing in clinical population groups including stroke. In addition to this, it is possible to extend the tool to provide a more holistic view of hope for people with stroke. One way to achieve this is incorporating the tool with a framework for hope [19]. The framework highlights the interconnection between the expression of hope (captured by the MEAH) with the different levels of hope, factors that impact hope and the importance of creating goals to enable hope.

The specific levels of hope include a need to end suffering (for instance to reduce post stroke pain), a need to continue meaningful activities and relationships as well as (re)establish social identities and roles [19]. A common initial hope for instance, is to return to normal roles, activities, or way of life [20]. Several factors can influence hope including internal, external, situational, and environmental factors [21]. For instance, the severity of stroke or living alone are significant predictors of well-being (a construct closely related to hope) [22]. Being able to understand these factors and support people with stroke access these factors could provide a better understanding of the context of the difficulty identified by the MEAH. Furthermore, to integrate the MEAH tool more fully into rehabilitation goals should be considered. Hope can be understood by identifying agency (goal directed energy an individual has) as well as pathways (how the goals could be achieved) [23]. Examples of specific goals common across people with hope include improved mobility, cognition, confidence, and independence [20]. In stroke attaining goals can enable important activities and social roles or identities to be reclaimed [24]. However, the ability to generate goals may not be straight forward. For instance, suffering (caused by pain during movement) can accompany simple activities early during rehabilitation and limited activities or opportunity for change [25]. Testing a longer version of the MEAH that enables a more complete picture of hope which looks also to establish goals would have important implications for rehabilitation. Qualitative research would be best suited to test such a tool. Given the above, the purpose of the current paper was to test a developed version of the MEAH tool to provide supported interactions for people with stroke.

2. Methods

An interpretative hermeneutic phenomenology methodology was undertaken, situated in a subtle realist paradigmatic world view. This worldview in qualitative research identifies the

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importance of individual experiences but seeks to focus on what is regarded as common across people. The standards for reporting qualitative research [26] were used.

2.1. Researcher Characteristics

Interviewers were undertaken by 6 final year undergraduate BSc (n=4) and MSc (n=2) students, completing a pre-registration Physiotherapy degree at the University of Birmingham. All students were taking part in a novel research placement and had no previous experience with the MEAH.

2.2. Sampling Strategy

Non-probabilistic sampling was used; participants were chosen through convenience sampling at our chosen interview locations. Samples depended on the willingness and availability of individuals to speak with participants.

2.3. Ethics

Ethical approval was gained from the University ethics committee in the West Midlands (ref: ERN_22-0410).

2.4. Eligibility

Inclusion Criteria: Individuals who had experienced a stroke and had ability to give verbal consent and answers. Individuals were required to attend one of two stroke community groups within the West Midlands.

Exclusion Criteria*:* Individuals who couldn't speak English or with severe aphasia and were not able to participate.

2.5. Procedures & Context

The MEAH tool was delivered on one occasion as the intervention following training provided by the lead researcher for all physiotherapy students. The details of the intervention are provided below and follows the TIDeR checklist [27].

Name: Version 3.8 Therapeutic MEAH Tool.

Why: The MEAH framework promotes therapeutic interactions between physiotherapists and patients, developed from an original screening tool. This allows for exploration and understanding of individual patient stories post-stroke, to create realistic conclusions for rehabilitation moving forward.

What: Following training, the physiotherapy research students provided the MEAH interview framework 3.8 (See Supplementary file) to people with stroke.

Who Provided: Students completed a short training course from the University of Birmingham, UK. This consisted of two online lectures and one in person lecture.

How: Interviews were performed in-person or over Microsoft-Teams. Interviews were recorded using a voice recording software on a phone/audio recorder.

Where: In-person interviews using the MEAH took place at a community stroke centre or during a home visit in Birmingham, West Midlands. Online interviews were conducted in a private room in the School of Sports, Exercise and Rehabilitation Sciences, University of Birmingham.

When & How Much: Data was collected over a four-week period, with adequate time allowing for each interview to take place.

Tailoring: Stroke participants were allowed to ask questions during all sessions and were allowed to withdraw at any time.

Modification: A pilot study was undertaken to test MEAH version 3.7a and gain feedback (see supplementary file). Based on the pilot study modifications were made to create MEAH version 3.8 tested in the current study.

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2.6. Outcome Measures

Demographics were recorded which included the age, gender, type of stroke (if known) and time since stroke. The primary outcome measure was the MEAH Tool (Version 3.8; see supplementary file). Following a pilot study, a semi-structured interview was undertaken (see supplementary file).

2.7. Data Processing and Analysis

Interviews were transcribed and participants were given a pseudonym to ensure confidentiality. Interviews were then analysed using a traditional content analysis [28]. The content analysis used a process of quantising the data [29], this was selected because the responses to the data could easily be reduced into specific identifiable and common meaning units and the worldview assumed is most interested in the most common experiences as that can enable or be associated with recommendations for clinical practice [30]. Initial coding and analysis were undertaken by all authors except author AS. These findings were presented to AS. This identified a need to focus on splitting the findings between people who had or used goals to help their difficulty versus those who did not. The stages and steps of analysis can be viewed in the supplementary file.

2.8. Trustworthiness

Quality was enhanced by considering quality markers identified by previous authors [30]. This included relevance, fair dealing, clear exposition of methods, and reflexivity. This is consistent with the world view assumed. In addition to this, open blind coding allowed consideration to the most common and important findings identified separately.

3. Results

3.1. Participant Demographics

A total of 17 individuals (average age 70.1±12.2 years) took part in the intervention. This included 10 male and 7 female participants. The average time with a stroke was 6.5±6.9 years. Most participants did not know the type of stroke they had been diagnosed with (n=11). A further 4 identified their stroke classification as ischemic,1 identified it as a middle cerebral artery stroke and 1 identified it as a transient ischemic attack. Participants P1, P2, P3, P5, P14 and P17 did not identify a goal at the end of the MEAH intervention. Participants P10, P15, P16 talked about having and achieving goals. All other participants identified a specific goal.

Two groups are now considered and represented throughout the results. The first group could identify a goal or were actively using goals to help their situation (the goal group, n=11). The second group could not identify a goal at the end of the intervention or were not actively using goals (the no goal group, n=6). Table 1 provides this information per participant.

Table 1. A demographic summary of people with stroke included in the research.

Participant	Age (years)	Gender	Years with illness	Type of stroke (if known)	Identified difficulty from the MEAH	Verbatim response to goal setting request
1	69	Female	3	Unknown	Writing	Happy as I am…I don't think I need any goals…it's not affecting me that bad
2	84	Female	11	Unknown	Loss of balance Loss of memory mentioned as	I don't think about the future I just think about today. I am happy as I am I don't want to think about setting goals for the future.

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					secondary difficulty	There is nothing I can do; I can't alter anything
3	77	Male	5	Unknown	Balance Speed of doing tasks identified as secondary difficulty	I don't really have goals. I just am where I am now and that's it…., I don't really think much about goals or anything. I just take everything day by day.
4	52	Female	10	RMCA	Memory and cognitive deficit as main difficulty	***Goal***: Being more patient because it's going to take time
5	84	Male	Unknown (3x)	Unknown Also bowl cancer	The (in)ability to walk	No, nope I have nothing.
6	78	Female	16	Unknown Also has Parkinson's Disease	Living alone	***Goal***: Going to the coffee mornings by where I live, so maybe I could do that.
7	68	Male	2	Ischemic (LHS)	Mobilising with a wheelchair	***Goal***: walk independently again
8	83	Male	1	Unknown	Independence Secondary difficulty identified as not being able to return to meaningful activities (bowling)	***Goal***: To go on a seaside holiday trip soon as it may not be possible.
9	84	Male	21	Unknown	Fear of falling Secondary difficulty identified as not being able to return to meaningful activity (dancing)	***Goal***: Pick up Golf again.
10	67	Male	15	Ischemic Also has a diagnosis of Leukaemia	Cutting food	***Goals in general***: everybody telling me to get an automatic [car] because honestly [begins to get a bit emotional] wanted to prove that I could still do it
11	63	Male	2 strokes in the past 9 months	Unknown	Walking Secondary difficulty identified as typing on a computer	***Goal***: to have a rail fitted on my stairs so I can go up and down

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12	65	Male	18	Ischemic	Fatigue from seasonal change in weather	*Goal*: Further my research
13	49	Female	2	Ischemic	Not being able to walk and the implication of this being isolated and not able to socialise	*Goal*: The target it to be able to Jog
14	82	Female	4	Unknown	Loss of memories Secondary difficulty identified as no sense of taste	No.
15	56	Male	3	Unknown	Difficulties associated with the slowness of movement	*Goal in general*: I've got goals: the gym, swimming, driving, running
16	77	Male	1(2x)	Unknown	Aphasia	*Goals in general*: Little goals. In the hospital I would try to remember words and think about it and remember names
17	54	Female	2 months	Transient ischemic attack and aneurysm found	Anxiety regarding the aneurysm and the potential outcomes following surgery	I've got no goals in sight…Just to get on my next holiday [laughs].

Note: x = RMCA = Right middle cerebral artery , LHS = Left Hemisphere Stroke.

Six research physiotherapy students (3 males, 3 females; 23.3 ± 5.3 years) were trained to deliver the intervention to individuals with stroke. All students were undertaking a pre-registration course in physiotherapy. All students except one had undertaken one previous placement that was associated with stroke. Table 2 provides full details of the physiotherapy research students.

Table 2. Demographics of research physiotherapists.

Researcher	Course Type	Age (years)	Number of previous placements*	Previous neurology/ stroke placements
SP1	Undergraduate	20	6	6 weeks in community neurology + stroke ward
SP2	Undergraduate	20	6	6 weeks on acute stroke ward
SP3	Undergraduate	21	6	6 weeks in community neurology
SP4	Undergraduate	20	6	6 weeks in community neurology + stroke ward
SP5	Postgraduate	26	4	4 weeks in neurology
SP6	Postgraduate	33	4	None

*Includes physiotherapy, nursing, and service placements.

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3.2. Responses to the MEAH core questions on hope, adaptation, energy and feelings

Across the whole group around half identified their difficulty against an average hope for change (7/17, 47%), Just over half (10/17, 59%) could accept the difficulty. In a similar way, around half reported average energy levels for managing the difficulty (9/17, 53%) and average feelings (not negative or positive) towards it (9/17, 53%).

3.2.1. Group differences

Most people in the no goal group (5/6, 83%) identified a low level of hope. No one in the goal group identified this, most often they (5/11, 45%) identified a high level of hope. Interestingly nearly a quarter of people (4/17 24%) found acceptance difficult or stated they would not accept the difficult with most (3/11, 27%) representing the goal group. Only individuals from the goal group identified high energy (4/11, 36%). Table 3 provides a full breakdown of the individual's responses.

Table 3. Group responses to the additional questions for the MEAH tool.

Item or topic related to the question	Group responses
Does the difficulty change over time?	***Goals group*** • Some of the goal group identified a deterioration over time (P4; P6; P10, 3/11 = 27%). • Six individuals in the goal group (P8; P9; P11; P12; P13; P15, 6/11 = 55%) focused on being able to manage the situation ***No goals group*** • More of the no goal group identified no change over time (P1; P2; P3, 3/6 = 50%). • one individual in the no goal group (P17, 1/6 = 17%) focused on being able to manage the situation.
The impact of the difficulty on important roles, identities or groups associated with.	***Goals group*** • The goal group highlighted the reliance and importance of family members that provide care (P4; P7; P8; P10; P12, 5/11 = 45). ***No goals group*** • The no goal group identified no impact on their roles (P1; P2; P3; P17, 4/6 = 66%). This could be because they don't go out (P3) or what is prevented is limited e.g., bowls (P5).
Impact of the difficulty on meaningful relationships	***Goals group*** • Some individuals (P6;P12;P15, 3/11 = 27%) identified no change in meaningful relationships. • One individual identified having more contact with family (P8). Another individual identified that they were looking to make more friendships (P9) and one stated that they had more friends take them out post stroke (P11). ***No goals group*** • Most individuals (P1; P2;P5; P14; P17, 4/6 = 83%) identified no change in meaningful relationships.
Impact of the difficulty on tasks or accomplishments	***Goals group*** • Most individuals identified that the difficulty had impacted on tasks and accomplishments more (P6;P7; P15; P9; P10:P11; P16, 7/11 = 64%). ***No Goals group*** • Most individuals identified no impact (P1; P2; P5; P17, 4/6 = 66%)
Activities that can help	***Goals group*** • Individuals identified that the community stroke group helped them (P4;P6; P7;P9; P12, 5/11 = 45%). One individual stated that dominos helped with concertation (P4), one individual identified that bowling (P6) helped. Two individuals identified that staying active helped (P9; P15). ***No goals group*** • The no goals group identified not looking for activities to help (P1;P2; P3; P5, 4/6 = 66%)
Characteristics that are associated with themselves	***Goals group*** • The most consistent termed used to describe peoples characteristic was determination (P6; P7;P8;P9; P10; P12; P13; P16; 8/11 = 72%) • Two from both the goal group also identified the term persistent (P4;P6; 2/11 = 18%) ***No goals group*** • Determination was identified by two individuals (P1;P2; 2/6 = 33%). • Two individuals identified the term persistent (P1; P3, 2/6 = 33%).
A different way to look at or consider the situation	***Goals group*** • Three individuals (P4;P6;P9, 3/11 = 27%) identified that they did not look at the situation differently (P4;P6) or never accepted that change is not possible (P9).

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	• Three others identified accepting the situation (P10), being grateful the situation is not worse (P8) and being positive and pragmatic (P12). ***No goals group*** • Most identified a need of continuation when responding to this question (P1;P2;P14;P17, 4/6 = 66%). In their words, this was to take each day as it comes (P2) or live with it (P1) or get on with it (P17), or keep on going (P14).
Can others that can help	***Goals group*** • The most consistent response was identified as the support given by family members (P6;P11; P16. , 3/11 = 27%). • Three individuals (P8; P11; P12, 3/11 = 27%) identified that health care professionals helped them. ***No goals group*** • The most consistent response was the support given from family members (P1; P2, 2/6 = 33%).

3.3. Responses to the additional questions related to the framework of hope

Individual responses to the additional MEAH questions are provided below. Differences in each groups open comments were identified. Key differences included the goal group identified that the difficulty had got worse over time (P4; P6; P10, 3/11 = 27%) and identified a reliance and the importance of family members support (P4; P7; P8; P10; P12, 5/11 = 45%). Around half of the individuals in the no goal group identified no change over time (P1; P2; P3, 3/6 = 50%). The no goal group identified no impact of the difficulty on; their roles (P1; P2; P3; P17, 4/6 = 66%), their meaningful relationship (P1; P2; P5; P14; P17, 4/6 = 83%) or their tasks or accomplishments (P1; P2; P5; P17, 4/6 = 66%). However, the goal group identified an impact of the difficulty on their tasks and accomplishments (P6; P7; P15; P9; P10:P11; P16, 7/11 = 64%). In a similar way most in the no goal group did not consider activities that could help the difficulty (P1; P2; P3; P5, 4/6 = 66%) whilst the goal group most often identified that community group would help the difficulty (P4; P6; P7; P9; P12, 5/11 = 45%). The goal group identified determination as a key characteristic more often (P6; P7; P8; P9; P10; P12; P13; P16; 8/11 = 72%) than the no goal group (P1; P2; 2/6 = 33%). The focus of the no goal group was for the need to continue by seeing what each day would bring (P1; P2; P14; P17, 4/6 = 66%). Whereas some in the goal group identified they could not look at the situation differently implying not accepting it (P4; P6; P9, 3/11 = 27%). Table 4 provides a breakdown of the differences per open question considered.

Table 4. Responses to the process evaluation of the MEAH intervention split by groups that did and did not identify a goal.

Question	Response by each group
Perceptions of the intervention	***Goals group*** The aspects of the intervention that were identified as valuable included social interaction (P4), ask good questions (P13), helping people who are reserved or quiet (P8), the ability to identify problems (P9), General perceptions of the intervention identified that it was worthwhile (P12), pleasant (P16) and positive because it allows the person to talk (P15). It was also important because patients could see that it would help others (P6;P10). One individual commented about the students being nice (P11) <u>Example quote</u> *No, I think they were very good question. They are all part and parcel of what has happened, nothing happened untoward, nothing that I wasn't expecting*. (P13) ***No goals group*** This groups identified the intervention as helpful and useful (P1; P5), good and positive (P17) and fine (P3). It was also identified as a way to help others (P2; P5:P6) or to contribute to research (P3). <u>Example quote</u> *Yeah, it was ok. If it helps other people, then that's what I like. I know it won't help me much but if my answers help others and research then it's good*. (P2)
If it was considered beneficial	***Goals group*** Several benefits were identified these included talking about things that haven't been talked about since the stroke (P4), talking about feelings (P6; P9) and expressing their own view (P9; P16). Participants valued the following elements including the questions asked (P8; P10), the interactions (P11; P12) with a focus on no interruption of answers (P11) or the way personal

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	circumstances that were sensitively considered (P12). Initially apprehensive, P15 enjoyed the interaction and described it as an 'icebreaker'. Example quotes *Well I'm able to talk about things in a way that I haven't really been able to since the stroke, because no one tends to really ask me, they just look at the physically difficulty and think that's it*. (P4) *You let me take my time and let me answer the questions, I told you some of the problems I had during the interview* (P11) ***No goals group*** Several benefits were identified including talking to others (P1; P3), talking about challenges (P2), sharing problems helps (P5), having a goal to work towards (P17) and providing an 'escape' for a moment in time (P5). Example quotes It helps you to recognise what your abilities and struggles are and what your goals could be if you wanted to improve. (P1) "*Well I'm sharing the problems I've got with you, whether that will help anybody else, I don't know*" (P5)
Value in hospital	***Goals group*** The value within hospital was identified as helping people who feel depressed (P4; P6), being given social support (P4) and being asked how they are feeling (P6). Receiving it on the ward was identified as something that would be remember (P11). Two individuals identified limits or caution for applying the MEAH within the hospital setting. P15 stated that at the point of discharge may be best. P12 stated that there would not be much value as you need more time to comes to terms with what has happened (P12) Example quote *Yes, it's [MEAH] very important. I think in hospital they refused to see the fact that I was depressed. I lost my job, and my independence and people fail to realise that there are more than the physical effects. I think they should provide more social support in practice* (P4) ***No goals group*** Two individuals identified that there would be value (P5; P17). One person (P1) stated the value could be seen but were irrelevant for them currently. Two individuals identified that the value may depend on who the person is and if they want to talk (P2;P3). Example quote *Individuals are different from each other. So what might be good for one person might not work for another. I don't think this would work for me*. (P3)
Duration of intervention and number of questions asked	***Goals group*** The majority of individuals stated that they were happy with the duration and number of questions (P4;P6;P9;P10:P11:P12:P15). One individual stated that it could go longer (P4). Another stated that they would pass the question if I wasn't happy (P9) Example quote *The length of time is fine, you could go on longer if you like, no problem*. (P4) ***No goals*** Three individuals identified that it was 'fine' in terms of duration of the intervention (P1; P3; P5). Example quote *For me I think it was fine. Some questions didn't really apply to me but I can see how it would help others*. (P1)
Role in treating neurological illness	***Goals group*** Most individuals supported the MEAH as having a role in treating individuals with neurological disease. Most answered yes to the question (P4; P11; P10; P12; P13 P16). Other statements included that it was useful (P6; P10), beneficial (P12), brilliant (P16), or important (P4; P11) Example quote *I think anything that get people to open up about a conversation about their life by people with experience in stroke is beneficial. I hope the intervention is also used as a tool to help open up conversations for those people that have lost all their confidence* (P12 ***No goals group*** Most individuals answered yes to the MEAH having a role in treating people with neurological conditions (P1; P2; P5). Two stated that it would help support individuals' feelings (P1; P5). Example quote *Yes, it would be good to adapt it to all people with illnesses, it will help people to talk about how they feel* (P5)
Could the intervention be used more widely for physiotherapy students	***Goals group*** The majority of individuals answered yes to this question (P4;P6;P9;P11;P12). One individual identified that they could not answer the question as they were not sure (P16) Example quote I think it's perfect with physio because patients love physios, because you are the face of care and are therefore more likely to have a conversation with you and be more honest with you (P12) ***No goals group***

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	The majority of individuals answered yes to this question (P1;P2;P5;P17). *Example quote* *Yeah you tend to get people mobile again and spend a lot of time with us*. (P17)

*Note: where information on individual responses is not provided it was not given during the interview

3.4. Process evaluation of the intervention – individuals with stroke

Both groups have favourable considerations about receiving the intervention and the duration that it took. The value was identified in several ways. This included the questions asked within the MEAH (P8; P10; P12), being able to talk to others (P1; P3; P4), being able to share feelings (P4; P9) and problems (P5), being able to share the challenge or express feelings. The application of the intervention within a stroke ward was supported by some because of the need to support people's feelings (P6) or help with depression (P4; P6). Some participants (P2; P3) identified that it may be individual to the person as to the value within a hospital setting. P15 identified the value of the intervention at the point of discharge. However, P12 cautioned of the value in such a setting. He identified that more time was needed to come to terms with what had happened before receiving the intervention. A summary of the process evaluation is given in Table 5.

Table 5. the most common responses from physiotherapy students on the placement.

Theme	Sub-theme	Code	Example	Participants
Value of the research placement	Value of research placement	Experience of the process	Write up experience and going through the research process has value (SP1: SP2: SP4: SP5) *Example quotes* *normally on placement you just perform interventions and don't really consider the process behind them. I don't really think I would have ever explored this post university if. I hadn't had the opportunity now* (SP2) *It's a bit different than a traditional placement that people I think expect to have. But it feels very involved in the development of the area of study* (SP5)	SP1; SP2; SP4; SP5 5/6, 83%
Value of the MEAH tool	Insight from experience	Understanding experience of people who have had a stroke	Students valued understanding the individuals experience of stroke has or what life is like following a stroke (SP1; SP2; SP3: SP6). This was considered as advancing their own understanding in a new way (SP4) provided a deeper understanding of life with stroke (SP5; SP6) *Example quotes* *Well, I found it overall quite insightful on the day… during the interviews and just getting an understanding and appreciation for what life is like. I think readapting to life really… But them having the stroke and then that that knowledge of that importance has been impacted, you know, affecting the rest of their life and how they approach the rest of life.* (SP3) *I have had some previous placement experience on a stroke ward, so it's been really nice for me to advance my understanding on stroke in a new way…I also think I have benefitted from conversations with patients and learnt a lot from them too* (sP4)	SP1; SP2; SP3; SP5; SP6 5/6, 83%

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		Understanding the individual's psycho-emotional response to the stroke	Experience and feelings or emotional aspects of rehabilitation (SP1; SP2; SP3). This was considered different from the normal focus on mobility and physical rehabilitation (P1). Students identified the importance and value of hope (SP3; SP6) and how hope is accessed (SP6). <u>Example quotes</u> *using the MEAH intervention I've realised that the emotional aspects sometimes have the biggest impact on patients, and I think that it's easy from a physio perspective to just see physical and functional difficulties* (SP2) *they saw that as a positive rather than a negative where it's very easy to look at these life changing events that can also be quite debilitating....But they still take positives from that when it's very easy to get lost in the negatives and self-pity, those sorts of things. I think it's that sense of hope and ... they're like being thankful for what they have. I think that stood out for me in particular* (SP3) *But how they still take that and find the positives when it's very easy to get lost in the negatives and self-pity, I think this that sort of feeling of their feeling of hope*. (SP6)	SP1; SP2; SP3; SP5; SP6 5/6, 83%
The training for students	Introductory lectures	Pre-MEAH course learning	Training videos had value (SP1; SP2; SP4) and could be explore at the student's own pace (SP4). One student highlighted that there was enough training (SP4). <u>Example quote</u> *I found the training good overall. I liked the recorded lectures as I could work through them at my own pace and really take the time to understand the content. I feel that the training prepared me well for taking part in the placement* (SP4)	SP1; SP2; SP4; SP5; SP6 5/6, 83%
		Value of training within the physiotherapy course	Could help more globally with topics like hope and goals (SP1) or more around holistic topics (P2) and give a wider appreciation for stroke or the condition (SP3; SP4) good for students (SP6) and allows good application of what research is like before the dissertation (SP4), not yet as it needs to be more refined, it could be applied in a certain way (SP5) <u>Example quote</u> *Interviewer: Do you think the intervention could be integrated into a university course? Can you explain your answer?* *P2: Yeah, I think it should be considered for a lot of different health conditions, it can really give meaning behind goals*	SP1; SP2; SP3; SP5; SP6 5/6, 83%

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			and experiences, and I think that's really important for patients.	
	Simulation needs	Further Practice	Practice is needed (SP1; SP2; SP3; SP6), training was enough but with practice you learn (SP5). *Example quotes* *After I had completed my interview, I was doubting whether I had asked the questions in the right order or with the right tone for example. This was probably just because it was the first time trying out the MEAH with participants. It's not until you perform something that you think… did I do this wrong? So maybe just having a practice before*. (SP2) *I think we got enough training; I suppose. And it's just really trial and error, it is a numbers thing. So, you kind of get a bit better from it each time*. (SP5)	P1;P2;P3;P5;P6 5/6, 83%
		Understanding how to apply questions further	Further understanding around the questioning process including how to word questions (SP6), if the follow up questions were correct (SP1) or understanding that every student has the same identification of what each question means (SP3) *Example quotes* *I think [myself] having a better understanding what the questions really trying to get to, if I had better understanding [could have helped]. If I could potentially reword it differently, or say, better, if there is a better, if there is a worse, I did rephrase it so, and I think just having a deeper understanding of what the questions really mean* (SP6) Just speaking, not especially that we're all on the same page with questions, just so we all understand you know our perspective of what questions we're asking as everyone's perspective may be different of what a question is asking (SP3)	SP1; SP3; SP6 3/6; 50%

3.5. Process evaluation of the intervention – physiotherapy students

The physiotherapy students who took part in the research placement were generally positive about the experience. They valued the experience of delivering a research project (SP1; SP2; SP4; SP5; 4/6) or understanding the experiences of people with stroke at a deeper level (SP1; SP2; SP3; SP5; SP6; 5/6) and perceived benefit of experiencing an interaction that focused on the psychological and emotional responses to stroke (SP1; SP2; SP3; SP5; SP6; 5/6). The MEAH research placement was generally considered appropriate for physiotherapy training (SP1; SP2; SP3; SP5; SP6; 5/6) . The level of training given as generally consider adequate (SP1; SP2; SP4; SP5; SP6; 5/6) , although further simulated practice was required (SP1; SP2; SP3; SP5; SP6; 5/6). Table 6 provides a content analysis of the responses given by student physiotherapists.

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Table 6. The responses to the first four MEAH questions split by those who did identify a goal and those who did not identify a goal.

Item	**High**	**Average (middle)**	**Low**	**No answer or answer unrelated to scale**
Hope for change to be accomplished	Goals: 4,9,11,15,16 N=5/11, 45% No Goals: N=0 Total number of participants: 4,9,11,15,16 N=5/17,29% <u>Examples quotes</u> *Always hopeful. But after, after a while, you realize that you're the same person, you just a different version* (P15) *I'm… what's the word… optimistic. I expect to get things right, I'm like that.* (P16)	Goals: 6,7,8,10,12,13 N=6/11, 55% No Goals: 1 N=1/6, 17% Total number of participants: 1,6, 7,8,10, 12,13 N=7/17, 47% <u>Example quotes</u> *I think it is possible it might change. There is some hope that it could be improved but I am not sure. I think it is the middle one* (P1) *I'm not really hopeful about it changing, but I'm hopeful that I can manage it* (P12)	Goals: N= 0 No Goals: 2,3,5,14,17 N=5/6, 83% Total number of participants: 2,3,5,14,17 N=5/17,29% <u>Example quotes</u> *None, they've told me that there is nothing they can do and it is permanent….They can't repair it. (P2)* *I don't think I'm ever gonna change, I have no hope.* (P3) *I see no hope and no change. Cause I have got 3 strokes and bowel cancer* (P5)	Goals: N=0 No goals: 0 N=0 Total number of participants: N=0 <u>Example quote</u>
Acceptance of difficulty currently	Goals: N=0 No Goals: 1,3 N=2/6, 33% Total number of participants: 1,3 n=2/17, 11% <u>Example quotes</u> *I think I've embraced it. I know that it's something that has changed since the stroke and that it's something I need to work on in order to make it better (P1)* *Yes I have accepted it completely. It's a part of me now. (P3)*	Goals: 6,7,8,10,12,13,15,16 N=8/11, 73% No Goals: 2,17 N=2/6, 33% Total number of participants: 2,6,7,8,10,12,13,15,16,17 N=10/17,59% <u>Example quotes</u> *I accept it and I am learning to live with it because there is nothing else I can do really* (P2) *I accept that my husband will never come back, it was COVID, I couldn't see my husband at all when he passed away. That was a lot to accept, but I accept it a bit more now* (P6) *I acknowledge it. I think I have a middle ground response* (P12)	Goals:4,9,11 N=3/11, 27% No Goals: 5 N=1/6, 17% Total number of participants: 4, 5,9, 11 N = 4/17, 24% <u>Example quotes</u> *I'm not going to accept it, no* (P4) *I acknowledge it…I don't think I shall ever accept* it (P5) I don't accept it, I won't accept it (P9) *well it's hard to accept* (P11)	Goals: N=0 No Goals: N=0 Total number of participants: <u>Example quote</u>
Energy towards difficult How much energy do you have	Goals: 6,9,10,16 N=4/11, 36% No Goals: N=0	Goals:4,7,9,11,12 N=5/11, 45% No Goals: 1,2,3,17 N=4/6, 67%	Goals: N=0 No Goals: 5 N=1/6, 17%	Goals:13,15 N=2/11, 18% No Goals: 14 N=1/6,17%

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to deal with the difficulty	Total number of participants: 6,9,10,16 N=4/17, 24% Example quotes *Well I suppose high energy really* (P6) *Yeah, plenty of energy, yeah* (P9) *I practised every day and now I can do it all… Oh it's hard work, I'm tired* (P16)	Total number of participants: 1,2, 3, 4,7,9,11,12,17 N = 9/17, 53% Example quotes *I find that I don't actively use up my energy to try and practice. I think only average energy* (P1) *On the scale I would say average energy because there are times where I don't think about it at all, but when I'm outside I really do* (P3) *I use a FES on my leg and that saves about 10% of my energy. I was using far more energy without that. As long as I've got my FES device for my leg, I've got use to it, I don't really use that much energy* (P12)	Total number of participants: 5,13 N= 2/17, 13% Example quotes *"I don't think I have got any energy, no energy both mentally and physically* (P5)	Total number of participants: P13,P14,P15 N= 2/17 Example quotes Interviewer: *So how much energy do you have to deal with this currently?* P15: - *I find I get tired faster but i never did anything before or if i push myself too far Sometimes I don't have any energy… Big challenge, and partly having those people around you. To motivate you… got to think positively, got to push yourself, push your limits to really* (P13)
Feelings How do you feel about the difficulty currently from positive or pleasant o negative or unpleasant	Goals:1,10,16 N=3/11, 27% No Goals: 1,14 N=2/6, 33% Total number of participants: 1, 4, 10,14,16 N= 5/17, 29% Example quotes *Do it because it makes me feel better because I can still do it (driving).* (P10) *You have to be positive. If you're negative, you might as well kill yourself.* (P14)	Goals: 6,7,8,9,11,P13,P15 N=7/11, 64% No Goals: 1,17 N=2/6, 33% Total number of participants: 1,6,7,8,9,11,P13,P15,17 N = 9/17, 53% Example quotes *"I have average feelings. It's not something that stresses me out day to day because I don't have to think about it every day. Compared to what I have achieved, it's not a massive challenge"* (P1) *Normal feelings, in the middle* (P6) *more in the middle really. Depression is a thing and an important part of the stroke because you lose all your ability and get confused and in your head* (P11)	Goals:12 N=1/11, 9% No Goals: 5 N=1/6,17% Total number of participants: 5,12 N=2/17, 12% Example quotes *I hate it I can't walk* (P5) *It's an unpleasant experience.* (P12)	Goals: N=0 No Goals: 2,3 N=2/6, 33% Total number of participants: 2,3 N = 2/17, 12% Example quotes *I have no feelings towards it at all really. It's just something that I've had to learn to live with now so I can't change that. I accept it and that's it. I don't sit and feel sorry for myself or anything like that. I know it's not gonna get better so I've learnt to live with* it (P2) *"I don't think anything towards it at all because I've accepted it. I'm not gonna get back to the way I was.*

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				This is how I am now so I have no feelings towards it. No one has ever asked me questions like this so I haven't really thought about it. (P3)

Note: Goals: Participant who wanted to set goals, No Goals: Participants who did not have or want to set goals:.

4. Discussion

This is the first study to use a framework of hope as a therapeutic tool for people with stroke. The MEAH tool was able to consider and address important psychosocial elements following a stroke and establishing practices such as applying the MEAH could help address some of the unmet psychological needs for people with stroke. This includes emotional functioning and ability to access meaningful activities and interactions [31]. It has provided initial evidence for how goals can be developed and the association that exists between goal setting, hope and energy. Further to this, the characteristic of being determined was more often mentioned in the group that could identify a goal and this group had high levels of energy. These aspects are important factors which influence and are influenced by hope [21]. The MEAH appears to be a useful tool that can meet important psychological needs for people with stroke. This includes a need for enhanced patient centredness [32], a need to capture psychological constructs like acceptance early on in rehabilitation, something which has been called for [15] and a need to be able to listen to the individuals' stories which can enhance the empathetic response of physiotherapy students [33]. Finally, it may be useful as a tool that can prepare people with stroke for discharge which is often influenced by worry and apprehension [34].

Important differences were noted between individuals, who, at the end of the MEAH interview could identify goals and those who would not. Interestingly those who expressed that their difficulty had gotten worse with time were within the goal setting group. Being able to manage the negative emotions that are created with setbacks and accepting these emotions is important if goal setting is to continue [24]. Past research has identified that setbacks or a lack of progress requires people with stroke to adjust goals [24]. It may be that a setback or lack of progress or uncertainty about the future prevented the group with no goals from setting any. Being able to disengage from unachievable goals appeared to allow engagement with more achievable ones, but for some this process is not possible [24]. The group that set goals in the current study had more hope and higher perceived energy levels. This suggested that they could be more able to revise their goal to the changes experienced, this may explain why the group had a higher level of hope [8]. This may also illustrate accommodative coping. Accommodative coping is the ability to adjust goals in the face of a persistent problem and is associated with a higher quality of life in people with stroke [35]. This type of coping also is associated (r=0.71) with self-confidence [36]. This is likely also a better quality of life in the group that could set goals. It is important to note that proactive coping and optimism can change negatively following the first years after a stroke, whilst passive coping strategies often remain stable [36]. Further research is needed to consider how to aid positive and adaptative coping and understand further information about the potential negative impact of passive coping. For instance, apathy may be associated with the inability to identify a goal. Apathy occurs in around a third of people with stroke and relates to diminished motivation, less persistence of activity, reduced emotions and social activity [37]. Further to this, it is noted that hope for improvement is complicated by uncertainty, and this can result in frustration and introduce a need to accept what may not be possible for recovery [34]. The group that did not set goals had lower hope and therefore this likely contributed to how they managed the difficulty. Although, the experience of no hope for one participant in the no goal group was attributed to the prognosis given by a health care professional. It is important that health care professionals understand the need for a patient to keep moving forward. For instance, Hoyle et al. [38] found the

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importance of moving forward, revealing that individuals who dwelled on their pre-stroke selves had lower satisfaction.

Some in the goal group identified an inability to accept the difficulty as something that would not change. Acceptance is important post-stroke as individuals experience a change in identity and potential physical, emotional, and cognitive alterations [39]. Acceptance appears to change positively with rehabilitation, although around 20% of people in past research demonstrated no change in acceptance levels [15]. The current results identified that acceptance was similar for both groups. However, the group that set goals were more often unable to accept their primary difficulty. It is important to note, however, that this group did not appear to reject it rather it was acknowledged by them. Past research has identified low acceptance as a risk for mental health disorders [24] as well as a worse functional and emotional status [15]. The current findings identify the importance of distinguishing between acknowledgement and acceptance when considering such a finding. As the ability to acknowledge but not accept or embrace may have been used as a source of energy and motivation for the group that could set goals.

Maintaining independence is an important requirement for people with stroke [34]. Consistently in the current study people with stroke across the groups identified the important role of family members and that that was a source of support. Elloker and Rhoda [40] found that participation in meaningful activities increased in individuals with higher levels of social support. Individuals in the goal group more often identified attendance at the community stroke group as a meaningful activity. Hartman-Maeir et al. [41] found that meaningful participation in activities was needed to prevent isolation and health declining post-stroke; allowing individuals to feel more hope and joy. The current findings support this and consequently, physiotherapists should consider incorporating activities that are considered meaningful to the patient when creating treatment plans [42].

4.1. Implications

- The MEAH appears to provide a therapeutic interaction where patients feel heard and valued. This is important and making sense of their situation following stroke was allowed [8].
- The MEAH tool for both people with stroke and carers could be highly valuable at points in time. One example for people in the current study is discharge. Discharge is recognised as a difficult time for people with stroke and their care givers [43].
- The MEAH can map moods and when considered alongside the level of hope may be a precursor to a clinical mood disorder. Being able to screen for mood is important for people with stroke [44].
- Individuals who may not want or perceive a need to create a goal still appeared to value the process of communication developed with the MEAH. Health care professionals should be able to accept when an individual just wants to express how they are feeling, versus a constant need to move or adapt goals.
- For individuals who do identify a goal following the MEAH. Physiotherapists may want to consider how to move goals forward following identification with the MEAH. One way may be to use a framework e.g., [24].

4.2. Limitations

- Speech difficulties following a stroke can limit engagement and the ability to project a sense of self, this could include avoiding communication or activities that required speaking whilst other used strategies supported by SALTS [32].
- All individuals accessed by the study, except one individual, could attend a community centre. This likely restricted the representativeness of the sample.
- Psychological needs for people with aphasia are higher than the general stroke population [44]. Further research needs to consider to what extent the MEAH can achieve the needs or if adaptations are required.

- One aspect that was not considered by the MEAH was the patient's level of confidence to engage in activities. A diminished level of confidence is associated with social withdrawal and reduced independence [43].
- Being able to distinguish between problematic or clinical mood disorders is important but also difficult [43]. The extent the MEAH can achieve this may be limited.

5. Conclusions

The current study identified potential value in the MEAH tool which considered different areas of hope and adaptation for people with stroke. This supports current findings and demonstrates the need for further application.

Supplementary Materials: 1 supplementary file.

Author Contributions: Conceptualization AS; Data curation; all authors, Formal analysis; AS. Funding acquisition; N/A, Investigation; all authors. Methodology; AS. Project administration; all authors. Supervision; AS, Validation; all authors. Visualization; AS; Writing - original draft; AS, Writing - review & editing; all authors.

Funding: No funded was provided for this research.

Data Availability Statement: Not applicable.

Conflicts of Interest: The author reports there are no competing interests to declare.

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